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The Fruit and Vegetable Sector in Bosnia and Herzegovina

Preparation of IPARD Sector Analyses in Bosnia and Herzegovina

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Preparation of IPARD Sector Analyses in
Bosnia and Herzegovina
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Sektor Voća i Povrća u Bosni i Herzegovini

Kontekst i ciljevi analize sektora

Opći kontekst analiza sektora: Pripreme za pristupanje EU

Bosna i Hercegovina (BiH) je potencijalna zemlja kandidatkinja za pristupanje EU od sastanka Evropskog vijeća u Thessalonikiju iz 2003. U junu 2008., EU i Bosna i Hercegovina su potpisale Sporazum o stabilizaciji i pristupanju (SSP). Privremeni sporazum o trgovini i trgovinskim pitanjima je stupio na snagu 1. jula 2008., a Vijeće je usvojilo novo Evropsko partnerstvo sa Bosnom i Hercegovinom 18. februara 2008[1].

Bosna i Hercegovina je imala korist od autonomnih trgovinskih mjera EU od 2000. godine. Nakon što je Privremeni sporazum stupio na snagu 1. jula 2008., pristup proizvodima iz BiH Evropskoj uniji je proširen, a za izvoz iz EU u BiH su odobrene trgovinske preference.

Kada su EC i BiH 31. jula 2008. potpisale Nacionalni program Sporazuma o finansiranju instrumenta za pred-pristupnu pomoć (IPA) 2007, to je bio veliki korak ka EU integracijama. Ukupna sredstva za raspodjelu u okviru IPA iznose € 11,47 milijarde (za trenutne cijene) u periodu 2007. - 2013.

Kao zemlja pred-kandidatkinja, Bosna i Hercegovina još uvijek ne može u potpunosti koristiti IPA pomoć, iako se vrše pripreme koje bi trebale biti okončane do trenutka kada BiH postane kandidatkinja za EU, i kada se pokrene implementacija IPARD pomoći za poljoprivredni i ruralni razvoj.

Kontekst sektora

Kako bi Bosna i Hercegovina imala koristi od pred-pristupne pomoći u sklopu IPARD-a, neophodno je:

- Da dobije status zemlje kandidatkinje
- Da ima IPARD Program koji je usvojila Evropska komisija
- Da sklopi okvirne i sektorske sporazume
- Da uspostavi IPARD operativne strukture i dobije državnu akreditaciju
- Da dobije akreditaciju i odobrenje upravljačke odluke od Komisije
- Da zaključi Sporazum o višegodišnjem finansiranju

Uredba za provedbu IPA (718/2007) (član 184., stav 2.b) navodi da se IPARD program treba temeljiti na analizi postojećeg stanja u ruralnim područjima i temeljitoj analizi sektora. Između ostalog, IPARD program treba sadržavati kvantificirani opis postojeće situacije, ukazati na razlike, nedostatke i potencijal za razvoj. Program također treba sadržavati kvantificirane ciljeve. Analiza stanja i određivanje prioriteta među područjima za potencijalne intervencije treba izvršiti uz pomoć neovisne ekspertize.

S obzirom na gore navedeno, glavni cilj sektorskih analiza je pružiti čvrste ulazne parametre za izradu IPARD programa i osigurati temelj za opravdano i prikladno ciljanje mjera uključenih u IPARD program. Dakle, studije sektora kao takve ne predstavljaju dio IPARD programa, već pružaju osnovne ulazne informacije neophodne za procesa programiranja.

Nadalje, treba naglasiti da državne vlasti mogu koristiti studije sektora kao izvor informacija za pripremu intervencija usmjerenih na poljoprivredni i ruralni sektor, i kao takve, studije sektora ne doprinose isključivo izradi IPARD programa.

IPARD podrška će se baviti slabijim karikama u lancima proizvodnje i snabdijevanja (vrijednosnim lancima). ciljevi IPARD intervencije su doprinos postizanju usklađenosti sa standardima EU, jačanje sveukupne konkurentnosti i rezultata, te pomoć održivom razvoju sektora u kontekstu pristupanja EU. U tom smislu, analize sektora se bave najzahtjevnijim sektorima u smislu

[1] Vidi internet stranicu Delegacije EU za Bosnu i Hercegovinu: http://www.delBIH.ec.europa.eu/

troškova zadovoljavanja standarda za koje se očekuju najveći potencijali i dodatna vrijednost intervencije.

Analize poljoprivrednog sektora izvršene u Bosni i Hercegovini su odabrane putem konsultacija sa lokalnim vlastima, i zasnivaju se na relevantnosti u smislu standarda EU i privrednoj relevantnosti. Analize su izrađene za:

- Meso, preradu i mlijeko i mliječne proizvode
- Voće i povrće
- Žitarice (pšenica i kukuruz)
- Vino
- Diversifikaciju

Analize sektora pružaju detaljne analize stanja u sektorima te identificiraju slabosti i pitanja od interesa za sektor koje je potrebno riješiti IPARD intervencijom, kao i drugim intervencijama na državnom i entitetskom nivou. analize sektora u obzir uzimaju potrebe regionalnog razvoja, tamo gdje je to podesno.

Ciljevi izvještaja

Analiza sektora voća i povrća je jedna od pet studija sektora pripremljenih u 2011. kao osnova za izradu Pred-pristupnog instrumenta za ruralni razvoj EU (IPARD).

Osnovni cilj izvještaja je da pruži obuhvatnu analizu stanja u vinskom sektoru u BiH. Stoga izvještaj doprinosi analizi unutrašnjih snaga i slabosti, kao i vanjskih mogućnosti i prijetnji u sektoru. U svjetlu potreba i problema sektora te izazova sa kojima se suočava, vrši se procjena potreba za ulaganjem i formuliraju se preporuke za politike. Na taj način izvještaj doprinosi formuliranju niza mogućih intervencija politika za poljoprivredu i ruralni razvoj u skladu sa potrebama razvoja sektora.

Slijedi sažeti prikaz ciljeva i rezultata analize sektora.

- Osnovne informacije i ključne brojke za sektor
- Strukturalne karakteristike sektora: proizvođači/poljoprivrednici i prerađivačka industrija
- Vladina politika za sektor na državnom i entitetskom nivou
- Tržište i trgovina
- Stepen primjene relevantnih standarda EU
- Raniji trendovi i buduće aktivnosti po pitanju ulaganja
- Utvrđivanje potencijala i potreba sektora
- Utvrđivanje potreba za obukom u sektoru
- Rezultat: Kao rezultat, analiza sektora pruža
  - Transparentan pregled sektora sa kvalitativnim i kvantitativnim opisom situacije.
  - Detaljnu analizu najvećih potencijala i prepreka (najslabije karike u lancu snabdijevanja) kako bi se utvrdili potencijali proizvodnog i marketinškog lanca, za potrebe mjera utvrđenih u IPARD programima.
  - Preporuke sa ciljem identifikacije konkretnih ulaganja (segment/područje/ korisnik), uz primarni fokus na najslabije karike u lancu snabdijevanja.

Pozadina i ciljevi

Bosna i Hercegovina (BiH) je potencijalna zemlja kandidat za pristupanje EU, slijedeći Solunsko Evropsko Vijeće od juna 2003.god. U junu 2008. EU i Bosna i Hercegovina su potpisale Ugovor o stabilizaciji i asocijaciji (SAA). Privremeni ugovor o trgovini i trgovinskim pitanjima stupio je na snagu 1. jula 2008. i novo Evropsko partnerstvo sa Bosnom i Hercegovinom je usvojeno od strane Vijeća 18. februara 2008.

To je prekretnica Bosne i Hercegovine na putu u Evropu koja se završava 31. jula 2008. potpisivanjem od strane EC Sporazuma o finansiranju Nacionalnog programa za Instrumente predpristupne pomoći (IPA) 2007. Ukupna finansijska sredstva u okviru IPA programa je 11,47 milijardi eura (tekuće cijene) u kroz period 2007-2013

Kao zemlja pred-kandidat, Bosna i Hercegovina ne može još uvijek u cijelosti iskoristiti prednosti IPA pomoći, iako su pripreme u toku i trebaju biti ostvarene do momenta kada će BiH postati zemlja kandidat za EU, tada će biti pokrenuta i implementacija IPARD pomoći za poljoprivredni i ruralni razvoj.

Među različitim obavezama koje su od koristi iz pred pristupne pomoći, Bosna i Hercegovina mora imati IPARD program usvojen od strane Evropske komisije i zaključen okvirni i sektorski ugovor.

Uredbe o realizaciji IPA programa ukazuju da IPARD program mora biti baziran na analizama trenutne situacija u ruralnim područjima i na dubinskim analizama sektora koji je u pitanju.

Razmatrajući gore navedeno, glavni cilj sektorske analize je da obezbijedi solidne ulazne informacije za pripremu IPARD programa i obezbijedi osnovu za opravdano i odgovarajuće usmjeravanje mjera uključenih u IPARD program.

Nadalje, potrebno je naglasiti da bi nacionalne vlasti mogle iskoristiti sektorsku studiju kao ulaz za pripremu intervencija usmjerenih na poljoprivredni i ruralni sektor i kao takva, sektorska studija ne doprinosi isključivo za pripremu IPARD programa.

IPARD podrška će podržati slabe karike u vrijednosnom lancu proizvodnje i snabdijevanja. Ciljevi IPARD intervencije su da doprinose nadogradnji EU standard, jačanju cjelokupne konkurentnosti i performansi, kao i poticanja održivog razvoja sektora u kontekstu pristupanja EU. U tom smislu, sektorska analiza ja završena za najzahtjevnije sektore u pogledu troškova ispunjavanja standarda za koje je najveći potencijal i dodana vrijednost intervencije predviđena.

Provedena analiza poljoprivrednog sektora u Bosni i Hercegovini je odabrana kroz proces konsultacija sa lokalnim vlastima i bazirana je na važećim EU standardima jednako kao i na važećim ekonomskim standardima. Voće i povrće je jedan od 5 odabrani sektora.

Sektorska analiza obezbijeđuje sveobuhvatnu analizu stanja savremenosti u sektorima, uključujući identifikaciju slabosti i briga sektora koje bi se trebale riješiti sa IPARD intervencijom, jednako kao i sa ostalim intervencijama na entitetskom i državnom nivou.

Izvještaj doprinosi analizi internih snaga i slabosti kao i vanjskih šansi i prijetnji sektora. U svijetlu potreba i problema sektora i nadolazećih izazova, potrebna investiranja su procijenjena i preporuke formulisane. Na ovaj način izvještaj doprinosi formulisanju broja mogućih politika intervencija za politiku poljoprivrednog i ruralnog razvoja u skladu sa potrebama razvoja sektora.

Ciljevi sektorske analize su sumirani ispod i trebaju da obezbjede:

- Istorijat i ključne pokazatelje za sektor
- Strukturne karakteristike sektora: Proizvođače/poljoprivrednike i prerađivačke industrije
- Vladine politike za sektor na državnom i entitetskom nivou
- Tržište i trgovinu
- Nivo ostvarivanja relevantnih EU standard
- Stare trendove i buduće razvoje i smislu investicija
- Identifikaciju potencijalnih potreba sektora
- Identifikaciju potreba usavršavanja unutar sektora
- Zaključak, uključujući transparentan osvrt na sektor, detaljnu analizu najvećih potencijala i prepreka za realizaciju sektorskih potencijala u proizvodnom i marketinškom lancu, za mjere identifikovane u IPARD programu i investicionim preporukama primarno se fokusirajući na najslabijim karikama u lancu snabdijevanja.

Metodologija

Izvještaj se bazira na primarnim i sekundarnim podacima prikupljenim u toku projekta.

Prvi korak se sastoji u sprovođenju desk istraživanja. Dva fakulteta, jedan u Sarajevu i drugi u Banjoj Luci su imali zadatak da prikupe podatke i informacije dobijene iz studija pripremljenih od strane bilateralnih i multilateralnih institucija. Dobijeni podaci se najviše oslanjaju na oficijelnu statistiku obezbjeđenu od strane MOFTER-a. Dva međunarodna konsultanta su kompletirali i objedinili dodatne dokumente od internacionalnih i bilateralnih organizacija.

Većina dobijenih podataka dolaze iz državnih statističkih ureda BiH, Republike Srpske i FBiH. Kvalitet ovih podataka je doveden u pitanje od strane ovih ureda koji su priznali da nemaju namjeru garantovati da podaci odražavaju pravo stanje na terenu. Međutim, pretpostavlja se da su metode nepromijenjene i da trendovi kroz određene periode daju barem u informativnom smislu trenutno stanje. Ostali podaci su također upitnog kvaliteta ili ih je teško koristiti.

Za proizvodnju, tim je koristio statistike od FAO. Međutim statistika FAO je bazirana na državnoj statistici i zbog toga ograničenja koja su se pojavila u zvaničnoj statistici BiH su prisutna i kod podataka FAO.

Uvozni i izvozni podaci su bazirani na COMTRADE statistici koja je komunicirana od strane carine BiH i izvoznih i uvoznih zemalja. Ovi podaci se mogu smatrati prilično tačnim, mada prema nekoliko ključnih informatora, sasvim je uobičajeno da roba kojom se trguje preko graničnog prelaza između Hercegovine i Hrvatske nije oporezovana niti se registruje od strane carine.

U okviru ovog projekta izvršeno je istraživanje farmi. Glavni cilj je bio procjena proizvodnih obrazaca i ekonomskih performansi kod različitih tipova poljoprivrednih preduzeća u različitim regionima BiH. Istraživanje je obavljeno od strane Poljoprivrednog fakulteta u Sarajevu u FBiH i savjetodavnih službi u Republici Srpskoj.

Prilikom istraživanja uključeno je stotinu poljoprivrednih preduzeća, 50 u FBiH i 50 u RS. Statistički značajan uzorak će osigurati nivo pouzdanosti od 95% i interval pouzdanosti ±10%. Na entitetskom nivou interval pouzdanosti će biti 14%. Uzorak uključuje 25 uzgajivača voća i 25 uzgajivača povrća za svaki entitet.

Uzorak uključuje polu održive familijarne farme (min. 20 u svakom entitetu), komercijalne posjede (min. 15 u svakom entitetu) i velike korporativne proizvođače (između 10 i 15 ili sve njih). Uzorkovanjem su u obzir uzeti i geografska rasprostranjenost, poljoprivredni sistemi i klimatološki faktori.

Dokument sadrži nekoliko grafikona baziranih na navedenom posmatranju farmi. Imajući na umu da uzorak nije reprezentativan, čitalac bi trebao razmotriti navedene grafike pažljivo, koji najviše ukazuju na određena pitanja.

Obrađena su 22 slučaja iz sektora F&V. Oni uključuju 5 proizvođača voća i 5 proizvođača povrća u svakom od entiteta i 2 prerađivača. Odabrani uzgajivači su polu održive i komercijalne familijarne farme, jednako kao i veliki korporativni poljoprivrednici. Odabirom su uzeti u obzir geografska rasprostranjenost, poljoprivredni sistemi, klimatološki faktori.

Primarni cilj studije je bio da se identificiraju dobra praksa i specifični faktori uspjeha u odnosu na specifičnosti investicija i proizvodne karakteristike (tehnološki nivo, objekti, transfer znanja, standardi kvaliteta, usko grlo je i najslabija karikau lancu vrijednosti). Studija je urađena od strane Poljoprivrednog fakulteta Sarajevo u FBiH i Poljoprivrednog fakulteta Banja Luka u Republici Srpskoj.

Dva internacionalna eksperta su imali sastanke sa 29 ključnih informatora uključujući između ostalog proizvođače, prerađivače, sakupljače i pakere, trgovce na mali, menadžera trgovina na veliko, kao i kreatore politika. Cilj ovih intervjua je bio prikupljanje informacija o vladinim politikama, tržištu i trgovini, nivou ostvarenja EU standard, prošlih trendova i budućih ostvarenja u pogledu investicija.

Na kraju, radionice su organizovane na početku i završetku projekta. Nakon što je istraživanje sprovedeno, radionice su organizovane na početku projekta u svakom od entiteta okupljajući interesne grupe iz sektora voće i povrća i predstavnike institucija kako bi se identifikovale sektorske snage i slabosti, šanse i prijetnje. Jedna radionica se organizovala u svakom od entiteta kako bi se predstavio rezultat studije i preporuke investitora. Tokom diskusija koje su uslijedile, interesne grupe su iznijele svoje komentare i ponude koje su uzete u razmatranje kod finaliziranja sektorske studije.

Zaključci

Proizvodni pokazatelji ukazuju sa jedne strane određene slabosti u odnosu na susjedne zemlje, a sa druge strane veoma ohrabrujući rast prinosa i vrijednosti. Ovo je naročito vidljivo kod voća, dok je kod povrća rast u nivou sa zemljama u region i niži od NMS.

Jedan od glavnih nedostataka sektora F&V u BiH je dvojnost proizvodne struktura, velika većina proizvođača raste manje od 4 hektara, a mali dio je izrastao do 10 ha i nekoliko korporativnih i velikih porodičnih proizvođača. Srednji segment nedostaje. Proizvođači srednje veličine, koji bi trebali biti glavni pokretači razvoja sektora koji bi također pozitivno uticali na lanac snabdijevanja, nedostaju ili su veoma nezastupljeni. Većina malih proizvođača su izdržavana ili polu-polu-izdržavana poljoprivredna domaćinstva. Manji posjedi obično koriste zastarjelu opremu i ograničavaju ulazne troškove koristeći vlastito sjeme i sadnice lošijeg kvaliteta.

Lanac snabdijevanja se odlikuje tako da poljoprivrednici prodaju svoje proizvode na ulazima u farme, na zelenim i pijacama na veliko. Nezavisni trgovci imaju veliku ulogu u transport i distribuciji. Supermarketi koji imaju tržišni udio ispod 10% svoje proizvod nabavljaju od većih proizvođača.

Tržišni standardi nisu regulisani od strane države, ali je predmet saradnje između primarnih proizvođače i prerađivača. Dobrovoljni standardi počeli su se usvajati od strane veoma ograničenog broja proizvođača, većinom su to GlobalGAP i organski. Međutim uz malo potražnje domaćeg tržišta za standardima i nedostatka potrebnih usluga za procesom certificiranja (konsultanti i CB), samo nekoliko uzgajivača je uključeno u dobrovoljnu certifikaciju standarda.

Horizontalna i vertikalna organizacija je još uvijek slaba, mada značajan broj ne – održivih uzgajivača su članovi zadruga i udruženja. Oni nisu uvijek operativni ili im se menadžment suočava sa teškoćama u novčanim tokovima. U pogledu kreiranja CMO za F&V i za bolje funkcionisanje lanca snabdijevanja važna je snaga ovih operatora.

Preporuke

Trenutna struktura holdinga je glavno usko grlo kod značajne profesionalizacije sektora, i ometa konkurentnost sektora i sposobnost interesnih grupa da se usklade sa EU standardima. Glavni cilj bi trebao biti da se u narednih 5 godina usvoje mjere koje bi povećale broj srednjih uzgajivača sposobnih da se usklade sa zahtjevima tržišta u smislu kvaliteta standarda i povećaju svoj kapital u smislu sredstava i znanja.

Trenutno zemljišno tržište je velika prepreka u razvoju poljoprivrednog sektora u BiH i naročito za sektor F&V. Za povećanje tržišno orijentisanih malih i srednjih proizvođača značajno je povećanje **tržišta zemlje** kako bi se omogućilo povećanje eksploatisanih površina po posjedu. Kratkoročne mjere kao što su primjena postojećeg zakona o korištenju neobradivog zemljišta će poboljšati situaciju. Dugoročno, nivo zemljišne fragmentacije, kakva je u BiH, mjere zemljišne reforme i zemljišne konsolidacije se ne mogu izbjeći.

Potreba za postojanjem jasne politike u polju IPM detaljno je razgovarano u prethodnom dijelu. Nacionalne vlasti moraju uvesti radne grupe zadužene za razvoj **Nacionalnog Plana za IPM,** prateći predloženi plan puta. Ovo mora biti razvijeno paralelno sa formulisanjem Kodeksa o dobroj praksi poljoprivrednika (GAP) za sektor F&V.

Proizvođači moraju zadovoljiti zahtjeve i regulative tržišta koji će biti sve više i više strožiji. Mjere bi trebale da prate proizvođače u boljem razumijevanju i ispunjavanju tržišnih zahtjeva kvaliteta, uključujući ne samo F&V svojstva, nego i sve atribute povezane za tržište proizvoda vezano za okruženje, tradiciju, biorazličitost, zdravlje ili religiju, i garantovano dobrovoljnim certificiranim standardima. Mjere trebaju da podrže proizvođače u certificiranju njihovih proizvoda pod različitim šemama kao što su IPM, organske proizvodnje, GI, Halal, GlobalGAP.

Za prerađivačku industriju HACCP bi trebao biti dopunjen sa BRC ili IFS standardima od strane samih prerađivača koji razmišljaju o izvoznom tržištu. Za porast usvajanja različitih standarda, mjere bi trebale:

- Razvijati domaći sistem certifikacije i akreditovanja, dostupan zainteresovanim operatorima u lancu snabdijevanja
- Širiti informacije o zahtjevima standarda različitih tržišta i certifikacijom mehanizama i implikacija na proces proizvodnje
- Finansijski asistirati proizvođače kod unapređenja njihovih proizvodne imovine ukoliko to zahtijevaju standardi

Uzimajući u obzir još uvijek slabu produktivnost po hektaru i perspektivan porast po gazdinstvu, potrebe za investicijama u intenziviranje proizvodnje su značajne, i vrlo je vjerovatno da sredstva IPARD-a neće zadovoljiti te potrebe.

Kako bi se održao određeni nivo konkurentnost u odnosu na uvozne proizvode u vidu ponude ne-kvarljivog povrća koja se oslanja na odgovarajuću logistiku zahtjeva veliko investiranje, **prostorije za skladištenja** na farmama i na nivou sabirnih punktova (preduzeća ili zadruge) su jasan prioritet.

U oblasti svježeg povrća i jagoda, **moderni višenamjenski staklenici ili polustaklenici** bi se trebali multiplicirati kako bi se produžila rana i kasna sezona uzgajanja, pa čak zimi, u blagim klimatskim regionima. Zagrijavani staklenici bi trebali pružiti podršku u slučaju da je izvor energije ne-fosilni.

Visoko zgusnuti voćnjaci se trebaju proširiti u cilju povećanja produktivnosti i rastuće potražnje sorti na tržištu.

U industrijskom procesu F&V, kapacitet je ponovo na niskom nivou u odnosu na ostale zemlje u region. Investiranje u nove procesne jedinice je neophodno. Dodatno**, unapređenje postojećih procesni linija i prostorija za skladištenje** je neophodna zbog povećanja produktivnosti i poboljšanja poštovanja standarda. IPARD program može uzeti za prioritet druge tipove mjera, kao što je uspostavljanje novih procesnih jedinica koje zahtijevaju visoke investicije.

Razmatrajući bitne potrebe investiranja naspram sa očekivanog obima IPARD sredstava, pa čak i najoptimističnije gledano, pristup ostalim izvorima sredstava je ključan za cjelokupni razvoj sektora. Strategije uključivanja privatnih bankarskih institucija prisutnih u BiH trebale bi se odvijati kroz profesionalizaciju uzgajivača, uključujući i sposobnosti upravljanja farmom, sklapanje ugovora sa kupcima, i osiguranje usjeva. Postojeća šema podrške kroz osiguranje se treba unaprijediti u pravcu da bude više pristupačna za F&V poljoprivrednike. Razmislite o osnivanju posebne šeme za F&V poljoprivrednike radi velikih investicije i visokog rizika.

Informacije za razvoj HR su ključni faktor u razvoju. U okruženju koje se brzo mijenja, interesne grupe sa jedne strane moraju imati pristup informacijama o tržištu, novim tehnologijama, i legislative koja bi mogla uticati na njihove aktivnosti i moguće partnerstvo, i sa druge strane unaprijediti vještine i znanja. Privatni operatori će također bolje razviti njihov biznis ukoliko se pojednostave administrativne procedure i birokratija svedena minimum.

Zbog toga se preporučuje razvoj slijedećeg:

- Sistema tržišnih informacija povezujući različite strane koje su uključene (proizvođači, zelene i pijace na veliko, izvoznici i uvoznici)
- Podrške savjetodavnim uslugama vođene potražnjom
- Podrška u razvoju usluga obezbjeđenih od Organizacije proizvođača (POs)
- Pojednostavljenje procedure zemljišne i registracije proizvođača
- Razviti smjernice o propisima za sektor
- Razviti širenje putem konvencionalnih i elektroničkih medija i razvoj mreže

Finansiranje ovih aktivnosti bi se trebalo bazirati na principu sufinansiranja usluga gdje povrat ulaganja (RoI) nije trenutan ili

gdje se interesi proizvođača i javni interesi kombinuju; i pune subvencije za usluge koje su isključivo od javnog interesa. Na primjer, osnovni treninzi i treninzi o svjesnosti za najbolju upotrebu pesticida i za IPM bi to moglo dovesti do smanjenja uticaja na okolinu što je javno dobro, te iskoristiti u cijelosti javna sredstva finansiranja. Sa druge strane savjetodavne usluge za pripremu aplikacija za subvencije i kredite trebaju biti obezbjeđene od strane podnosioca aplikacije. U međuvremenu, savjetodavne usluge za plan upravljanja štetočinama, prema IPM priprema za pojedinačna gazdinstva trebaju bite djelimično sufinansirana, kao bi ovo imalo pozitivan uticaj na okruženje i na ekonomske performanse na farmama.

Kvantificiranje finansijskih sredstava je veoma teško zbog nedostatka pouzdanih podataka o strukturi farme i usjeva. Također je teško definisati globalnu brojku za sektor koja će biti rezultat broja predloženih pojedinačnih mjera za F&V sektor, zbog raznovrsnosti usjeva i tipova mjera za svaki usjev pojedinačno. Međutim, na kraju će isplata sredstava biti u funkciji kapaciteta i zahtjeva korisnika, što je teško predvidjeti, naročito uzimajući u obzir da je vrijeme dostupnosti IPARD sredstvima nepoznato i da se kapaciteti i potrebe mogu razviti na vrijeme.

Trenutno informacije prikupljene tokom studije ukazuju da će se samo nekoliko uzgajivača moći uskladiti sa zahtjevima i biti u poziciji za pristup IPARD. U cijelom region Čapljine i Mostara, između 5 i 10 njih će biti u mogućnosti finansijski i tehnički da se prijave za sredstva. na osnovu toga može se pretpostaviti da će stotinu korisnika širom zemlje imati koristi od IPARD-a

Na državnom nivou, vlasti trebaju preduzeti akcije u slijedećim oblastima bez čekanja IPARD sredstva:

- Uskladiti politiku podrške tržištu između entiteta, dok će RD podrška predstavljati dio u kojem bi se entiteti mogli takmičiti ko će od poljoprivrednika i ruralnih područja dobiti veću i bolju pomoć
- Razmotriti uspostavljanje LFA područja i definisanje uslova za procjenu ulaganja i podrške ruralnom razvoju u tim regionima
- Definisati odgovarajući vremenski okvir za reviziju strategije

Na entitetskom nivou vlasti bi trebale preduzeti akcije u izgradnji institucija i regulatornog okvira bez čekanja na IPARD sredstva:

Institucionalna intervencija i izgradnja

- Poboljšanje inspekcijske kontrole ili prilagođavanje mjera osposobljavanja kontrolnog sistema, naročito u Federaciji BiH
- Dalji razvoj sistema registracije za registrovanje poljoprivrednika i zemlje

Intervencija na izgradnji regulatornog okvira.

- Uskladiti mjere sa definisanim strateškim prioritetima ili mijenjati strateške prioritete
- Unaprijediti sistem razvoja politika, kriterija podobnosti korisnika, plaćanja i kontrola subvencija i konstantno praćenje efekata mjera i njihovo prilagođavanje novim situacijama bazirano na objektivnim informacijama
- Povećati RD podršku u odnosu na tržišnu podršku
- Razviti višegodišnje šeme finansiranja za RD projekte
- Registracija farmi kao osnovni uslov za bilo koju dobru pomoć
- Određene mjere nižih vrijednosti gdje je fokus na investiranju (navodnjavanje, zaštita od grada, strojevi u F&V proizvodnji) moraju biti pojednostavljene na način da je povrat sredstava urađen automatski za dio troškova nakon podnošenja računa, slično kod investiranja u uspostavljanje novih voćnjaka
- Odvojiti ekonomske i socijalne mjere.

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Abbreviations and acronyms

AB	Accreditation Body
AFRD	Agriculture, Food and Rural Development
AIS	Agriculture Information System
B&H	Bosnia and Herzegovina
B2B	Business to Business
B2C	Business to Consumer
BAM	Bosnia and Herzegovina Convertible Mark
BATA	Institute for Accreditation of Bosnia and Herzegovina
BD	Brčko District
BHAS	Bosnia and Herzegovina Agency for Statistics
BRC	British Retail Consortium
CA	Competent Authority
CAP	Common Agricultural Policy of the European Union
CB	Certification Body
CCA	Central Competent Authority
CEEC	Central Eastern European Countries
CEFTA	Central European Free Trade Agreement
CMO	Common Market Organization
EC	European Commission
EU	European Union
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organization of the United Nations
FBiH	Federation of Bosnia and Herzegovina
FBO	Food Business Operator
FSA	Food Safety Agency of Bosnia and Herzegovina
GAO	Gross Agriculture Output
GAP	good agricultural practice
GDP	Gross Domestic Product
GFP	Good Farming Practices
GHP	Good Hygiene Practices
GI	Geographic Indication
GIS	Geographic Information System
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practices
GVA	gross value added
ha	hectare
HACCP	Hazard Analysis and Critical Control Point
HBS	Household Budget Survey
HR	Human Resources
IA	Interim Agreement
IACS	Integrated Administration and Control System
IFOAM	International Federation of Organic Agriculture Movements.
FiBL	Research Institute of Organic Agriculture
IFS	International Featured Standards
IP	Integrated Production
IPA	Instrument for Pre-Accession
IPARD	Instrument for Pre-Accession Assistance for Rural Development

IPM	Integrated Pest Management
IT	Information Technology
LAG	Local Action Group
LAMP	Linking Agriculture Producers to Market (Project)
LFA	Less Favoured Area
LFS	Labour Force Survey
MAFWM	Ministry of Agriculture, Forestry and Water Management (of the Republika Srpska)
MAWMF	Ministry of Agriculture, Water Management and Forestry (of the Federation of Bosnia and Herzegovina)
MCO	microcredit organization
MIS	Market Information System
MoFTER	Ministry of Foreign Trade and Economic Relations
NEAP	National Environmental Action Plan
NMS	New Member States (of the EU)
NTB	Non-Tariff Barriers to Trade
PDO	Protected Designation of Origin
PGH	Plastic Greenhouse
PGI	Protected Geographic Indication
PHPO	Plant Health Protection Office
PoS	Point of Sale
PPP	Plant Protection Product
PRSP	Poverty Reduction Strategy Paper
R&D	Research and Development
RD	Rural Development
RoI	Return on Investment
SAA	Stabilisation and Association Agreement
SCO	Savings and credit organization
SESMARD	Support for Establishment of the State Ministry of Agriculture and Rural Development
SME	Small and Medium Sized Enterprise
SOP	Standard Operating Procedure
SPS	Sanitary and Phytosanitary
SVO	Senior Veterinary Officer (of Bosnia and Herzegovina)
SWOT	Strengths, Weaknesses, Opportunities and Threats (analysis)
TBT	Technical Barriers to Trade
TFYRM	The former Yugoslav Republic of Macedonia
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TSG	Traditional Speciality Guaranteed
UAA	utilized agricultural area
ULO	Ultra Low Oxygen
UPOV	Union for the Protection of New Varieties
USAID	United States Aid for International Development
VAT	Value Added Tax
WB	World Bank
WTO	World Trade Organization

Currency Equivalents

Exchange rates

USD for 1 EUR

2005	1.2431
2006	1.2548
2007	1.3711
2008	1.4704
2009	1.3946
2010	1.3265
2005–2009	1.3483

European Central Bank: http://www.ecb.int/

BAM for 1 EUR

Since 2002	1.95583

Introduction

This is one of five sector analyses (Meat and Dairy; Fruits and Vegetables; Cereals; Wine; Diversification) prepared between the spring of 2011 and the spring of 2012 for the agricultural authorities in Bosnia and Herzegovina (Bosnia and Herzegovina) at state, entity and Brčko District level. The sector analyses are inputs to the design of measures to be financed under the European Union (EU) Instrument for Preaccession Assistance for Rural Development (IPARD),[1] as well as for the design of entity level interventions in general. The analyses were commissioned by the EU and monitored by task manager Ms Timea Makra, EU Delegation in Sarajevo. The analyses were coordinated by Mr Morten Kvistgaard, International Team Leader under the overall management of Gerold Boedeker, Budget Holder and Raimund Jehle, Lead Technical Officer, Regional Office for Europe and Central Asia of the Food and Agriculture Organization of the United Nations (FAO) in Budapest.

Further information on the studies and the IPARD planning process is given in Chapter 1 of this report.

Report structure

The report is structured as follows:

Beside this introduction, the report contains an executive summary presenting the conclusions and recommendations from the analysis. The first chapter presents context, objectives and methodology of the analysis as well as background data and key figures for the Bosnia and Herzegovina agriculture sector and for the fruit and vegetable sector specifically. Chapter 2 describes the structure and the importance of the sector, including fruit and vegetable processing. Chapter 3 illustrates the main patterns and trends of the sector including production, market, trade and fruit and vegetable consumption. Chapter 4 outlines the government policies for the sector, at entity and state level, including a presentation of the support schemes under implementation, as well as the general regulatory framework. Chapter 5 describes the level of attainment of relevant EU standards, while chapter 6 analyses the past trends and future investments in three groups of fruits and two groups of vegetables. Chapter 7 analyses the supply of agriculture credits and the specific needs of the fruit and vegetable sector. Chapter 8 draws attention to challenges and potentials of the fruit and vegetable sector in relation to international competition, while Chapter 9 describes the training needs and the need for competence development. Chapter 10 ends the analysis with the conclusions and recommendations. Finally, a number of supportive annexes are attached to the report.

Study team

This report was conducted by the following team:

- Core team:
  - Mr Pascal Bernardoni, MA Agroeconomics, FAO Consultant
  - Mr Goran Zivkov, MA Agronomy, FAO Consultant
- Support team:
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  - Mr Vlado Pijunović, FAO Consultant, coordination, support and background papers
- Database processing and analyis:
  - Mr Nemanja Teofilovic, of Belgrade based company SEEDEV

[1] *The final concept for pre-accession assistance to agriculture and rural development after 2013 is not yet known, and it may be different from the current IPARD model. As a matter of simplicity reference is made to IPARD throughout the sector analyses.*

The report was reviewed by Gerold Boedeker, Raimund Jehle, Avetik Nersisyan, Geza Gabriel and Dmitry Zvyagintsev, (all FAO). Valuable support regarding language editing was provided by Tom Hunter and Valerie Guidi.

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- Several fruit and vegetable producers met in all regions of Bosnia and Herzegovina
- Bosnia and Herzegovina *Ministry of Foreign Trade and Economic Relations* (MoFTER):
  - Mr Dušan Nešković, Assistant Minister
  - Ms Melisa Ljuša, Expert Advisor, Policy Analysis, and key daily contact
  - Ms Jelena Prolok, Expert Advisor
- Federation of Bosnia and Herzegovina, *Ministry of Agriculture, Water Management and Forestry*
- Republika Srpska, *Ministry of Agriculture, Forestry and Water Management*
- Brčko District, *Department of Agriculture, Forestry and Water Management*
- Bosnia and Herzegovina *Agency for Statistics*
- Federation of Bosnia and Herzegovina *Federal Office of Statistics*
- Republika Srpska *Institute of Statistics*

Several key interviewees representing the fruit and vegetable sector.

1. Executive summary

1.1 Background and objectives

Bosnia and Herzegovina is a potential candidate country for EU accession following the Thessaloniki European Council of June 2003. In June 2008, the EU and Bosnia and Herzegovina signed the Stabilisation and Association Agreement (SAA). An Interim Agreement (IA) on Trade and Trade-related issues entered into force on 1 July 2008, and the Council adopted a new European partnership with Bosnia and Herzegovina on 18 February 2008.

This was a milestone on Bosnia and Herzegovina's road to Europe that allowed the European Commission (EC) to sign the Financing Agreement for the Instrument for Pre-accession Assistance (IPA) 2007 National Programme on 31 July 2008. The total financial allocation within IPA is EUR 11.47 billion (current prices) over the 2007–2013 period.

As a pre-candidate country, Bosnia and Herzegovina cannot yet take full advantage of the IPA support, although preparations are being made and should be accomplished by the time Bosnia and Herzegovina becomes a EU candidate country, when the implementation of the Instrument for Pre-Accession Assistance in Rural Development (IPARD) support for agricultural and rural development will be initiated.

Among the different obligations that must be met in order to benefit from pre-accession assistance, Bosnia and Herzegovina must have an IPARD Programme adopted by the European Commission and conclude the Framework and Sectoral Agreements.

The IPA Implementing Regulation indicates that the IPARD Programme should be based on an analysis of the current situation in the rural areas and on an in-depth analysis of the sectors concerned.

Considering the above, the main objective of the sectoral analyses is to provide a solid input to the preparation of the IPARD Programme and provide the grounds for justified and appropriate targeting of the measures included in the IPARD Programme.

Furthermore, it should be emphasized that the sector studies might be used by the national authorities as inputs for the preparation of any intervention targeting the agricultural and rural sectors, and as such the sector studies do not exclusively contribute to the preparation of the IPARD programme.

IPARD support will address the weaker links in the production and supply (value) chains. The objectives of the IPARD intervention are to contribute to upgrading to EU standards, strengthening overall competitiveness and performance as well as fostering the sustainable development of the sector in a EU accession context. In this respect, the sector analyses have been undertaken for the most demanding sectors in terms of the costs of meeting the standards for which the highest potential and added-value of the intervention is anticipated.

The agricultural sector analyses carried out in Bosnia and Herzegovina have been selected through a consultation process with local authorities and are based on EU standard relevance, as well as economic relevance. The fruit and vegetable sector is one of the five selected sectors.

The sector analyses provide the state of the art in the selected sectors including identification of the weaknesses and sector concerns to be addressed with the IPARD intervention, as well as with other state and entity level interventions.

The report contributes to the analysis of the internal strengths and weaknesses as well as of the external opportunities and threats to the sector. In light of the needs and problems of the sector, and the challenges ahead, investment needs are estimated and policy recommendations are formulated. In this way, the report contributes to formulation of

a number of possible policy interventions for agriculture and rural development policy in line with the needs for development of the sector.

The objectives of the sector analysis are summarized below and are to provide:

- Background and key figures for the sector
- Structural characteristics of the sector: Producers/Farmers and processing industry
- Government policy for the sector at state and entity level
- Market and trade
- Level of attainment of relevant EU standards
- Past trends and future developments in terms of investment
- Identification of potentials and needs of the sector
- Identification of training needs in the sector
- Conclusions, including a transparent overview of the sector, a detailed analysis of the highest potentials and obstacles to realize the sector potentials in the production and marketing chain, for the measures identified in the IPARD programmes and the investment recommendations focusing primarily on the weakest links in the supply chain.

1.2 Methodology

The report is based on both primary and secondary data collected during the duration of the project.

The first step consisted in carrying out desk research. The two faculties of Sarajevo and Banja Luka had the task of collecting data and information obtained from studies prepared by bilateral and multilateral institutions. The provided data consisted mostly of official statistics provided by MoFTER. The two international consultants gathered additional documents from international and bilateral organizations.

Most of the data comes from the Statistical Offices of the State of Bosnia and Herzegovina, Republika Srpska and the Federation of Bosnia and Herzegovina. These offices note that they do not have the means to guarantee that the data reflect the reality in the field and hence challenge the quality of their own data. However, it is assumed that the methods are consistent and that at least trends over certain periods are informative of the actual situation. Other data was also of debatable quality or difficult to use.

For production figures, the team used statistics from FAO. However, FAO statistics are based on the State statistics and therefore, the same reservations expressed for Bosnia and Herzegovina official statistics are valid for FAO data.

Import and export data is based on COMTRADE statistics that are communicated by the customs of Bosnia and Herzegovina and exporting and importing countries. This data can be considered to be quite accurate. However, according to several key informants, it is quite common that goods traded through border points between the Herzegovina region and Croatia are not taxed and not registered by the customs.

In many cases, in order to carry out comparative analyses between countries or subsectors for instance, we had to find analogous data, e.g. data from all countries for the same years. This explains why some analyses of the most recent years were not possible.

Within the framework of this project, a farm survey was performed. The main objective was to assess production patterns and the economic performance of different types of agriculture enterprises in different regions of Bosnia and Herzegovina. Staff of the Agriculture Faculty of Sarajevo in the Federation of Bosnia and Herzegovina and the extension services in Republika Srpska performed the surveys in their respective entities.

One hundred farming enterprises were included in the survey, 50 in the Federation of Bosnia and Herzegovina and 50 in the Republika Srpska. The statistical significance of the sample ensures a confidence level of 95 percent and a confidence interval of

±10 percent. At entity level, the interval confidence is about 14 percent. The sample included 25 fruit and 25 vegetable growers for each entity.

The samples included semi-subsistence family farms (a minimum of 20 in each entity), commercial holdings (a minimum of 15 in each entity) and large-scale corporate producers (between 10 and 15 or all of them). The sampling took into consideration geographic distribution, farming systems and climatologic factors.

The document contains several graphs based on this farm survey. Bearing in mind that the samples are not representative, the reader should consider these graphs carefully, and regard them as indicative.

Twenty-two case studies of the fruit and vegetable sector were performed. This included five fruit and five vegetable producers in each entity and two processors (see Annex 9). Selected growers were semisubsistence and commercial family farms, as well as large-scale corporate farms. Again, the selection took into consideration geographic distribution, farming systems, climatologic factors.

The primary objective of the case studies was to identify good practices and specific factors of success in relation to specific investments and production characteristics (technology levels, facilities, know-how, quality standards), as well as bottlenecks and weak points in the value chain. The case studies were performed respectively by the Agriculture Faculty, University of Sarajevo in the Federation of Bosnia and Herzegovina and the Agriculture Faculty of the University of Banja Luka in Republika Srpska.

The two international experts had various meetings with 29 key informants including inter alia producers, processors, collectors and packers, small and medium retailers and wholesale market managers as well as policy-makers. The objective of these interviews was to collect information on government policy, market and trade, level of attainment of EU standards, and past trends and future developments in terms of investments.

Eventually workshops were organized at the inception and the conclusion of the project. Just after the desk research had been performed, two workshops were organized in Sarajevo and Banja Luka bringing together fruit and vegetable sector stakeholders and institution representatives to identify sector strengths, weaknesses, opportunities and threats. One workshop was organized in each entity to present the outcome of the study and investment recommendations. During the ensuing discussions, stakeholders provided their comments and proposals that were taken into consideration for the sector study finalization.

1.3 Description of the sector

The fruit and vegetable sector is the most significant sector for agricultural production in Bosnia and Herzegovina. In 2005, the fruit and vegetable sector contributed EUR 233 million to the gross agricultural output (GAO). Vegetable production is significantly more important economically with more than EUR 180 million against EUR 70 million for fruit production (2007). Fruit and vegetables are important for food security and nutrition for a broad swath of the population, as a vast majority of rural households have vegetable plots and fruit trees in their gardens for self-consumption.

Production indicators denote on the one side a certain weakness compared to neighbouring countries, but on the other very encouraging growth of yields and volumes. This is especially true for fruits, while growth of vegetables is in line with countries in the region but lower than New Member States (NMS).

One of the main handicaps of Bosnia and Herzegovina's fruit and vegetable sector is the duality of the production structure: the vast majority of producers growing less than four hectares, a smaller portion cropping up to 10 hectares and few sizeable corporate or large

family farms. Medium-scale producers who would be the main drivers of a development of the sector that would also impact positively on the supply chain and rural development are missing or very much under-represented. Most of the small-scale producers are subsistence or semi-subsistence agriculture households. The smaller holdings are usually using obsolete equipment and limit their expenditure in inputs by using own produced seed and lower quality seedlings, and generate lesser added value.

The unpredictability of a support policy, lack of institutional support and a lack of real competitiveness caused by high tariff protection against products originating from competitive countries, such as the EU and similar, are other reasons for this lack of competitiveness. This has a clear negative impact on fruit and vegetable retail prices, which are still lower than in the EU 27, Croatia and Montenegro, but higher than Serbia, The former Yugoslav Republic of Macedonia (TFYRM) and NMS of the region.

Fruit and vegetable processing in Bosnia and Herzegovina is largely underdeveloped. The estimated annual output of the fruit and vegetable processing industry in Bosnia and Herzegovina is about 15,000 tons, almost 90 percent of which is in Republika Srpska.

The sector is characterized by farmers selling their products at the farm-gate and on green and wholesale markets. Independent traders play an important role in transport and distribution. Supermarkets, that have a market share below 10 percent, source their products from the largest producers and alternatively from imports.

The 2007 Household Budget Survey (HBS) indicates that fruit and vegetables represent respectively 7.4 percent and 9.5 percent of average household expenditure on foodstuffs. Fruit and vegetables can be considered relatively expensive, in particular for the lower socio-economic population groups. If we assume that this does not threaten the rural poor, who are likely to have easier access to fruit and vegetable products, some concerns can be raised for the diet of the urban population.

According to the 2007 HBS, the main place of purchase for fruit and vegetables is the traditional “next-to-home shop”. One of the possible reasons for this is the convenience due to proximity of this type of outlet. Compared to other food items (bread, meat, fish), consumers still purchase their fruit and vegetables on the open market. This is particularly the case in urban areas, where fruit and vegetables are more often purchased in open markets (respectively 38.9 percent and 39.6 percent) as compared to households which live in rural/semi-urban areas (17.5 percent and 18.3 percent). Large retailers still have a reduced market share, though this may have slightly increased over the past four years.

Marketing standards are not regulated by the State, but subject to agreement between primary producers and processors. Voluntary standards are beginning to be adopted by a limited number of producers, mostly for GlobalGAP and organic. However, with little demand from the domestic market for standards and with an absence of the services needed for the certification process (consultants and certification bodies (CBs)), only a few growers have engaged in voluntary standards certification.

Horizontal and vertical organization is still weak though a significant number of non-subsistence growers are member of cooperatives or associations. These are not always operational or face management and cash-flow difficulties. With the perspective of the creation of the Common Market Organization (CMO) for fruit and vegetables and of a better functioning of the supply chain, it is crucial to strengthen these operators.

Financing of agricultural production, especially on small family farms, has been and still is an issue in the whole region, and Bosnia and Herzegovina is no better placed in that respect. This is a real burden for development of the sector as fruit and vegetables, with

the exception to a certain extent of berries is very much capital based. Technology and infrastructure for storage and processing are important assets that are not in many cases transferable to other sectors.

1.4 Recommendations

The current holding structure is the main bottleneck for a significant professionalization of the sector hindering competitiveness of the sector and the ability of the stakeholders to comply with EU standards. The main objective for the next five years should be to adopt measures that would increase the number of medium-scale fruit and vegetable growers able to comply with market requirements in terms of volume and quality standards; and to increase their capital in terms of assets and knowledge.

The current land market is a major obstacle for development of the Bosnia and Herzegovina agricultural sector and for the fruit and vegetable sector in particular. To boost the market-oriented small-scale and medium producers, it is crucial to increase the **land market** to allow the average exploited surface per holding to expand. Short-term measures such as enforcement of the existing law on utilization of noncultivated land will already improve the situation. In the longer term, the level of land fragmentation is such in Bosnia and Herzegovina, that land reform and land consolidation measures cannot be avoided.

The need to have a clear policy in the field of Integrated Pest Management (IPM) is key for the sector. National authorities must put in place the working group in charge of developing the **National Plan for IPM**, following the proposed roadmap. This should be developed in parallel with the formulation of a Code for Good Agriculture Practices (GAPs) for the fruit and vegetable sector, which transposes at national level the Directive on Nitrates, the agri-environment and other requisites.

Producers have to satisfy market requirements and regulations that will become continuously more stringent. Measures should accompany producers to better understand and meet market required quality including not only fruit and vegetable properties, but also all attributes linked to the marketed product related to the environment, tradition, biodiversity, health or religion, and guaranteed by voluntary standards certification. Measures have to support producers in certifying their products under different schemes such as IPM, organic, Geographical Indications (GIs), Halal, GlobalGAP. For the processing industry, Hazard Analysis and Critical Control Point (HACCP) should be complemented by the British Retail Consortium (BRC) or International Featured Standards (IFS) by those processors contemplating the export market. To increase the adoption of these different standards, measures should support:

- the development of a domestic accreditation and certification system affordable to interested supply chain operators;
- the dissemination of information on standards demanded by the different markets and on certification mechanisms and implications for the production process;
- financial assistance to producers to upgrade their production assets if required by the standards.

Taking into account the still weak productivity per hectare and the perspective of an increased cropped surface per holding, the needs of investment for production intensification are significant, and it is very unlikely that IPARD funds will meet all these requirements.

To maintain a certain level of competitiveness against imported products in non-perishable vegetable supply that relies on appropriate logistics implying heavy investments, **storage facilities** at farm and collection points level (companies or cooperatives) are a clear priority.

In the field of fresh vegetables and strawberries, **modern multi-span greenhouses or polyhouses** should be increased to extend early and late season

growing, and even winter cropping in the mildest climatic regions. Heated greenhouses should be supported in the case the source of energy is non-fossil.

High-density orchards should be extended in order to enhance productivity and the growing of market demanded varieties.

In the fruit and vegetable processing industry, the capacity is very low compared to other countries in the region. Investment in new processing units is needed. Additionally, the **upgrading of existing processing lines and storage facilities** is needed to increase productivity and improve standards compliance. The IPARD programme might prioritize the second type of measures, as (i) establishing new processing units requires too high investments and (ii) the capacity of the existing facilities is not yet fully utilized.

Considering the important investment needs compared to the anticipated size of the IPARD funds, even the most optimistic, access to other sources of funding is key for the overall development of the sector. Strategies to involve private banking institutions present in Bosnia and Herzegovina should be pursued through professionalization of growers, including improvement of farm management skills, contracts with buyers and crop insurances. Existing insurance support schemes need to be improved to be affordable and more attractive for fruit and vegetable farmers. Measures in the form of a special scheme for fruit and vegetable farmers could accompany this process due to the high investment needs and risks of the sector.

Information and Human Resources (HR) development are key factors for progress. In a fast changing environment, stakeholders must, on the one hand, access information on markets, new technologies, legislation affecting their activities and possible partnerships; and on the other upgrade skills and knowledge. Private operators will also better develop their business if administrative procedures are simple and bureaucracy reduced to a minimum.

It is therefore recommended to:

- Develop market information systems associating the different parties involved (producers, green and wholesale markets, exporters and importers)[2]
- Support advisory services that are demand driven
- Support the development of services provided by Producer Organizations (POs)
- Simplify producers and land registration procedures
- Develop guidelines on regulations for the sector
- Develop dissemination through conventional and electronic media, and dissemination networks

Financing of these initiatives should be based on the following principles: (i) co-financing for the services where the Return on Investment (RoI) is not immediate or where producers and public interests are combined; and (ii) full grants for services that are exclusively related to public goods. For instance, awareness and basic training on best practices with regard to pesticides and Integrated Pest Management (IPM) that might result in a reduced impact on the environment that is a public good, could benefit from full public funding. In contrast, consultancy services to prepare a grant or a loan application should be covered by the applicant. In between, consultancy services for a pest management plan according to IPM principles prepared for a single holding could be partly co-financed, as this would impact positively on the environment and on the farm's economic performance.

The sound quantification of the financial resources is rather difficult due to the absence of reliable data on farm structure and crops. It was challenging to define a global

[2] *Market information systems are planned to be supported via the Instrument for Pre-Accession (IPA) 2009*

figure for the sector that are the aggregate of proposed single measures for the fruit and vegetable sector due to the diversity of crops and types of measures for each crop. However, eventually the disbursements of funds will occur according to the capacity and the demand of users and this is difficult to anticipate, especially considering that the timing of IPARD fund availability is not known and that capacity and needs might evolve in time.

Currently, the information collected during this study indicates that only a few growers would comply with the requirements and be in a position to access IPARD. In the whole of Caplina and Mostar region, between 5 and 10 of them would be financially and technically able to apply for funds. On that basis, one could assume that a hundred users nationwide could benefit from IPARD, as single beneficiaries. Additional producers could also benefit in groups, but the capacity of the latter needs to be improved.

At State level, authorities should take action in the following fields without waiting for IPARD funds:

- Harmonize market support policy among entities
- Consider establishment of Less Favoured Areas (LFAs) and define conditions for accessing investment and rural development support in those regions
- Define the appropriate time frame for strategy revision in order for growers to anticipate changes in measures.

At entity level, authorities should take action in institution building and regulatory frameworks without waiting for IPARD funds:

Institutional interventions and build up:

- Improvement of the inspectors control or adjust the measures regarding the capabilities of the control system, especially in the Federation of Bosnia and Herzegovina
- Further develop the system of registers for land and farm registration

Regulatory interventions and framework build up:

- Either align measures with defined strategic priorities or change strategic priorities.
- Improve system of policy development, beneficiary's eligibility criteria, payment and control of subsidies, and constantly monitor the effects of the measures and adjust them to the new situation based on objective information.
- Increase Rural Development (RD) support in relation to market support.
- Develop a multiyear financing scheme for RD projects.
- Enforce farm registration, a basic precondition for any valid support.
- Simplify certain measures of lower value where the focus is on investment (irrigation, hail net, machinery in fruit and vegetable production) by refunding automatically part of the cost after the submission of invoices, similar to the investment in setting up new orchards.
- Separate economic and social policy and measures.

2. Background and context for the sector analyses in Bosnia and Herzegovina

2.1 General information about Bosnia and Herzegovina

Bosnia and Herzegovina (BiH), one of the federal republics that constituted the former Socialist Federal Republic of Yugoslavia, is located in the western part of the Balkan Peninsula and covers an area of 51,129 km^2. In 1990, Bosnia and Herzegovina held its first democratic multiparty elections and in early 1992 it became an independent country.

Bosnia and Herzegovina has borders with Serbia to the East, Montenegro to the South East, Croatia to the North and West, and a 20 kilometre coastline on the Adriatic Sea. Its landscape varies from high altitude central mountains to arable land in the north and Mediterranean vineyards in the south, with most of the major towns being located in valleys. Climatically, Bosnia and Herzegovina summers last from May to September and are warm and humid, whilst winters tend to be foggy and snowy and last from November to February. Autumn and spring are usually short.

Within Bosnia and Herzegovina's recognized borders, the country is divided into two entities and the Brčko District (BD). The Federation of Bosnia and Herzegovina covers about 50 percent of the territory and the Republic of Srpska covers about 49 percent. Brčko District covers the remaining one percent of the total territory.

Table 2.1: Bosnia and Herzegovina Key Figures

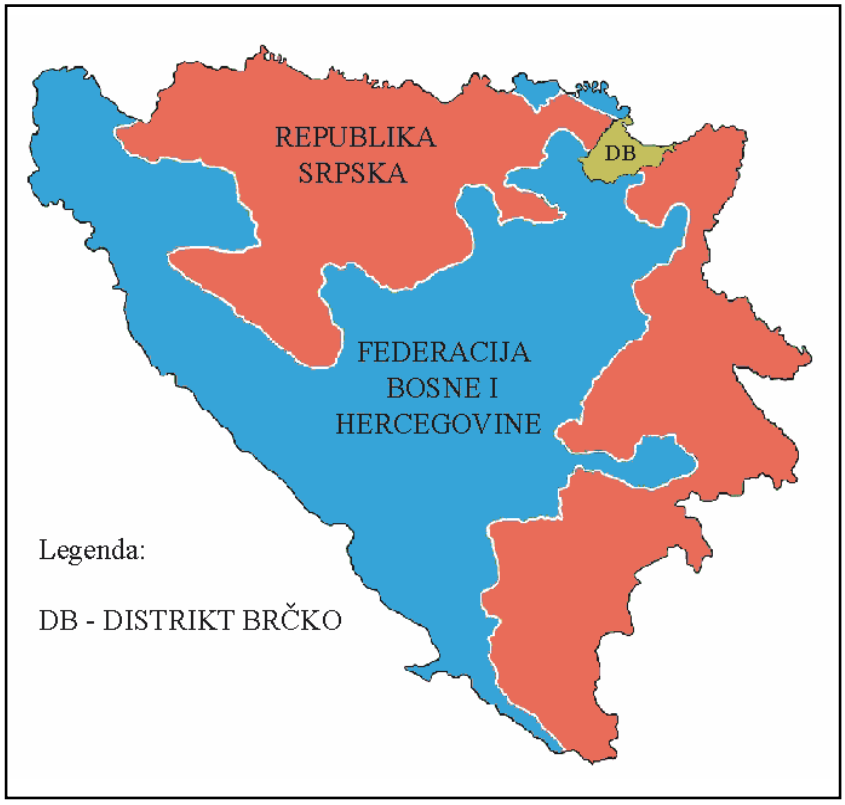
• Total Area: 51,209.2 sq km • Population: 3,839,737 (Bosnia and Herzegovina Agency for Statistics (BHAS), 2011) • Population: 4,622,292 (CIA World Factbook, 2012)	• Capital: Sarajevo • Major languages: Bosnian, Croatian and Serbian

Figure 2.1: Main Bosnia and Herzegovina cities[3]

[3] *Bijeljina, main town of an important fruit and vegetable production area is among the eight first Bosnia and Herzegovina cities in terms of population located east of Tuzla.*

This territorial and administrative division is shown in the following map:

Figure 2.2: Administrative division of Bosnia and Herzegovina



The current administrative divisions (Map 2.2) are based on the lines drawn up as part of Dayton Peace Agreement in 1995. The Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District all have their own constitutions. The total BiH population is estimated at 4 million, although a precise figure is not available, since a population census has not been conducted recently (the most recent census was in 1991). The Federation of Bosnia and Herzegovina is decentralized. It is divided into 10 Cantons (each with its own government) and 79 municipalities. The Government of the Federation of Bosnia and Herzegovina shares and delegates some of its competencies with the Cantonal administrations. Both, the Government and the Cantons have the right to determine policy and to adopt laws that pertain to any of their competencies. Where competencies are further delegated to the municipalities (the lowest administrative level), their activities are financed and supervised by the Cantons.

The Republika Srpska is centralized and has no Cantons. It shares and delegates some of its competencies directly with 61 municipalities and two cities. The Brčko District (comprising the entire territory of the former Brčko municipality) is a self-governing administration under the direct jurisdiction of Bosnia and Herzegovina.

Table 2.2: Bosnia and Herzegovina key economic figures

- Gross Domestic Product (GDP): EUR 12,678 million (2010)
- Agricultural GDP: EUR 927 million (2009)
- GDP per capita: EUR 3,300 (2010)

2.2 Context and objective of the sector analyses

2.2.1 Preparation for EU accession

Bosnia and Herzegovina is a potential candidate country for EU accession following the Thessaloniki European Council of June 2003. In June 2008 the EU and Bosnia and Herzegovina signed the SAA. An Interim Agreement on Trade and Trade-related issues entered into force on 1 July 2008 and the Council adopted a new European partnership with Bosnia and Herzegovina on 18 February 2008.[4]

Bosnia and Herzegovina has benefited from EU autonomous trade measures since 2000. After the Interim Agreement came into force on 1 July 2008, EU access to products from Bosnia and Herzegovina has expanded, and EU exports to the country have been granted trade preferences.

Bosnia and Herzegovina and the EC signed the Financing Agreement for the IPA 2007 National Programme on 31 July 2008, which was a major milestone on Bosnia and Herzegovina's road to Europe. The total financial allocations within the IPA are EUR 11.47 billion (current prices) for the 2007–2013 period.

As a pre-candidate country, Bosnia and Herzegovina cannot yet take full advantage of IPA support. Preparations are being made and should be accomplished by the time Bosnia and Herzegovina becomes an EU candidate country, and when the implementation of the IPARD support for agricultural and rural development is initiated.

2.2.2 Sector context

In order for Bosnia and Herzegovina to benefit from the pre-accession assistance under the IPARD, it must:

- Achieve candidate country status
- Have an IPARD Programme adopted by the European Commission
- Conclude the Framework and Sectoral Agreements
- Establish IPARD operational structure and receive national accreditation
- Receive accreditation and conferral of the management decision from the Commission
- Conclude a Multi-annual Financing Agreement

The IPA Implementing Regulation (718/2007) (Article 184, Paragraph "2.b") indicates that the IPARD Programme should be based on an analysis of the current situation in the rural areas and on in-depth analysis of the sectors concerned.[5] Among other things, the IPARD programme should include a quantified description of the current situation, showing disparities, shortcomings and potential for development. The programme should also include quantified objectives. The analyses of the situation and prioritization of the areas for potential intervention should be made with the help of independent expertise.

Bearing this in mind, the main objective of the sector analyses is to provide a solid input to the preparation of the IPARD Programme and to provide the grounds for justified and appropriate targeting of the measures included in the IPARD Programme. Therefore, the sector studies are not a part of the IPARD Programme as such, but rather constitute a basic input to the programming process.

Furthermore, it should be emphasized that the national authorities may use sector studies as inputs for the preparation of any intervention targeting the agricultural and rural sectors. As such the sector studies do not exclusively contribute to the preparation of the IPARD Programme.

IPARD support will, if so decided, address the weaker links in the production and supply chains. The objectives of the IPARD intervention are to contribute towards upgrading to EU standards, strengthening

[4] See EU Delegation Web site for Bosnia and Herzegovina: http://www.delBosnia and Herzegovina.ec.europa.eu/

[5] A new regulation could be expected in 2013 in replacement of the regulation 718/2007

overall competitiveness and performance as well as fostering the sustainable development of the sector in the context of EU accession. In this respect, the sector analyses were carried out on the most demanding sectors in terms of the costs of meeting the standards, for which the highest potential and added-value of the intervention is anticipated.

The agricultural sector analyses carried out in Bosnia and Herzegovina have been selected through a consultation process with local authorities and are based on EU standard relevance as well as economic relevance. Analyses have been prepared for:

- Meat, including rendering, and Dairy
- Fruits and Vegetables
- Cereals (wheat and maize)
- Wine
- Diversification

2.2.3 Objectives of the fruit and vegetable sector report

The fruit and vegetable sector analysis is one of five sector studies prepared in 2011 as a basis for the design of the EU Instrument for Pre-accession Assistance for Rural Development (IPARD).

The main objective of the report is to provide a comprehensive state of the art of the fruit and vegetable sector in Bosnia and Herzegovina. Therefore the report contributes to the analysis of the internal strengths and weaknesses as well as of the external opportunities and threats to the sector. Where appropriate, the sector analyses take into account specific regional development needs. In light of the needs and problems of the sector and the challenges ahead, investment needs are estimated and policy recommendations are formulated. In this way, the report contributes to formulation of a number of possible policy interventions for agriculture and rural development in line with the requirements for development of the sector.

The objectives of the sector analysis are summarized below and are to provide:

- Background and key figures for the sector
- Structural characteristics of the sector: Producers/Farmers and processing industry
- Government policy for the sector at state and entity level
- Market and trade
- Level of attainment of relevant EU standards
- Past trends and future developments in terms of investment
- Identification of potentials and needs of the sector
- Identification of training needs in the sector
- Outcome: As an outcome, the analysis of the sector provides:
  - A transparent overview of the sector containing a quantitative and qualitative description of the situation.
  - A detailed analysis of the highest potentials and obstacles (weakest links in the supply chain) to realize these potentials in the production and marketing chain, for the measures identified in the IPARD Programmes.
  - Recommendations in order to target the specific investments (segment/area/beneficiary), primarily focusing on the weakest links in the supply chain.

2.3 Methodology

The fruit and vegetable sector analysis has been drafted based on both primary and secondary data. Primary data was collected through actual field research, surveys among wineries, case studies and interviews with relevant stakeholders. Secondary data was collected from different sources (see section on Desk Research below).

Different methods and techniques have been applied in the study. Among the scientific methods used in the study are analysis, synthesis, classification, comparison and historical methods. These methods are based on existing data on the sector and have been compared with previous research to get a realistic picture of the sector.

During the primary data collection process the following techniques were used: Surveys, interviews, observations, classifications and measurements. Data was analysed using statistical data processing techniques where relevant.

2.3.1 Desk research

The two faculties, in Sarajevo and Banja Luka, were tasked with collecting data and information obtained from studies prepared by bilateral and multilateral institutions. However, most data comes from official statistics provided by MoFTER.

The two international consultants gathered additional documents from international and bilateral organizations.

2.3.2 Statistics

The main sources of data were the following:

- Bureaus for Statistics of Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District for general economic data and data of the Household Budget Survey (HBS), 2007
- EUROSTAT for general economic statistics especially for international comparisons and for NMS data
- COMTRADE and customs for international trade data
- FAO and Bosnia and Herzegovina statistics for general agriculture data
- International Federation of Organic Agriculture Movements (IFOAM)-Research Institute of Organic Agriculture (FiBL) for organic agriculture data
- FOCUS Balkans project for consumer preference data
- Review of previous research

Most data came from the Statistical Offices of the State of Bosnia and Herzegovina, Republika Srpska and the Federation of Bosnia and Herzegovina. The quality of this data is challenged by these offices who have admitted to not having the means to guarantee that the data reflects the reality in the field. However, it is assumed that the methods are constant and that at least trends over certain periods are informative of the actual situation.

In the case of the fruit and vegetable sector, the team faced a specific problem in using the pilot Agricultural Census 2010. Indeed, there is a huge inconsistency in this data compared with other data sources. This is mainly due to the relatively small surfaces of single fruit and vegetable crops. For some of them, there may be just several hundred hectares in the whole country. Even in the case that there are a couple of thousand, if these hectares are concentrated in a specific area, as is often the case for fruit and vegetables, and if the pilot census had included or excluded these surfaces, the biases are significant. In the case of meat and dairy or wheat, the relatively equal distribution of the production reduces the risk of high bias. For all these reasons, the data from the pilot Agricultural Census 2010 were not used for the analysis of the fruit and vegetable sector.

Data related to wholesale and retail markets was also transmitted to the team. This data is difficult to use as it contains yearly average prices for certain fruits and vegetables, while the prices vary significantly during the year and an average price cannot be used as a basis for a sound analysis of the market situation.

For production, the team used statistics from FAO. However, FAO statistics are based on the State statistics and so have the same problems.

Import and export data is based on COMTRADE statistics that are communicated by the customs of Bosnia and Herzegovina and exporting and importing countries. This data can be considered quite accurate, although according to several key informants, it is quite common that goods traded through border points between Herzegovina and Croatia are not taxed or registered by the customs.

2.3.3 Surveys

The main objective was to assess production patterns and economic performance of

different types of agriculture enterprises in different regions of Bosnia and Herzegovina. The secondary objectives were (i) to identify good practices and specific factors of success in relation to specific investments and production characteristics (technology levels, facilities, know-how, quality standards), as well as bottlenecks and weak points in the value chain and (ii) to contribute to assessing the economic performance of the fruit and vegetable sector (GVA). The surveys were carried out by the Agriculture Faculty of Sarajevo in the Federation of Bosnia and Herzegovina, and the extension services in Republika Srpska.

One hundred farming enterprises were included in the survey, 50 in the Federation of Bosnia and Herzegovina and 50 in Republika Srpska. The statistic significance of the sample will ensure a confidence level of 95 percent and a confidence interval of ±10 percent. At entity level, the interval confidence will be about 14 percent. The sample included 25 fruit and 25 vegetable growers for each entity. The Republika Srpska team covered Brčko District, but no specific sample was made for this entity.[6]

The samples included semi-subsistence family farms (a minimum of 20 in each entity), commercial holdings (a minimum of 15 in each entity) and large-scale corporate producers (between 10 and 15 or all of them). The sampling took into consideration geographic distribution, farming systems and climatologic factors.

The document contains several graphs based on this farm survey. Bearing in mind that the sample is not representative, the reader should carefully consider those graphs that are mostly indicative of some issues.

One retail survey was conducted in five supermarkets to assess the presence of processed products from Bosnia and Herzegovina and foreign origin on the domestic market.

2.3.4 Case studies

The primary objective of the case studies was to identify good practices and specific factors of success in relation to specific investments and production characteristics (technology levels, facilities, know-how, quality standards, bottlenecks and weak points in the value chain). The case studies were performed by the Agriculture Faculty of Sarajevo in the Federation of Bosnia and Herzegovina, and the Agriculture Faculty of Banja Luka in Republika Srpska.

The secondary objective was to (i) contribute to assessing the economic performance of the fruit and vegetable sector (GVA) and (ii) to identify mechanisms contributing to sector integration (cooperatives, associations, contractual agriculture and packers).

Twenty-two case studies from the fruit and vegetable sector were performed. These included five fruit and five vegetable producers in each entity and two processors. Selected growers were semi-subsistence and commercial family farms, as well as large-scale corporate farms. Again, the selection took into consideration geographic distribution, farming systems and climatologic factors.

2.3.5 Stakeholder and key informant interviews

The two international experts had various meetings with 29 key informants including, *inter alia,* producers, processors, collectors and packers, small and medium retailers and wholesale market managers as well as policy-makers. The objective of these interviews was to collect information on government policy, the market and trade, the level of attainment of EU standards and past trends and future developments in terms of investments.

2.3.6 Workshops

SWOT workshops

In each entity, one workshop with the fruit and vegetable sector stakeholders and

[6] *90 farms should have been included to reach the same 10 percent only for Brčko District.*

institutions representatives was organized at the beginning of the project to identify sector strengths, weaknesses, opportunities and threats. The workshop in Republika Srpska was well attended by a large number of producers and other stakeholders, while in Sarajevo mostly academics, a few institutions and only one producer attended the workshop.

Verification workshops

One workshop was organized in each entity to present the outcome of the study and investment recommendations. The workshops were attended by a total of 70 stakeholders, including producers, processors and value chain supporters (advisory services, certification bodies, non-governmental organizations (NGOs) and international organizations). During the discussions that followed, the stakeholders provided their comments and proposals that were taken into consideration for the sector studies finalization.

2.4 Key figures about the Bosnia and Herzegovina economy

This section of the report provides basic economic information about the development of the Bosnia and Herzegovina economy to be used as reference data in the specific sector analysis. Generally speaking the Bosnia and Herzegovina economy is characterized by a good level of recovery. Over the last 8 years, Bosnia and Herzegovina has registered a growth except for 2009.

2.4.1 Demography

The total population of Bosnia and Herzegovina is not known with precision. The last census that was performed in 1991 indicated a total population of 4,377,033. At that time, 60 percent of the population was living in rural areas. The war and the economic difficulties resulting from it caused important migration flows internally and towards Western Europe and countries of the region. Official statistics and estimations of different organizations show very different figures for the demography of Bosnia and Herzegovina. The official Statistical Office of Bosnia and Herzegovina shows a total population of 3,839,737, while estimation made by the CIA indicates a figure of 4,622,292.

If we trust estimations, the proportion of urban population has increased by 10 percent over the last 20 years, and the estimated urbanization rate for the period 2010–2015 is 1.1 percent per year.[7]

2.4.2 General economic indicators

The development in Gross Domestic Product (GDP) from 2004 to 2010 is presented in the table below. The economy demonstrates a very positive performance from 2004 to 2008 with an average yearly growth of 13 percent (in current prices), when the international financial crises changed the scene dramatically. 2009 was a year of decline, while 2010 has brought the economy back on a positive track at the same level as in 2008.

Table 2.3: Rural and urban population changes since 1991

	Population 1991 Census			Population 2012 (Estimated)		
	Total	Urban	Rural	Total	Urban	Rural
Bosnia and Herzegovina	4,377,033	1,730,821	2,646,212	4,622,292	2,311,146	2,311,146
Federation of Bosnia and Herzegovina	2,732,226	1,165,583	1,566,643	n.a.	n.a.	n.a.
Republika Srpska	1,557,180	523,832	1,033,348	n.a.	n.a.	n.a.
Brčko District	87,627	41,406	46,221	n.a.	n.a.	n.a.
Sources	Census 1991	Census 1991	Census 1991	CIA World Factbook	CIA World Factbook	CIA World Factbook

Sources: Census 1991 and CIA World Factbook

[7] *See the CIA World Factbook at https://www.cia.gov/library/publications/the-world-factbook/geos/bk.html*

Table 2.4: Gross Domestic Product (GDP) of Bosnia and Herzegovina, 2004–2010, Million Bosnia and Herzegovina Convertible Mark (BAM) and Million EUR

Item	2004	2005	2006	2007	2008	2009	2010
GDP Bosnia and Herzegovina, Million BAM	15.946	17.157	19.272	21.778	24.718	24.004	24.484
GDP Bosnia and Herzegovina, Million EUR	8.136	8.754	9.833	11.111	12.611	12.247	12.678
GDP Bosnia and Herzegovina per capita, BAM	4.150	4.464	5.015	5.668	6.433	6.246	6.371
Population, Bosnia and Herzegovina, Million	3.842	3.843	3.843	3.842	3.842	3.843	3.843

Source: Agency for Statistics Bosnia and Herzegovina, own calculations, exchange rate BAM to EUR = 1.96 all years.

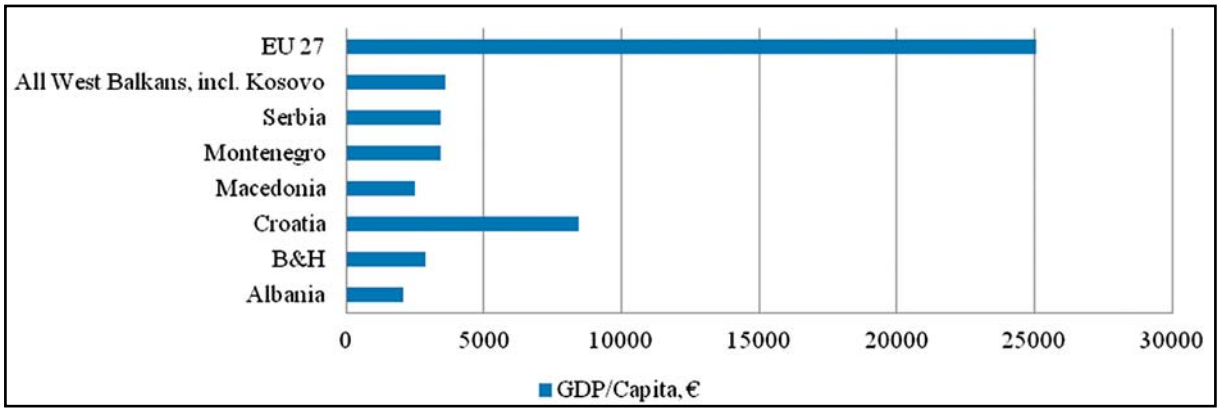
Table 2.5: GDP growth, percentage from previous year, 2004–2010, various countries

Country	2005	2006	2007	2008	2009	2010
Bosnia and Herzegovina	7.6	12.3	13	13.5	-2.9	3.5
Croatia	4.3	4.9	5.1	2.1	-5.8	-1.8
The former Yugoslav Republic of Macedonia	4.1	4	5.9	10 (f)	-0.9 (f)	1.3
EU (27 countries)	2	3.2	3	0.5	-4.2	1.8

f: forecast
Source: Agency for Statistics Bosnia and Herzegovina, own calculations, EUROSTAT

Compared with other countries in the region (Croatia and TFYRM), Bosnia and Herzegovina performs relatively well. The same is the case with regard to the comparison with EU-27 GDP development (see the Table 2.5). This positive development is needed for Bosnia and Herzegovina to catch up with most of the neighbouring countries in the region. The GDP per capita in 2007, where comparable data is available, shows that Bosnia and Herzegovina is lagging behind most of the countries in the region (see the figure and the table below).

Graph 2.1: Growth Domestic Product (GDP) per Capita, 2007, EUR, various countries



Source: EUROSTAT

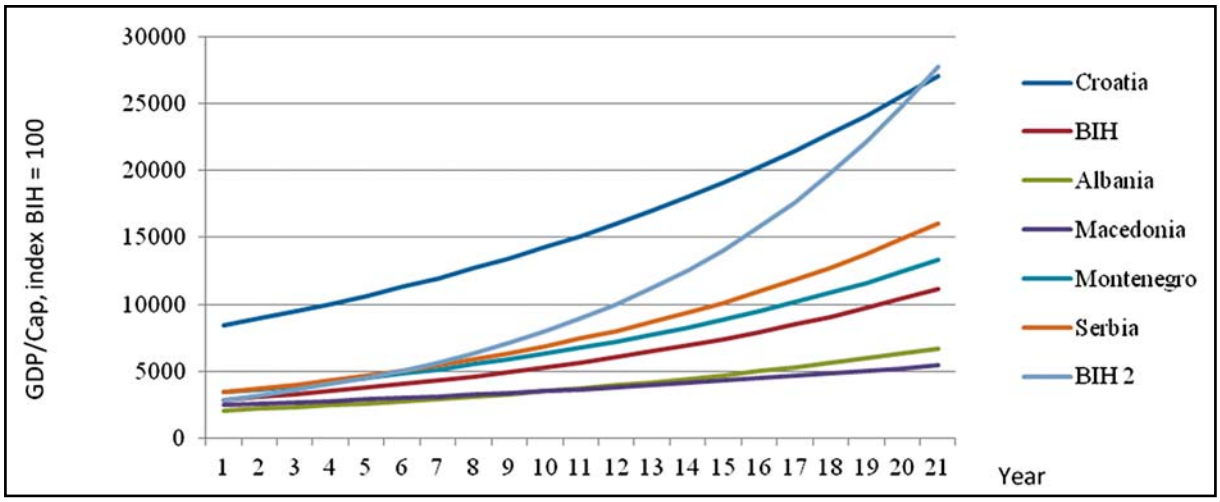
Table 2.6: Yearly growth rates in GDP, GDP/capita EUR, various countries, 2007

Country	Croatia	Bosnia and Herzegovina	Albania	TFYR Macedonia	Montenegro	Serbia
GDP growth from previous year, %	5	7	6	4	7	8
GDP/capita, EUR	8,443	2,879	2,088	2,488	3,438	3,447

Source: EUROSTAT

If the growth rates from 2007 are prolonged, a development as presented in the next figure will occur.

Graph 2.2: GDP/capita, 20-year extrapolation of growth rates from 2007, various countries



Source: EUROSTAT

An extrapolation of the 2007 level of GDP/ capita in Bosnia and Herzegovina with 7 percent, which was the growth rate from 2006 to 2007, illustrated with the line Bosnia and Herzegovina 1 in the graph 2.2, will only keep Albania and The former Yugoslav Republic of Macedonia behind in the growth race within a period of 20 years. To catch up in 20 years with Croatia, having an annual average growth rate of 5 percent in GDP per capita, Bosnia and Herzegovina would need to have 12 percent growth. In other words it is a demanding political task to catch up with the countries in the region. The Gross Domestic Product is broken down at entity level below.

The contribution from the entities to the Bosnia and Herzegovina state level GDP is quite stable over the period, even though an increase in the share of Republika Srpska is observed from 32 percent in 2004 to 34.2 percent in 2009, representing a total increase of 7.2 percent. Bosnia and Herzegovina and Brčko District are both experiencing a decrease in their contribution to the overall economy from 2004 to 2009, with a modest decrease of 2.2 percent for Bosnia and Herzegovina and more substantially 24 percent for Brčko District.

Employment

According to data collected during the fourth Labour Force Survey (LFS) in Bosnia and Herzegovina, carried out by the Agency

Table 2.7: GDP of the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District, Million BAM, share of Bosnia and Herzegovina GDP, percentage, 2004–2009

Item	2004	2005	2006	2007	2008	2009
GDP Federation of Bosnia and Herzegovina, Million BAM	10.350	10.945	12.261	13.879	15.647	15.231
GDP Republika Srpska, Million BAM	5.116	5.763	6.544	7.351	8.489	8.233
GDP Brčko District, Million BAM	0.480	0.449	0.467	0.548	0.581	0.550
Federation of Bosnia and Herzegovina share of GDP Bosnia and Herzegovina, %	64.91	63.79	63.62	63.73	63.30	63.45
Republika Srpska share of GDP Bosnia and Herzegovina, %	32.08	33.59	33.96	33.75	34.34	34.30
Brčko District share of GDP Bosnia and Herzegovina, %	3.01	2.62	2.42	2.52	2.35	2.29

Source: Agency for Statistics Bosnia and Herzegovina, own research, exchange rate BAM to EUR = 1.96 all years. Data for 2010 not available.

for Statistics of Bosnia and Herzegovina in May 2009 (over 10,509 households considered) it seems that the labour force numbered 1,131,557 persons for 1,462,619 inactive persons.

Among the labour force there were 859,218 persons in employment and 272,339 unemployed persons. Among persons in employment there were 58,039 unpaid family workers.

According to data collected in 2009, the unemployment rate was 24.1 percent (23.1 percent for men and 25.6 percent for women), while in the same period in 2008 it was 23.4 percent (21.4 percent for men and 26.8 percent for women). The unemployment rate was highest among young persons aged 15 to 24 years. It was 47.5 percent (44.8 percent for men and 52.3 percent for women).

In 2008 and 2009, the activity and employment rates revealed by the LFS were respectively 44 percent and 33.5 percent. The activity and the employment rates were by far the highest in the age group 25 to 49 years (69.1 percent and 53.5 percent).

The structure of persons in employment by status of employment shows persons in paid employment present by far the greatest share (72.8 percent). The share of self-employed persons was 20.5 percent (only 27.4 percent of them were women). The share of unpaid family workers was 6.8 percent (68.9 percent of them were women).

The structure of persons in employment by sectors of activity shows that 47.3 percent of them worked in services, 31.5 percent in industry and 21.2 percent in agriculture.

2.4.3 Agricultural indicators

A key constraint for improvement of the agriculture sector management in Bosnia and Herzegovina is the lack of accurate, reliable and timely information. Despite substantial EU and international donor assistance with initiatives such as a pilot Farm Accountancy Data Network (FADN) and a Pilot Agricultural Census, current information collection, collation and dissemination is still often undertaken in a rather *ad hoc* manner. Existing published sector information is relatively limited and the information made available is often considered to be of a relatively poor quality, lacking statistical rigour or relevance to the emerging market economy. With those caveats made, below is a summary of the situation in Bosnia and Herzegovina agriculture based on available statistics.

Agricultural land in Bosnia and Herzegovina

Bosnia and Herzegovina has a total area of 51,209.2 km^2, of which the sea surface is 12.2 km^2, which means that land surface is 51,197 km^2.[8] Of the total land area, plain land covers 5 percent, 24 percent are hills, mountains 42 percent and 29 percent karsts. Forests and woodlands cover about 50 percent of Bosnia and Herzegovina territory, and agricultural land covers 2.5 million hectares (ha) or 0.7 ha per capita.[9]

Land cover in Bosnia and Herzegovina is heterogeneous. About 86 percent are automorphic soils, and the remaining 14 percent hydromorphic soils. A large part of Bosnia is exposed to water erosion, particularly its central and southern part.

As with other data for Bosnia and Herzegovina, data on agricultural land are not identical. Depending on the source, this figure varies and differs considerably. According to the report for the agricultural sector in Bosnia and Herzegovina for 2007, Bosnia and Herzegovina has 2.572 million ha of agricultural land. According to the same source, 60 percent of agricultural land is at an

[8] *A report of the Agricultural Sector in Bosnia and Herzegovina 2007, Ministry of Foreign Trade and Economic Relations, 2008, p. 6.*

[9] *Action Plan for Environmental Protection Bosnia and Herzegovina (National Environmental Action Plan of Bosnia and Herzegovina), Ministry of Urbanism, Housing and Services, Civil Engineering and Ecology and the Federation Ministry of Spatial Planning and Environment, 2003, p. 10.*

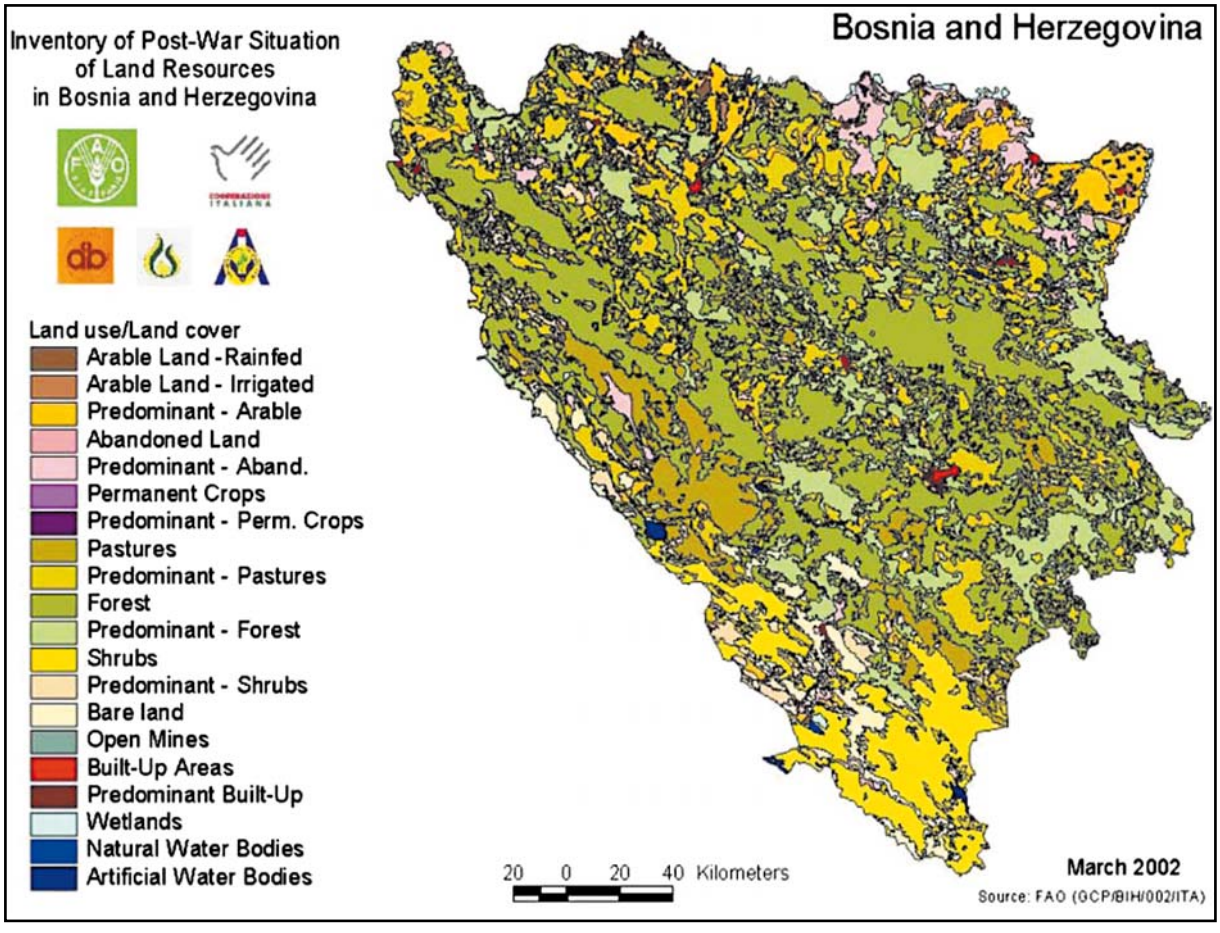
altitude of more than 500 meters in Bosnia and Herzegovina.

Similar information can be found in other sources. For example, Jaksic[10] states that Bosnia and Herzegovina has 2.525 million ha of agricultural land, of which 1.018 million hectares are arable land. According to the same source, 51.3 percent of agricultural land (1.294 million ha) belongs to the Federation, and 48.7 percent (1.23 million ha) to the Republic of Srpska. Out of the 1.018 million ha of arable land, 44 percent belongs to the Federation and 56 percent to the Republic of Srpska.

In the 2008 report on agriculture by the Ministry of Foreign Trade and Economic Relations, data have been published with the conclusion that the areas of agricultural land in Bosnia and Herzegovina had been significantly reduced. Conclusions were drawn based on the results of the FAO project "Inventory of Land Resources in Bosnia and Herzegovina in the post-war period," and the application of CORINE (Coordination of Information of the Environment) methodology. According to this source in Bosnia and Herzegovina (only) 1,884,906 ha of land are agricultural areas and 3,127,456 ha are forests and seminatural areas. According to FAOSTAT, Bosnia and Herzegovina has 2.13 million ha of agricultural land.

The dominant agro-ecology use of certain parts of the territory of Bosnia and Herzegovina is shown in the map below. This is the outcome of research within the framework of the FAO project "Inventory of the postwar situation of land resources in Bosnia and Herzegovina".

Map 2.3: Post-war situation of land resources in Bosnia and Herzegovina



[10] *Jakšić Duško, Postdejtonska stvarnost i perspektiva, Atlantik, Banja Luka, 1997, p. 95.*

According to official statistics, agricultural land in Bosnia and Herzegovina occupies (2.163 million hectares) 42.2 percent of its territory. This figure is a five-year average farm size in the Republic of Srpska, the Federation of Bosnia and Herzegovina and Brčko District, according to data of the entity and state agencies for statistics, which is shown in the detailed table that follows.

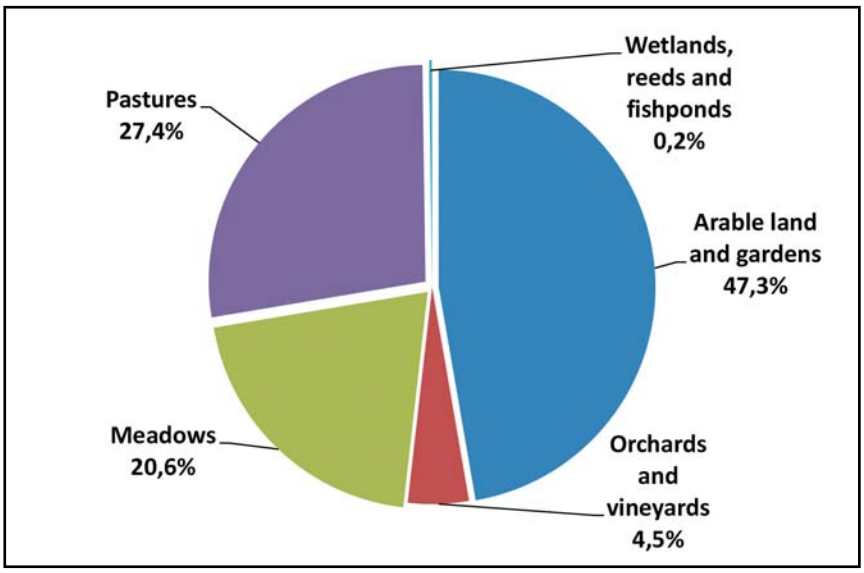
Out of the 2.16 million hectares, a little less than half is arable land and gardens (1.023 million hectares or 47.3 percent of total agricultural land). The other half of the agricultural land used for livestock production is meadows (445,000 ha, 20.6 percent) and pastures (593,000 ha, 27.4 percent). Fruit orchards and vineyards (3,500 ha) cover 98,000 hectares (4.5 percent of total agricultural land).

Table 2.8: Agricultural areas in Bosnia and Herzegovina, 2005–2009

Republika Srpska	**2005**	**2006**	**2007**	**2008**	**2009**	**Average 05–09**
Arable land and gardens (000) ha	593	596	596	587	584	591
Orchards and vineyards (000) ha	50	50	49	48	51	49
Meadows (000) ha	189	188	182	177	183	184
Total arable land (000) ha	832	834	827	802	818	823
Pastures (000) ha	166	166	164	148	168	162
Wetlands, reeds and fishponds (000) ha	3	4	4	2	1	3
Total arable land (000)	1,001	1004	995	952	988	988
Federation of Bosnia and Herzegovina	**2005**	**2006**	**2007**	**2008**	**2009**	**Average 05–09**
Arable land and gardens (000) ha	411	409	400	400	391	402
Orchards and vineyards (000) ha	42	43	43	43	43	43
Meadows (000) ha	262	263	257	264	254	260
Total arable land (000) ha	719	719	703	712	692	709
Pastures (000) ha	419	418	427	441	442	429
Wetlands, reeds and fishponds (000) ha	2	2	2	2	2	2
Total arable land (000)	1,140	1,139	1,132	1,155	1,137	1,141
Brčko District	**2005**	**2006**	**2007**	**2008**	**2009**	**Average 05–09**
Arable land and gardens (000) ha	30	29	29	29	30	29
Orchards and vineyards (000) ha	3	3	3	3	3	3
Meadows (000) ha	1	1	1	1	1	1
Total arable land (000) ha	34	33	33	33	34	33
Pastures (000) ha	1	1	1	1	1	1
Wetlands, reeds and fishponds (000) ha	0	0	0	0	0	0
Total arable land (000)	35	34	34	34	35	34
Total Bosnia and Herzegovina	**2005**	**2006**	**2007**	**2008**	**2009**	**Average 05-09**
Arable land and gardens (000) ha	1,034	1,034	1,025	1,016	1,005	1,023
Orchards and vineyards (000) ha	95	96	95	84	97	93
Meadows (000) ha	452	452	440	442	438	445
Total arable land (000) ha	1,585	1,586	1,563	1,547	1,544	1,565
Pastures (000) ha	586	585	592	590	611	593
Wetlands, reeds and fishponds (000) ha	5	6	6	4	3	5
Total arable land (000)	2,176	2,177	2,161	2,141	2,160	2,163

Source: Agency for Statistics Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District

Graph 2.3: Structure of agricultural land in Bosnia and Herzegovina (Average 2005–2009)



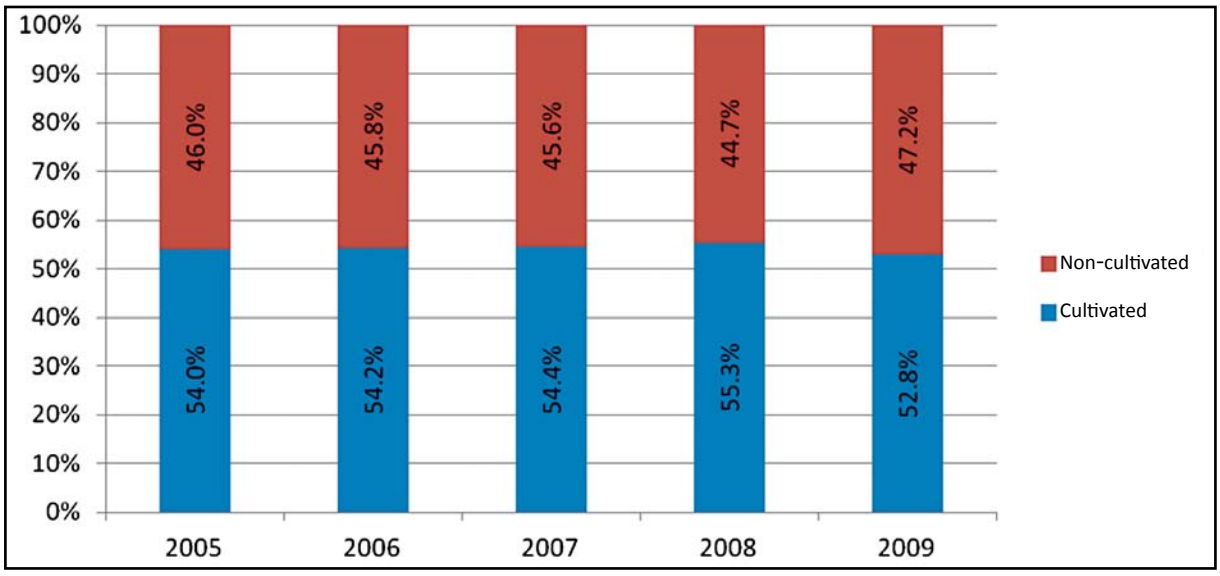
Although both entities occupy roughly the same area, Republika Srpska has a higher share of total arable land (58 percent), and the Federation of Bosnia and Herzegovina more of the total meadows (59 percent) and pastures (72 percent). This is the result of the natural geography of each entity, and consequently there is significant production of crops in Republika Srpska, whilst in the Federation greater importance is given to livestock.

Agricultural land use

Most of the agricultural land in Bosnia and Herzegovina is used for the production of grain (58 percent; 319,000 ha), where this production is more significant in the Republika Srpska (65 percent) than in the Federation of Bosnia and Herzegovina (43 percent). One quarter (26 percent; 142,000 ha) of the area is under forage crops, and 15 percent (82,000 ha) under vegetables. Areas under industrial crops are constantly being reduced, and by 2009 had fallen to 7,000 ha in all of Bosnia and Herzegovina (1.7 percent of agricultural land). The detailed structure of agricultural land use is shown in the Table 2.9.

Close to half of the arable land in Bosnia and Herzegovina is not cultivated

Graph 2.4: Relation between cultivated and non-cultivated land in Bosnia and Herzegovina (2005–2009)



Source: Farm survey

Table 2.9: Structure of the use of agricultural land in Bosnia and Herzegovina, 000 ha

Republika Srpska	**2005**	**2006**	**2007**	**2008**	**2009**	**Av. 05–09**
Crops	227	225	226	225	216	**224**
Industrial crops	7	8	8	5	4	**6**
Vegetables	38	37	37	37	34	**37**
Fodder crops	74	78	80	82	69	77
Total sown area	346	348	351	349	323	343
Nurseries, flowers, ornamental plants	0	0	0	0	0	**0**
Fallows and uncultivated arable land	247	248	244	238	261	**248**
Total arable land and gardens	593	596	595	587	584	591
% fallows and uncultivated arable land	41.7%	41.6%	41.0%	40.5%	44.7%	41.9%
Federation of Bosnia and Herzegovina	**2005**	**2006**	**2007**	**2008**	**2009**	**Av. 05–09**
Crops	85	83	82	87	85	**84**
Industrial crops	2	2	2	2	2	**2**
Vegetables	46	45	45	45	43	**45**
Fodder crops	64	67	64	64	62	**64**
Total sown area	197	197	193	198	192	195
Nurseries, flowers, ornamental plants	2	2	2	2	2	**2**
Fallows and uncultivated arable land	212	210	209	200	197	**206**
Total arable land and gardens	411	409	404	400	391	403
% fallows and uncultivated arable land	51.6%	51.3%	51.7%	50.0%	50.4%	51.0%
Brčko District	**2005**	**2006**	**2007**	**2008**	**2009**	**Av. 05–09**
Crops	11	10	10	10	11	**10**
Industrial crops	1	1	1	1	1	**1**
Vegetables	1	1	1	1	1	**1**
Fodder crops	1	1	1	1	1	1
Total sown area	14	13	13	13	14	13
Nurseries, flowers, ornamental plants	0	0	0	0	0	**0**
Fallows and uncultivated arable land	17	16	16	16	16	**16**
Total arable land and gardens	31	29	29	29	30	30
% fallows and uncultivated arable land	54.8%	55.2%	55.2%	55.2%	53.3%	54.7%
Total Bosnia and Herzegovina	**2005**	**2006**	**2007**	**2008**	**2009**	**Av. 05–09**
Crops	323	318	318	322	312	**319**
Industrial crops	10	11	11	8	7	**9**
Vegetables	85	83	83	83	78	**82**
Fodder crops	139	146	145	147	132	**142**
Total sown area	557	558	557	560	529	**552**
Nurseries, flowers, ornamental plants	2	2	2	2	2	**2**
Fallows and uncultivated arable land	476	474	469	454	474	**469**
Total arable land and gardens	1,035	1,034	1,028	1,016	1,005	**1,024**
% fallows and uncultivated arable land	46.0%	45.8%	45.6%	44.7%	47.2%	45.9%

Source: Agency for Statistics Bosnia and Herzegovina, Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District

(450,000–480,000 hectares). There are many contributing factors, including the presence of mines,[11] the absence of economic motivation of producers to be involved in agricultural production, the ageing of rural households, and the number of properties still remaining vacant after the war.

Household and farm structure

During the period of the Socialist Federal Republic of Yugoslavia, the size of private farms was limited to 10 ha on flat and hilly land, whilst in mountain regions farmers were allowed to own up to about 30 ha. Moreover, private properties and farms were not much favoured by the government at that time, and primary attention was paid to state farms, which worked about 5 percent of all agricultural land.[12]

In 2006, it was estimated that there were over 500,000 agricultural holdings in Bosnia and Herzegovina. More than 50 percent of these agricultural holdings are estimated to be less than 2 ha, and over 80 percent are less than 5 ha. These small farms are often further divided into 7–9 small parcels creating major problems for productivity and overall efficiency. Although the size of land areas actually cultivated by individual farms may be larger, the extent of land fragmentation restricts the adoption of more modern agricultural systems.

Recent surveys prepared as a part of the pilot FADN and other of the sector analyses indicate that subsistence and semi-subsistence farms, which consume the majority of their production and produce only little marketable surplus, remain the dominant form of farm structure in Bosnia and Herzegovina. However, in recent years, there is increasing evidence of more farmers producing for the market. Most commercially oriented farms tend to be larger, though they are often restricted in their development due to their status as partially privatized entities, which limits their access to and use of modern management and investment capital. Consequently, many have leased parts of their lands to smaller private farmers. Overall, the need for consolidation of fragmented farm holdings into more viable economic units is recognized as one of the most pressing agricultural policy issues in Bosnia and Herzegovina today.

The general problem of inadequate and uncoordinated data extends also to cadastral and land ownership data, much of which have not been updated since the war and therefore do not reflect the current situation. There is as yet no comprehensive farm or statistical register, so no official data are available on the number of landowners or agricultural households. In the immediate post-war period there was evidence that the number of landowners was growing and the average size of holdings contracting, in marked contrast to the patterns shown in almost every country of Europe;[13] as the economy returns to a more normal condition, a progressive migration to the towns (shown consistently in Yugoslavia throughout its existence) may be expected to resume.

A number of laws have been introduced in recent years in both entities to allow an agricultural land market to develop but further measures are required to provide sufficient incentive to amalgamate holdings and generally to strengthen the domestic land market. One of these measures consists of putting on the lease market agricultural land that has not been cultivated for at least two years. In this case, the local government has

[11] According to the BiH Mine Action Strategy (2009-2019), the Council of Ministers BiH, 2008, pg. 6, BiH in the end of 2008, had suspected 1,573 km^2 (mined) areas, which is slightly more than three percent of the territory. According to the Managing Director of BHMAC, the suspected area is today (June, 2012) 1,544 km^2 equal to 3.04 percent of the territory, see Atlantic Initiative Newsletter, June, 2012. The capacity of demining is 35-40 km^2 per year from 2012 to 2019, if fully operational. Recent data from EUD indicates a suspected area of 1,442 km^2 equal to 2.81 percent of BiH territory

[12] Čustović Hamid, Ljuša Melisa, Participatory Land Use Development in Bosnia and Herzegovina, p. 1.

[13] Čustović Hamid, Ljuša Melisa, Participatory Land Use Development in Bosnia and Herzegovina, p. 3.

the task of putting on auction the land that can be rented for one or more years, the rent being paid to the municipality or the Canton. However, only a few local governments are enforcing these legal measures that consequently remain without much impact.

Agricultural GDP

The agricultural GDP for Bosnia and Herzegovina as well as for the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District are presented below.

Table 2.10: GDP for Agriculture, Million BAM for Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District, 2004–2009

Item	2004	2005	2006	2007	2008	2009
GDP Agriculture etc, Million BAM	1,425.006	1,524.141	1,664.255	1,783.932	1,894.959	1,816.619
Agriculture, share of total GDP, BAM, %	8.9	8.8	8.6	8.2	7.7	7.6
GDP agriculture index, previous year = 100	107.6	107.0	109.2	107.2	106.2	95.9
Agriculture etc., Federation of Bosnia and Herzegovina, Million BAM	618.237	638.912	702.819	763.423	812.672	790.762
Agriculture etc., Republika Srpska, Million BAM	698.069	767.719	858.736	917.799	977.617	921.037
Agriculture etc. Brčko District, Million BAM	108.70	117.51	102.70	102.71	104.67	104.82

Source: Agency for Statistics Bosnia and Herzegovina, Agency for Statistics Republika Srpska (Statistical Yearbook 2010, Agency for Statistics Federation of Bosnia and Herzegovina, own research, exchange rate KM to EUR = 1.96 all years. Data for 2010 not available.

Table 2.11: Production of the 20 most important food and agricultural commodities (ranked by value) in Bosnia for the year 2007

Rank	Commodity	Production (EUR '000)	Production (mt)
1	Cow's milk, whole, fresh	135520	746700
2	Fresh vegetables	67061	490000
3	Chillies and peppers, dry	64988	30000
4	Maize	32585	635344
5	Potatoes	30096	387239
6	Plums and sloes	24472	138707
7	Apples	12770	60962
8	Hen's eggs, in shell	12613	20340
9	Wheat	10457	257112
10	Strawberries	10325	13344
11	Chillies and peppers, green	9257	36780
12	Cabbages and other brassicas	8829	82410
13	Grapes	7184	21235
14	Raspberries	6880	8032
15	Cherries	6679	10495
16	Tomatoes	5752	33287
17	Sheep's milk, whole, fresh	5229	21126
18	Onions, dry	4680	34822
19	Walnuts, with shell	4560	5098
20	Tobacco, unmanufactured	4341	3265

Source: Agency for Statistics Bosnia and Herzegovina, own research

The share of agriculture and related services of the overall GDP decreased from 2004 to 2008 and for 2009, but the share is relatively low compared with other countries in the region. The Federation of Bosnia and Herzegovina counts for 43 percent of the agricultural GDP in 2004, Republika Srpska counts for 49 percent and Brčko District for the remaining 8 percent. In 2009, the Federation of Bosnia and Herzegovina represents 43.5 percent, Republika Srpska 50.7 percent and Brčko District 5.8 percent, representing a relatively stable distribution.

Agricultural production in Bosnia and Herzegovina is dominated by crop production, with livestock production representing less than one third of the total output. Based on available data, crop production had, in 2009, an approximate share of 66 percent of the total Gross Agriculture Output (GAO). However, in the period from 2001 to 2006, the share of livestock production in the Gross Agriculture Output has increased. Estimates (in current USD) put the livestock production in 2009 at more than 33 percent of GAO mainly due to the increase in production of cow's milk.

The most important subsector economically of Bosnia and Herzegovina agriculture is vegetables, which contributed in 2008 some EUR 221 million to the overall GAO. Of considerable importance were also fresh cow's milk (approximately EUR 220 million in 2009), maize (approximately EUR 128 million in 2009) and potatoes (approximately EUR 105 million in 2009).

The percentage of GDP attributable to primary industry (agriculture, hunting, forestry and fishing) has been falling in recent years and is at present estimated at approximately 10 percent. The sector is more important for the Republika Srpska than it is for the Federation of Bosnia and Herzegovina.

Trade of agriculture products

Bosnia and Herzegovina has a persistent trade deficit (approximately 26 percent of total GDP in 2009). Over the last three years the agricultural and food sector (including food and beverage production) has accounted for the most significant share of all sectors of this trade deficit, with nearly 30 percent (some EUR 968 million in 2009). Over the last five years agricultural exports represented only 12.5 percent of the agricultural imports. Farmers and agro-processors have the potential to supply the country with many of the products that are currently imported but at present they cannot compete with imported products. Local demand preferences have been evolving towards higher quality, more diverse and safer products, which, to-date, are largely perceived as being of foreign origin.

In the period 1996–2006, Bosnia and Herzegovina's main trade partners were Croatia, Slovenia, Germany, Serbia, Montenegro and Italy. In 2005, 74 percent of all Bosnia and Herzegovina agro-food exports went to the neighbouring non-EU states (primarily to Croatia and to a lesser extent, Serbia and Montenegro) and 23 percent to the EU, whereas 43 percent of all agro-food imports in 2005 came from the EU and 51 percent from neighbouring non-EU states (mainly Croatia).

The country has benefited from EU autonomous trade measures since 2000. Following the entry into force of the Interim Agreement on 1 July 2008, access of products from Bosnia and Herzegovina to the EU expanded, and EU exports to the country have been granted trade preferences. The EU is the main trading partner of the country. It represents 63 percent of its total imports and 73 percent of total exports. Foreign direct investment (FDI) stocks amount to approximately EUR 4.5 billion, with the EU accounting for about 50 percent of total inflows.

Between 2005 and 2009, exports increased by 12 percent year-on-year more than the world growth. While exports are still dominated by steel and aluminium, the shares of more technologically sophisticated products have been increasing, as evidenced by rapid growth

in the export of machinery, car parts, and furniture. However, all of the above export industries are suffering from poor demand due to the global state of the economy.

For 2002–2006, agro-food imports amounted to EUR 1.042 billion (17.1 percent of total Bosnia and Herzegovina imports) while exports amounted to EUR 139 million (5 percent of total Bosnia and Herzegovina exports) over the same period. In 2005, the trade deficit was reduced in absolute terms for the first time. The main reason for this was that exports to EU countries increased, thus significantly reducing the trade deficit with the EU countries. Liberalizing trade with the EU has clearly yielded positive results and is enabling further expansion of exports from Bosnia and Herzegovina.

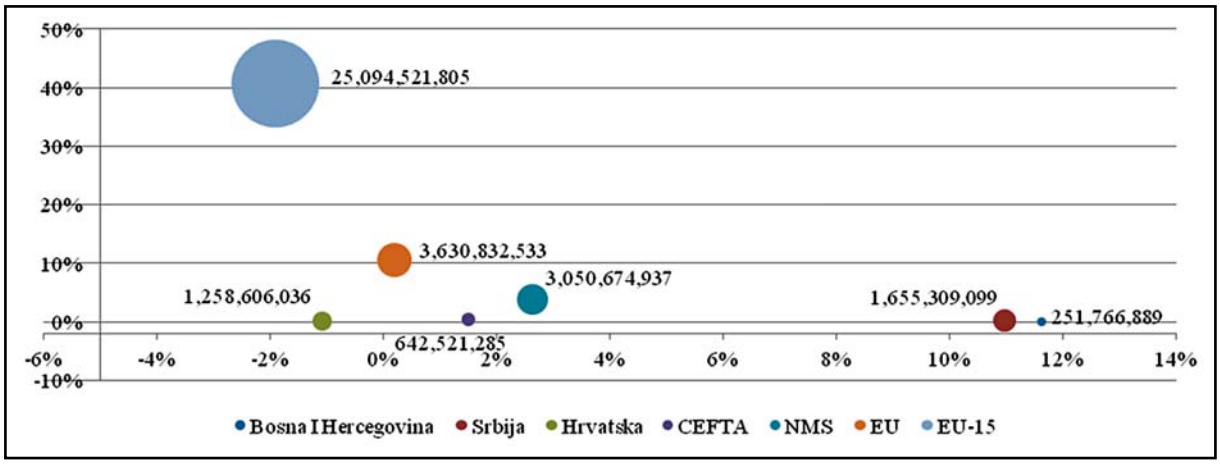
Still, exports of Bosnia and Herzegovina agriculture products are rather low in absolute terms (about EUR 180 million in 2009). However, the growth in exports from Bosnia and Herzegovina in recent years has been remarkable, surpassing that of all other countries in the Balkans region.

Croatia's accession to the EU in June 2013 will greatly disrupt trade flows among the Central European Free Trade Agreement (CEFTA) countries. Bosnia and Herzegovina will not be able to export products to Croatia for which safety standards for exports to the EU are not fulfilled. This will mainly impact products of animal origin such as milk and dairy products, live animals, meat and meat products.

For the fruit and vegetable sector, only potatoes cannot be exported to the EU before Bosnia can demonstrate that it has eradicated the bacteria *Clavibacter michiganensis ssp*. As a result, we can expect a higher offer of potatoes on the domestic market and increased presence of potatoes from Bosnia and Herzegovina on the markets of other CEFTA countries. A potential significant decrease in exports of nonperishable vegetables is foreseen since more than 50 percent of exported potatoes are marketed in Croatia; the famous tuber is far the most exported crop among non-perishable vegetables. However, in absolute terms, the decrease of exports, equivalent to EUR 1 million, corresponds to 2 percent of the total export value for the fruit and vegetables sector.

Other fruit and vegetable products can be exported to EU countries without major food safety obstacles. Lack of voluntary standards could be a problem for certain supermarket chains. One possible obstacle for export into the EU, including Croatia, could be the adoption of IPM as an obligatory standard. Otherwise there are no major food safety obstacles for export to Croatia. Regarding other types of market protection, once Croatia becomes a member of the EU, the situation will remain unchanged since Bosnia and Herzegovina has no tariffs for the export of fruits and vegetables to Croatia and the EU.

Graph 2.5: Average export of agricultural products and growth rate in relation to world exports (world = 0) in selected countries and groups of countries in 2005–2009



Source: COMTRADE and Bosnia and Herzegovina customs

Note on the reading of Bubble Graphs

This report displays several *Bubble Graphs* that are three-dimensional graphs. For each variable, that can be 'production', 'export, 'yield', the graph gives:

- ☐ the average value of the considered period – size of the bubble,
- ☐ the share that it represents worldwide – 'Y axis' and
- ☐ the growth in relation to world growth in the considered period – 'X axis'.

NMS (New EU Member States) = average of all New Member States including internal EU trade

EU 15 = average of all the countries including internal EU trade

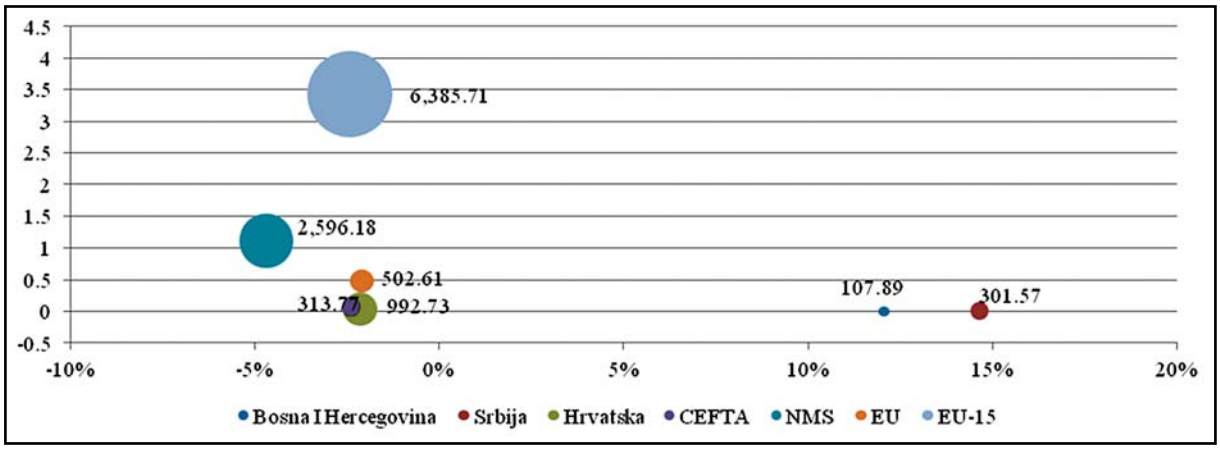
EU = average of 27 Member States without internal EU trade

Most of the graphs show data for the EU and NMS. NMS external trade outside the EU is included in EU figures. It appeared to us to be important also to show NMS trade performances including EU internal trade as these countries have gone through a similar process to that which Bosnia and Herzegovina is experiencing in the transition period.

Hence, comparisons are made between Bosnia and Herzegovina and the EU, and Bosnia and Herzegovina and NMS, but the comparison between the EU and NMS is irrelevant as the second group of countries is part of the first group.

Bosnia and Herzegovina exports per hectare are the lowest of the region. This indicates that the sector is not very competitive, although the progress registered between 2005 and 2009 is encouraging.

Graph 2.6: Average export of agricultural products per hectare and growth rate in relation to world exports (world = 0) in selected countries and group of countries in 2005–2009



Source: COMTRADE and Bosnia and Herzegovina customs

3. Structure of the Fruit and Vegetable sector

3.1 Importance of the fruit and vegetable sector in Bosnia and Herzegovina

The fruit and vegetable sector is the most significant sector for agricultural production in Bosnia and Herzegovina. In 2005, the fruit and vegetable sector contributed EUR 233 million to the GAO. Vegetable production is significantly more important economically with more than EUR 180 million against EUR 70 million for fruit production (2007).

In addition to the fruit and vegetables sold in the grey sector, fruit and vegetables are important for food security and nutrition for a broad swath of the population. Indeed, the vast majority of rural households, even non-agricultural households or part-time farming families have vegetable plots and fruit trees in their gardens to cover part of their own needs.

In terms of trade, the total value of fruit imports in 2009 was EUR 57 million, which was 5.4 percent of the total agricultural imports. The value of imported fruit has remained fairly stable over the last few years. The same applies to exported fruit, which reached some EUR 10.7 million in 2006, slightly more than in 2005.

The total value of vegetable imports in 2006 was EUR 28 million, which was 2.7 percent of the total agricultural imports. The value of imported vegetables has steadily increased over the last few years. Exported vegetables represented some EUR 8.6 million in 2006. Over the last few years, this export value has remained fairly stable.

The total value of imported processed fruit and vegetables in 2006 was EUR 22 million, which was 2.1 percent of total agricultural imports. Exported processed fruit and vegetables earned EUR 11.2 million in 2006. Over the last few years, this export value has slowly but steadily increased.

3.2 Fruit and vegetable producers structure

Fruit and vegetable producers can mainly be classified or qualified by the level of employment and income percentage coming from agriculture, the size of the area they own or farm, turnover, type of crops, legal entity forms and the level and type of technology they use. Based on employment and income levels coming from the agriculture activity, we can group producers as follows:

1. Subsistence fruit and vegetable producers
2. Semi-subsistence producers
3. Commercial family farms
   a. Medium estate
   b. Large estate
4. Cooperatives
5. Firms

This clustering was the starting point for the case studies and the farm survey in which producers not participating in the market were excluded (see section 1.3 for the methodology of the farm survey and case studies). This is mainly based on the fact that subsistence farmers will not be able to access IPA funds and that their influence on the sector overall is rather weak. Nevertheless, a rural development policy should integrate an important range of social inclusion measures for this group, which makes up a large portion of the Bosnia and Herzegovina population.

Based on the case studies and the key informants interviews, four types of fruit and vegetable producers were identified (Table 3.1).

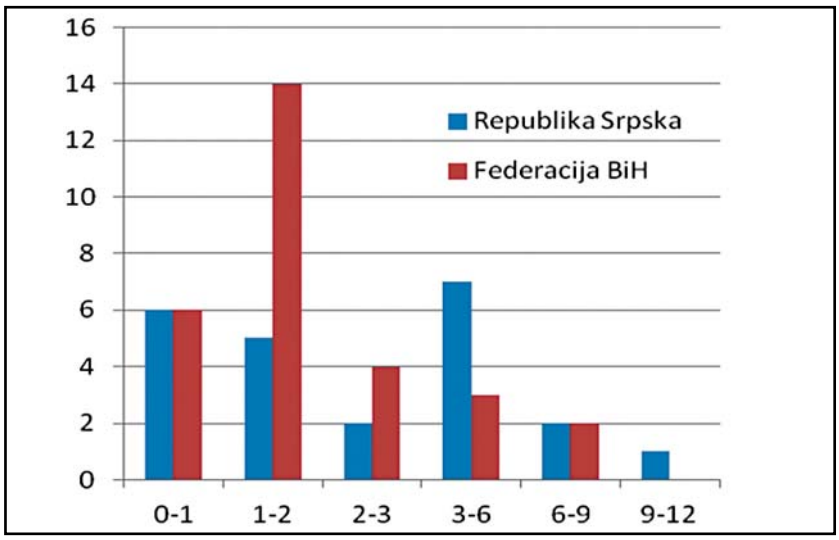
The two graphs below show the farm size of the producers interviewed during the farm survey. Though not statistically representative, the data confirms that there are many producers with less than two hectares (even the market-oriented producers). This pattern of very small growers seems more acute in the Federation of Bosnia and Herzegovina than in the Republika Srpska.

Table 3.1: Typology of fruit and vegetable producers participating in the fruit and vegetables market and their characteristics

Producer type	Main characteristics and investment challenges		
	General	**Fruit producers specific**	**Vegetable producers specific**
Semi-subsistence producers	Small-scale holdings with no or small surpluses depending on the years and the crops Mixed farms cropping cereals and breeding cattle and pigs or a few sheep Non-registered, non-Value Added Tax (VAT) payers, informal market channels Elderly people or part-time. High social vulnerability for young household without second job.	Exploit old orchards, with low rate of new orchards Transform quickly a high volume of fruits into spirit Other processed products for self-consumption	Low level of investment, with exception in some cases of small Plastic Greenhouses (PGHs) to increase tomato, cucumber and pepper production. Processed pickles for winter consumption and sometimes for green market sales.
Commercial family farms			
Medium estates	Limited land surface and high fragmentation hinder their production upscale and threaten their holding viability. Are usually under-equipped for post-harvest management and still perform manually most of the tasks. Low on farm storage capacity Large portion of these farms are mixed farms including other crops and animal production.	*3–5 ha orchards or 0.51.5 ha berry fruit* Erratic yields and inconsistent quality Direct selling via middleman to green markets for fresh fruits	*1–5 ha open-field or 0.3 to 1 ha PGH* Diversified marketing channels, based mostly on farm-gate, green markets and wholesale.
Large estates	Have to establish regular business relations with buyers to sell larger volumes Single producers are not in position to meet exporters and larger retailers requirements in particular in terms of volumes Have not yet reached the threshold in terms of post-harvest management and logistics to satisfy modern supply chain requirements	*5–30 ha orchards or up to 10 ha berry fruit* Good technological level with intensive orchards High harvest labour costs Basic and sometimes advanced storage facilities Supply chain integration, e.g. seedling production and sales, or production of packaging (wooden trays)	*5–30 ha of open-field vegetables or 5–10 ha of PGH* High harvest labour cost for non-perishable vegetables. Satisfactory agricultural machinery and equipment.
Firms	High labour costs Financial challenges due to credits reimbursement and sometimes unwise investments Lack of experience in the agricultural sector.	*More than 50 ha orchards* Supply supermarkets and export market (apples to the Russian Federation)	Capital and mechanization intensive production on more than 50 ha, mainly privatized former large companies.

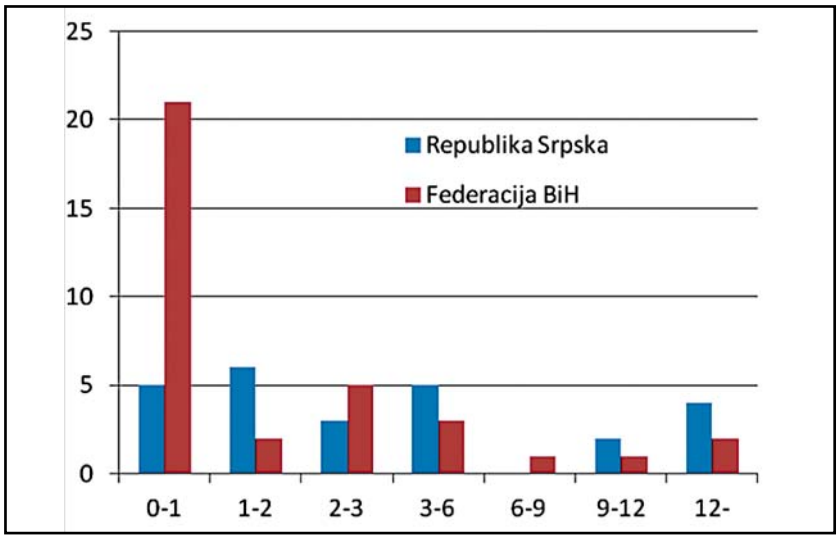
Many of the fruit and vegetable producers are actually operating on mixed farms, where they also grow some cereals and breed animals. The fruit and vegetable farm survey that focused on market-oriented producers showed that more than one third of producers had cattle and half had other animals. Among those who had cattle the majority had between 1–2 animals in the Federation of Bosnia and Herzegovina and between 1–10 in the Republika Srpska (see Graph 3.3).

Graph 3.1: Fruit growers farm structure (ha per farm)



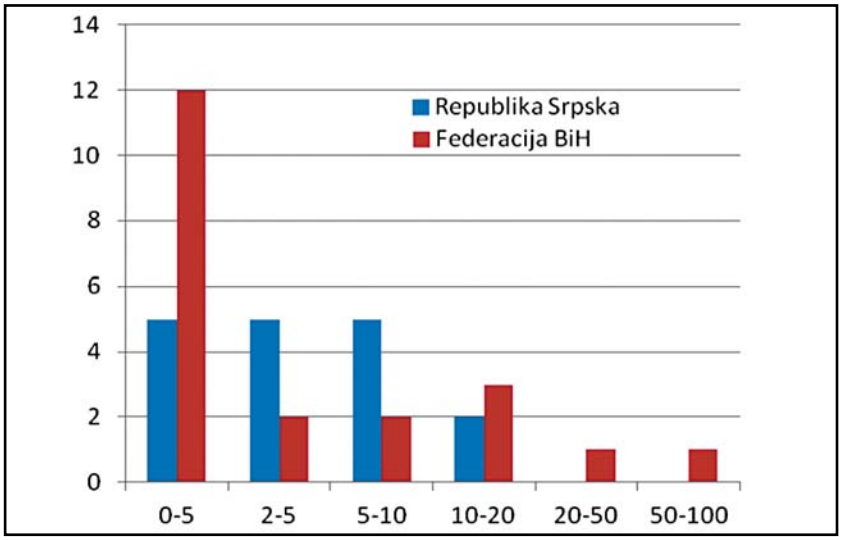
Source: Farm survey

Graph 3.2: Vegetable growers farm structure (ha per farm)



Source: Farm survey

Graph 3.3: Number of cattle for fruit and vegetable growers breeding cattle



Source: Farm survey

3.2.1 The role of women in the fruit and vegetable sector

Women are heavily involved in fruit and vegetable production and marketing. Official statistics indicate that the majority of women are employed in non-agricultural activities or in services. However, the number of women that do not have paid work is very high. In 2008, the proportion of unpaid female family workers was 65 percent for the Federation of Bosnia and Herzegovina and 75 percent for the Republika Srpska. In rural areas, these women are involved in farming activities mainly related to the dairy and fruit and vegetable sectors.

Often, women in rural areas face many difficulties due to poverty, patriarchal traditions, the heavy burden of numerous non-recognized household chores, and due to powerlessness and very limited possibilities to participate in any decision-making processes.[14]

In agriculture, this translates to a small number of women involved in management and decision-making, and dispossession of production means (in particular land, but also infrastructures). In the vast majority of cases, women cannot obtain credit, which prevents them from investing in any business.

Despite the formal commitment of the State of Bosnia and Herzegovina,[15] institutional efforts at entity level with the creation of Gender Centres in the Republika Srpska and Federation of Bosnia and Herzegovina, and the establishment of commissions at local level, many challenges remain to be addressed. Insufficient high-level measures are implemented to ease access for women to community and extension services, economic opportunities, agricultural credit and loans, marketing facilities, appropriate technology and land.

3.3 Geographical distribution of fruit and vegetable production

Like any other country Bosnia and Herzegovina is characterized by diversity in production by region. These are presented in a simplified maps below.

Map 3.1: Characteristics of the different areas of fruit production

Low level of production principally for self consumption, development of agriculture is mainly happening around cities and due to the donor programmes, conditions are also not favourable.

Extremely favourable marketing and climatic conditions for early and late production, the most developed fruit region represented by medium and large producers, significant variety of crops.

Very dynamic production area with growth of middle size producers, producing a variety of fruits because production mainly oriented towards consumption in the large cities.

Mainly production of apples, pears, strawberries, recently developing following the Banja Luka market, noticeably dynamic in the fruit sector.

Mainly a vegetable production area, fruit production exists but not so well developed, existence of important wholesale markets, better access to high quality land compared to other parts of Bosnia and Herzegovina.

[14] *Republika Srpska Gender Centre together with the Ministry of Agriculture, Forestry and Water Management on the Situation of Women in Rural Areas in 2009.*

[15] *Constitution of Bosnia and Herzegovina, Law on Gender Equality and Gender Action Plan and Committee on the Elimination of Discrimination against Women (CEDAW) Convention on the Elimination of All Forms of Discrimination against Women.*

Map 3.2: Characteristics of the different areas of vegetable production

Conditions are not favourable for agriculture, production is low and mainly for self-consumption, represented by smallscale farmers, some activities around cities, many donor programmes supporting agricultural activities.

Well developed vegetable production area both open field and indoor, good quality soil, mainly supplies Banja Luka and Sarajevo markets but also exports.

Production grown around cities therefore depends very much on the development of the city and the income of the city inhabitants, produces a variety of vegetables, growth of middle size producers.

Long tradition and extremely favourable marketing and climatic conditions for early and late production result in a high development level of a significant variety of vegetable crops.

3.4 Fruit and vegetable processors

3.4.1 Background

This subsector suffers from an almost complete absence of any official data, which has rendered the study difficult, in a way that it always seems to be incomplete. There are two key statements to this effect:

1. At the beginning of the study it was stated by the University of Mostar that there were no fruit and vegetable processors in the Federation, apart from the possibility of a tomato ketchup plant. The counterpart in Banja Luka failed to reply to a similar enquiry concerning processing in the Republika Srpska.
2. The key informant interviews conducted with growers revealed that they perceived no need for processing of fruit and vegetable produce, as almost all produce is sold directly to the end user.

The retail survey among five large supermarket companies in Sarajevo demonstrated that a high proportion of processed products present in the market was of foreign origin, principally from Croatia. The product offer was of traditional commodities, such as jam and a variety of speciality pickled or other preserved items. These are commonly produced by households also, suggesting that the market has little sophistication. For example, there was only a small and limited range of imported frozen fruit and vegetables on retail offer, a result of the current dominance of fresh produce sales.

Therefore, it may be concluded that the fruit and vegetable processing industry in Bosnia and Herzegovina is small and unsophisticated compared to some neighbouring states. Local patterns of consumption, and therefore demand reflect this state of processing. The six processors visited were all located in the Republika Srpska, none of which processing frozen products for retail sale.

There is a significant need for improvement of data collection, analysis and dissemination throughout the agricultural processing operation, but this is of particular importance for fruit and vegetables. During visits and interviews for all subsector studies regarding meat, dairy and fruit and vegetable processors, it became evident that planning of processing is undertaken by each enterprise in isolation of any other. That is not to say that companies do not try to work together, but an indication that there is no coherent driving force in Bosnia and Herzegovina that can develop a processing policy or strategy.

While it is understood that businesses are reluctant to divulge certain information

to an external source such as the project consultants, this only underlines the need for some form of infrastructural support, whether by the Government, the Ministry or an industry association. For each processor to work in relative isolation leads to the replication of product offers and subsequent stagnation of product development.

The processing subsector of the fruit and vegetable sector in Bosnia is to a large extent underdeveloped. One reason for this lack of development is due to the privatization of state assets in food processing, even as recently as 2009, which is some fifteen years after the end of the Balkan conflict.

State-owned factories were almost always the largest operating in the former Yugoslavia, and by the early 2000s were in need of investment in plant, machinery and technology as well as a review of management and working practices. Therefore, it is relatively recently that the processing industry has been able to respond to new challenges. The approach towards EU accession will both stimulate and support the responses to further change.

The factory visits revealed a vibrant industry, operating without much support from government or state organs. Consequently, processors have developed their businesses mainly on a trial-and-error basis. Only one processor is known to have closed recently due to financial difficulties, the rest look secure and viable.

3.4.2 Capacity

The processing sector consists only of six privately owned operators all located in Republika Srpska. One of the reasons for the location is the concentration of raw material production in the zone bordered by the Sava River, which is also the border to Croatia.

The largest processor has an annual output of 20,000 tonnes of all products, generating a turnover of EUR 15 million. Others vary between 4,000 and 16,000 tonnes annually, and all state their ability to increase annual output.

The estimated annual output of the fruit and vegetable processing industry in Bosnia is about 60,000 tonnes, almost all of which is in Republika Srpska. Data for Republika Srpska indicate that about 25 percent of vegetables and 45 percent of fruit production are processed, the balance accounted for by onfarm consumption, sales of fresh produce in green markets and by small retail outlets.

Factories work at least a two-shift system in the season, when the number of shifts depends on the daily variations in deliveries, although three shifts can usually cope with the maximum volume of deliveries. Processors state that during the season they operate at an overall average of 60 percent of design capacity. There are no reports of the inability of processors to handle the variations in raw material supply, and some state that there is a general shortage of such material. This indicates that the processing industry has the capacity to absorb and process higher raw material volumes without need for capital investment.

Most processors are semi-rural in location or at least close to a supply of labour. This ensures that seasonal variations, planned or otherwise, can be met by increasing the workforce at short notice.

The main problem relates to the high number of small-scale producers, rendering collection and transport costs higher than expected. A secondary problem is the lack of legal contracts of supply, so that growers who have received support from one processor are able to supply another if a better price is offered.

3.4.3 Products and processing

Raw materials supply is based on pre-season discussions, planning and agreements resulting in informal ‘contracts’. Delivery is usually at the cost of the grower, except in the cases where the processors must procure the needed fruit and vegetables outside the area where his/her facilities are located. Only a few conflict situations between processors and growers are reported. Processors complain about product quality while growers

argue that processors always find ways to downgrade part of the deliveries even when all fruits are first class quality. The main complaint is however the terms of payment often made several months after delivery of the goods.

Quality control of fruits is usually undertaken at the processing plant after consultation with field staff. Vegetable quality is assessed on delivery to the processor, but in either case growers are well-informed of quality parameters prior to the season.

The two largest processors, in Banja Luka and Prijedor, process only fruit, particularly into pasteurized juices and several varieties of rakija and fruit concentrates. A small-scale cooperative unit in Zvornik, with a 1,000 household membership, was the only company preparing fresh fruit (strawberries) for the local market, concentrating principally on the sales of cucumbers, both fresh and preserved.

Products are mainly bottled vegetables, bottled and canned fruit, jam, and a wide variety of pickled vegetables and other preparations of Balkan specialities, such as fruit kompot (compote), ajvar (caviar of pepper) and pindur (caviar of pepper and tomato).

Long-life pasteurized fruit juices are processed and packaged in either Tetra Pak or Combibloc packages. Concentrated juice is imported for those fruits not grown locally, for example citrus and pineapple. Imports are mainly from Brazil, India and Hawaii.

There are eleven varieties of fruit juice offered for retail sale in the Federation of Bosnia Herzegovina. The Table below shows the list of juice varieties on the market and their five countries of origin, of which there are four importers.

Bosnia and Herzegovina produces only three juice types – apple, sour cherry and orange juice, the last of which is certainly manufactured from imported concentrate. The highest price was 3.05 KM for Croatian blueberry juice and the lowest for sour cherry juice from Bosnia, for one-litre packages.

The two fruit juice producers from Bosnia and Herzegovina are Milkos from Sarajevo and Vitaminka of Banja Luka. Their products have a 30-month shelf-life.

The producers show little tendency for specialization as all are producing mainly the same range of products in similar packaging. For example, one processor manufactures ninety-eight different lines, including differences in packed weight.

There is a lack of automatic filling machines, probably due to the natural variations in shape and dimensions of the raw materials which demand different types of machine.

Table 3.2: Shop-checks on the origin of fruit juices offered for retail sale in Sarajevo

Variety	Origin
Apricot	Serbia, Croatia
Apple	Bulgaria, Bosnia and Herzegovina
Blackberry,	Croatia
Blackcurrant	Bulgaria
Blueberry	Serbia, Croatia
Cranberry	Croatia
Orange	Bulgaria, Bosnia and Herzegovina
Sour cherry	Bosnia and Herzegovina
Strawberry	Croatia, Slovenia
Tomato	Serbia

Source: Retail survey

One consequence of this lack of automatic filling equipment is the employment of a great deal of seasonal labour to achieve the filling process manually, a direct benefit to rural communities. This situation will be sustainable for only as long as rates of pay for casual or seasonal labour remain as modest as today.

A few smaller processors are more specialized, in the manufacture of jam and tomato ketchup for example, where second-grade raw material can be diverted by larger processors.

Freezing of fruit, and to a lesser extent of vegetables, is a practice confined to the preservation of raw material at its maximum level as a means of avoiding the strongly seasonal production from growers. This enables processors to level out their processing function whilst retaining the freshness of the original produce.

Fruits are processed into juice or pulp which are then exported for final processing, especially to Croatia.

Processing premises are in good general condition and processors are aware of EU standards. There is good progress in attaining Hazard Analysis and Critical Control Point (HACCP) certification and in some cases Halal and Kosher certification has already been awarded.

Plant and equipment in the larger plants are of a high technical standard, and there is clear evidence of compliance with modern standards of building design and plant hygiene.

3.4.4 The market

Competition for the market of Bosnia and Herzegovina comes both from local manufacturers and imports of similar products from neighbouring Balkan states, especially Croatia, The former Yugoslav Republic of Macedonia and Serbia. There is hardly any market penetration of non-traditional products, with the exception of a small amount of frozen vegetables in the large supermarkets. This is most likely due to the conservative nature of domestic demand, preferring traditional types of processed products, especially preserved vegetables. The demand for processed products is reported by processors to be of traditional products, due in part to the continued tradition of domestic preservation for winter consumption.

Fruit jam is available widely in retail outlets, but not of, shall we say, European type, and imports of jam are confined to those of neighbouring states.

Exports are reported to neighbouring states, plus Australia, Austria, France, Germany, the Russian Federation and Sweden, mainly based on the achievement of GlobalGAP certification.

Traders and exporters frequently collect finished product, thereby reducing the distribution costs of the processor. However, exports are organized formally via a contractor or by processors' own transport, in view of the need for appropriate documentation for export.

In 2009, the Federation of Bosnia and Herzegovina imported 172 million BAM's worth of fruit and vegetables and exported only the value of 22 million BAM, a trade gap of approximately 150 million BAM (EUR 75 million).

The negative trade balance for processed products indicates that the Bosnia and Herzegovina industry should concentrate on import replacement/substitution, thus reducing calls on foreign currency. In view of the comments on the nature of the domestic retail market, this course of action would not require any marked shift in the type or range of local product offered by processors. It is not anticipated therefore that significant investments in new technologies will be required in the medium term.

Retail sales in 2009 were reported at 40 million BAM, but there is no distinction made

between processed and fresh sales. *The significance of these figures is only as good as the data quoted, and preferably should be ignored.*

One company is an exporter of plums and cherries, where second-grade product is diverted to other use, mainly for the manufacture of rakija (spirit). One hundred tonnes of dried herbs are also exported annually, for use in the preparation of herbal remedies and in extracts for soft drinks and fruit tea. This business has also developed an export market for buckthorn, where the bark is dried for herbal use and the remaining heartwood pulverized for the manufacture of gunpowder in Switzerland.

This family business has an export license for plums as well as a wide selection of wild herbs, reported to be in excess of fifty. Fruit exports amount to 100 tonnes per day in the 12-week season, and the business reports an annual turnover of 2 million BAM, employing 6 full-time and 50 part-time staff.

A second processor reports an annual turnover of 11 million BAM, from the processing of 4,000 tonnes of fruit and vegetable products, and employing 50 full-time and 200 part-time workers.

Exports to the EU are usually via a partner company in the EU, but companies are reluctant to explain the mechanism.

3.4.5 Past trends and future developments in terms of investment in fruit and vegetable processing

Processors report some ability to source their own finance for expansion or development, but there is a general need for investments in new machinery and packaging equipment, which are largely beyond processors' immediate expectation.

Investments have been made in the following areas:

- Upgrading/refurbishing of factory buildings, to be in line with improved standards of cleanliness and hygiene.
- Rehabilitation of equipment rather than attempts to purchase new articles – an effect of the current economic climate.
- Improvement of finished product storage, in terms of capacity, lighting and general conditions. However, storage of finished product is still static i.e. simply stacked in pallets arranged in blocks, demanding complex manoeuvres to compose orders.

The future investments to be addressed are chiefly in respect of:

- Improved raw material handling, sorting, grading and cleaning.
- Replacement of old or out-of-date processing equipment, such as filling machines, continuous sterilizers, evaporators.
- Wider use of freezing facilities to level out the seasonal peaks of fruit and vegetables, where applicable.
- More widespread use of freezing products for retail sale, particularly for soft fruit.
- Introduction of computerized stock and inventory controls, as a prime means of reducing cash tied up by overstocking.
- Improvement of finished product storage by the introduction of a live system of pallet racking, allowing easy access when picking orders. This will require also modern forklift trucks for order picking and loading of vehicles and redesigned loading bays to avoid multiple handling of each pallet.

4. The main characteristics and trends in the fruit and vegetable sector

The supply chain of fruit and vegetables in Bosnia and Herzegovina is short, often ending at local markets. When chains are longer, producers do not have contact with the market and only indirect feedback from consumers. Indeed, farmers usually sell their products to middlemen at the farm gate or to the next wholesale market. The grey economy is prevalent in trade activities. The challenges for policy-makers are to develop longer supply chains, legalize them and to include small producers in the modern supply chain. These challenges are typical for countries in transition, where market organization and legislative frameworks are changing very rapidly. However, new points of sale and distribution (new supermarket purchasing), highly demanding safety regulations, legal frameworks that include new fiscal obligations, privatization of agriculture and processing companies together with encouraging private initiatives and market deregulation are many facets of a drastic restructuring dynamic. These transition processes are more spontaneous than controlled by policy-makers.

One of the main competitive advantages of Bosnia and Herzegovina agriculture, and the fruit and vegetable sector in particular, are the low labour costs. Income of Bosnia and Herzegovina farming households is significantly lower than for EU farmers, logically reflecting the overall state of the economy.

Besides these main characteristics, a few others considerably affect the image of the fruit and vegetable sector:

- Weak vertical integration of the supply chain;
- Storage and processing facilities are insufficient, outdated, inadequately distributed and not owned by the producers themselves;
- The collection, classification, storage and transport of fruits in Bosnia and Herzegovina are insufficient and not properly organized. There are no distribution centres with modern technology for handling quality products. However, isolated initiatives indicate the emergence of “packaging culture”. Lastly, there is a lack of proper transport capacity and poor and underdeveloped infrastructure;
- A lack of distribution centres (led by producers or companies) that would allow producers to standardize and harmonize goods they commercialize.

4.1 Production

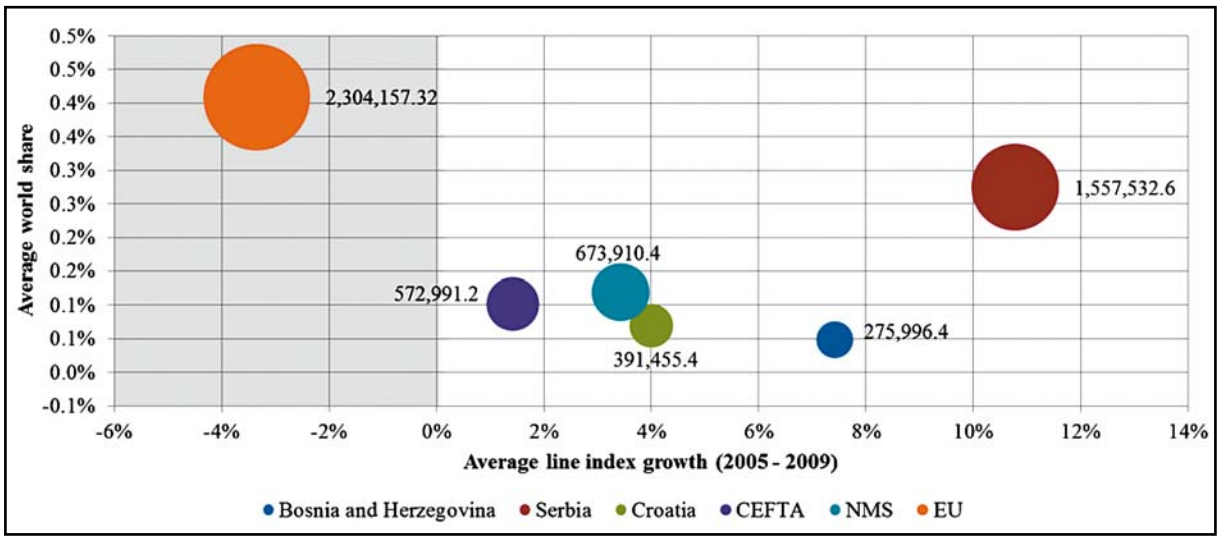
The production of fruits and vegetables in Bosnia and Herzegovina is extremely important because it provides food security (primarily vegetables) and income (primarily fruits) to rural agricultural holdings. Total income and profit per hectare are higher than in other sectors, and this is particularly important considering Bosnia and Herzegovina’s farming structure, with a high number of smallholdings.

Generally speaking, the production of all fruit types shows positive trends and good potential. The situation is different in the vegetable sector, where a negative trend can be observed.

Fruit production in Bosnia and Herzegovina is lower than that in the Western Balkans and in EU countries. However, Bosnia and Herzegovina has a higher growth rate of fruit production, with the exception of Serbia. Production growth is positive as well as in other neighbouring countries and NMS. A decline in production is recorded only in EU member countries. The growth rate is 8 percent higher than world growth. This growth rate is almost the same as area growth, implying that the production increase is due mainly to an expansion of the planted area.

On average, Bosnia and Herzegovina has a greater area under vegetables than EU single countries or NMS. Bosnia and Herzegovina vegetable crops represent 0.3 percent of

Graph 4.1: Average fruit production by selected countries (world growth = 0)



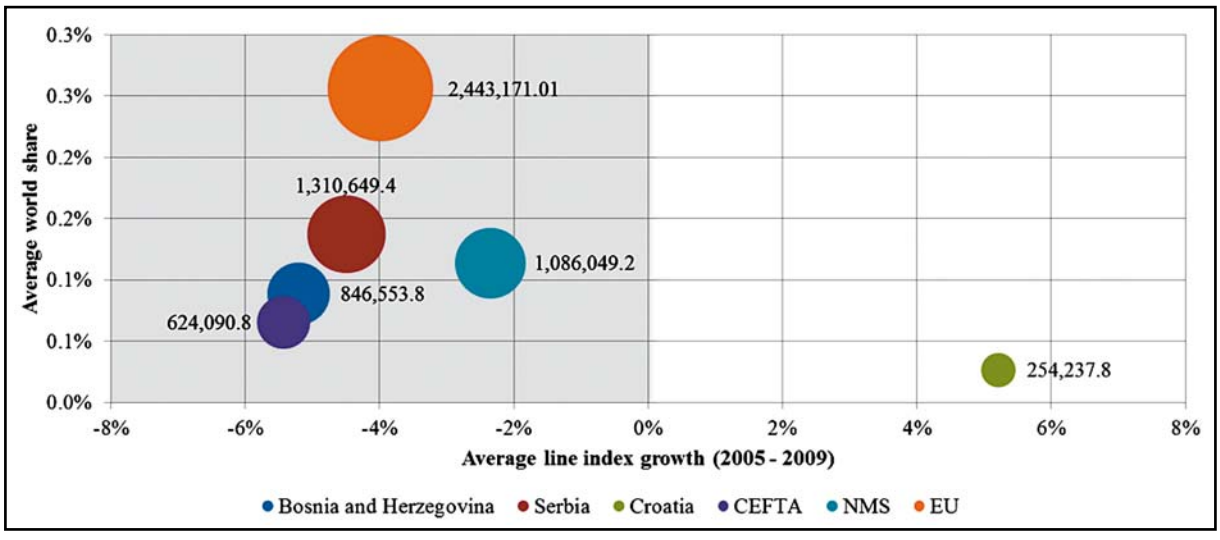
Source: FAO and Bosnia and Herzegovina statistics

the total surface worldwide. However, the contribution to the overall production is 0.1 percent. The reason for this lies in the extensive production with low yields (see Graph 4.2).

Areas under vegetables and total produced volumes in Bosnia and Herzegovina are increasing slower than they are worldwide. This is also the case for other countries of the region with the exception of Croatia, which has recorded positive growth (see Graph 4.2).

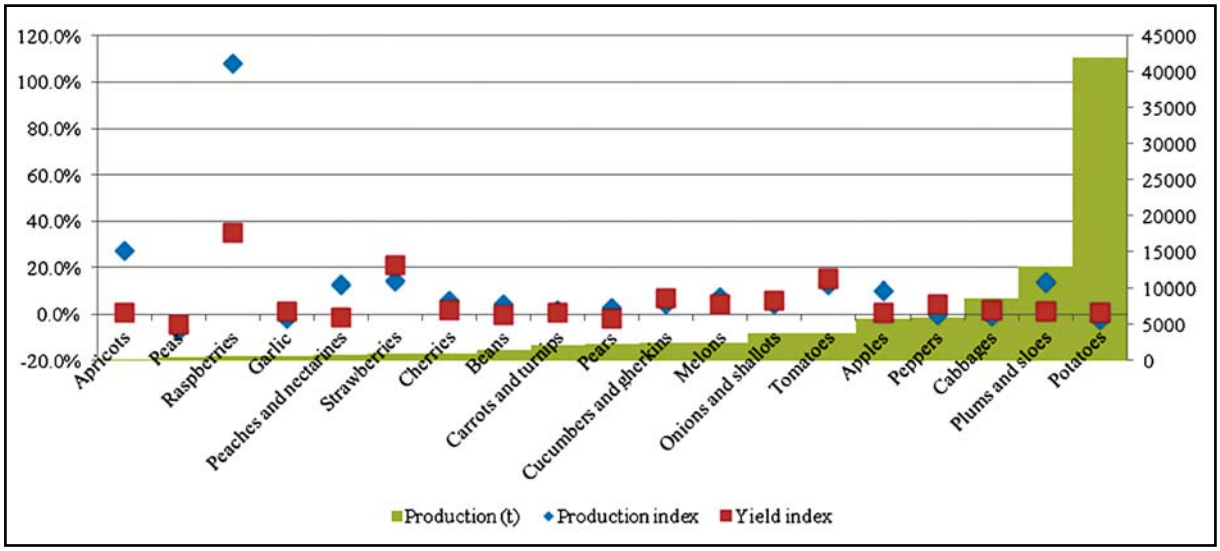
Based on an index of production of the main fruits and vegetables, it is manifest that Bosnia and Herzegovina has positive growth trends for most of the crops, but especially in the fruit sector. Raspberries, apricots, tomatoes, apples and strawberries have progressed the most in the last six years. Vegetable production is more stable. With the exception of tomatoes, for which growth is almost 20 percent, the other crops are barely showing positive trends and some even show negative growth; e.g. peas. In almost all cases, the yield index either follows or is lower than the index of production increase. Only strawberries and peppers show yield growth indexes slightly higher than the area growth indexes, indicating technological improvement (see Graph 4.3).

Graph 4.2: Average production of vegetables by selected countries (world growth = 0)



Source: FAO and Bosnia and Herzegovina statistics

Graph 4.3: Average growth index (left, percentage, 2005–2009) and average production (right, tonnes, 2005–2009)



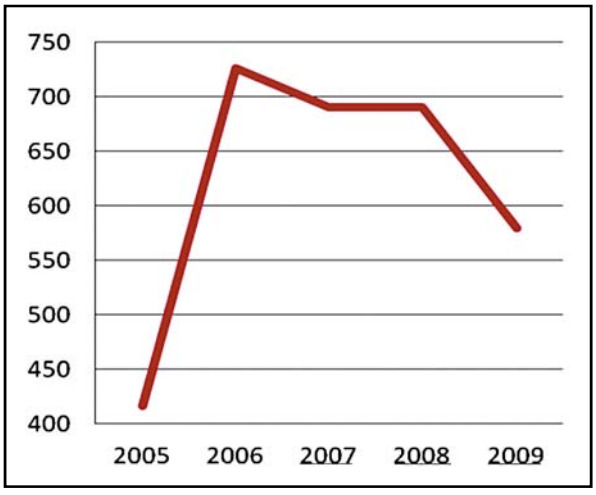
Source: FAO, COMTRADE and Bosnia and Herzegovina statistics, own calculations

4.1.1 Organic production

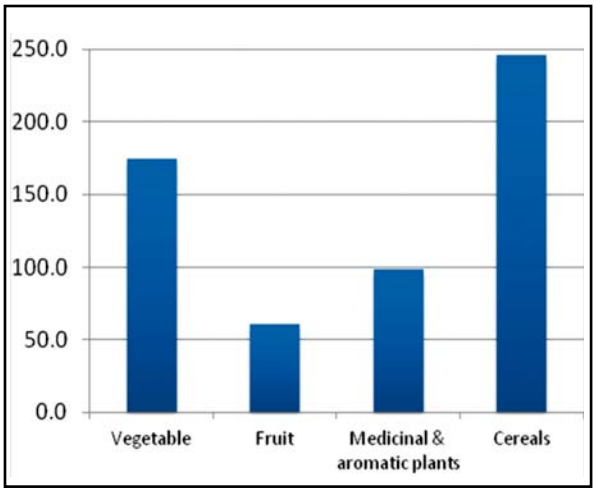
Organic production in Bosnia and Herzegovina is geographically concentrated in certain areas; namely, the Sarajevo region, the Central Bosnia region, the Herzegovina region and in West and North Bosnia region, with some producers in East Bosnia and Herzegovina. Some of these regions are also suitable for the collection of wild fruits, herbal plants and mushrooms and processing industries engaged in certified organic production are located in these areas.

The total area under organic management increased until 2006, before decreasing between 2007 and 2009 (see Graph 4.4). The total area is still low and the 27 producers, who are engaged in organic farming, are still perceived as pioneers. In comparison, other countries in the region have more organic producers: 817 in Croatia, 2,969 in Serbia, and 2,096 in Slovenia.[16] Even smaller countries like the The former Yugoslav Republic of Macedonia (99) or less developed like Albania (50) have more dynamic organic sectors. Only

Graph 4.4: Fully converted and in-conversion organic agricultural land, ha (2005–2009)



Graph 4.5: Fully converted and in-conversion organic agricultural land by crop type, ha (2009)



Source: IFOAM-FiBL, The yearbook "The World of Organic Agriculture -– Statistics and Emerging Trends"

[16] *IFOAM-FiBL, The yearbook „The World of Organic Agriculture -– Statistics and Emerging Trends*

Montenegro, with 29 producers, has a situation comparable with Bosnia and Herzegovina.

However, fruits and vegetables account for an important share of the area under organic management. Together with medicinal and aromatic herbs, it accounts for nearly 60 percent of the total area (see Graph 4.5).

4.2 Market and Trade of Fruit and Vegetables in Bosnia and Herzegovina

The fruit and vegetable supply chain in Bosnia and Herzegovina is characterized by a variety of points of sale (PoS): (i) importers' storage facilities, (ii) large producers and cooperatives' yards, (iii) supermarkets, (iv) processors, (v) wholesale markets, (vi) local shops and greengrocers, (vii) green markets.

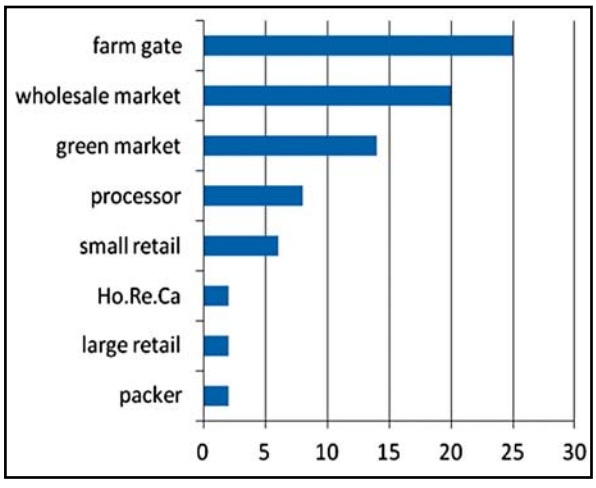
There are numerous types of retailers and traders at each of these points: (i) large importers and traders of fruit and vegetables; (ii) supermarket purchase agents; (iii) packaging house supply and selling agents; (iv) large traders working on the wholesale market; (v) traders that supply small shops; (vi) middlemen with trucks or cars with EUR 100, 1,000 and 10,000 in their pocket, and (vii) vendors on green local markets.

All the PoS and all the trading agents are important parts of a functioning market. Some of them are private companies, while others are public or semi-public entities, such as green markets and wholesale markets. The various types of supply chain organizations confer different weights to the points of sale and trading agents. Compared with other countries the characteristics of the fruit and vegetable supply chain in Bosnia and Herzegovina are:

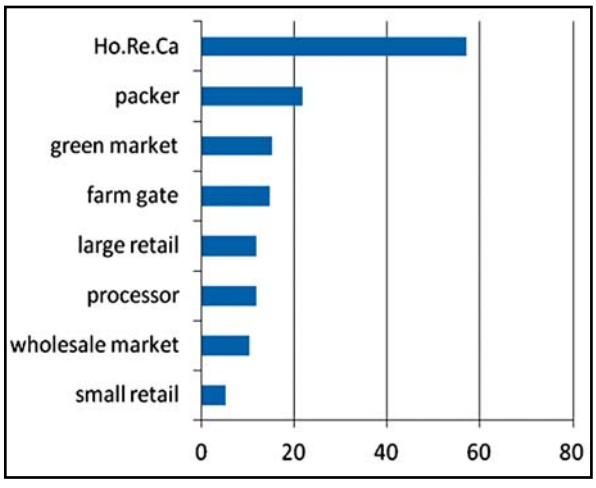
- A large number of small importers that prevents cartelization, a phenomenon widely spread in the western Balkans
- Very dynamic middlemen; both small and large and either domestic or from neighbouring CEFTA countries
- Wholesale markets do not fulfil their potential role
- A small number of packaging houses that harmonize the offer and add value to the product
- Small market share of supermarkets compared to green markets

In Europe, large wholesale markets play a key role in market transparency and efficiency, particularly in the fruit and vegetable sector They do not compete with supermarkets and local green markets because they are the points where most of the supermarkets and traders purchase their goods. Those markets are the meeting point of farmers and buyers; but wholesale markets, where the goods are stored, also facilitate standards enforcement, and health and food safety controls. As a rule, countries that have extended wholesale

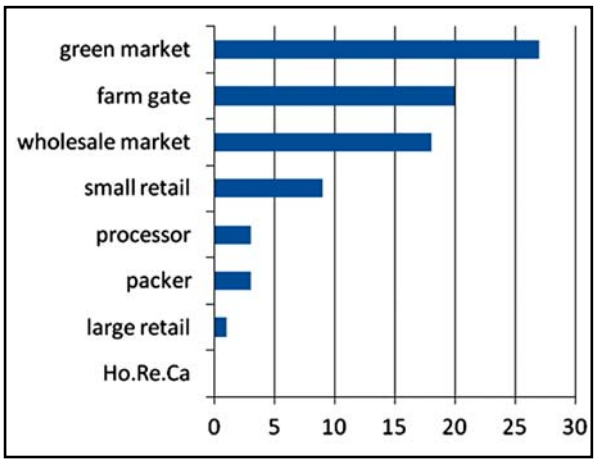
Graph 4.6: Point of sales for fruits (farm survey, N=97)



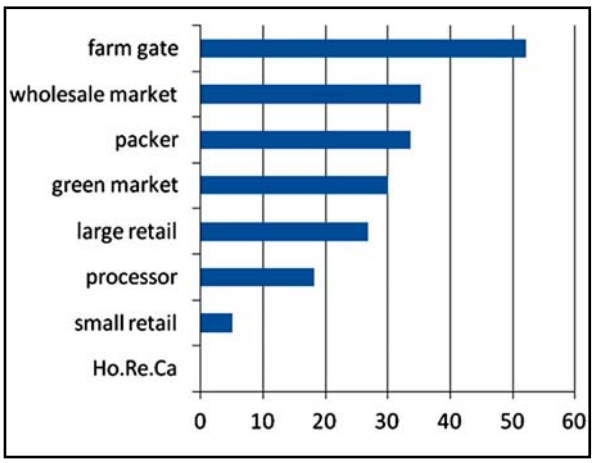
Graph 4.7: Average sales per type of point of sale for fruits in thousands BAM (farm survey, N=97)



Graph 4.8: Point of sales for fruits (farm survey, N=97)



Graph 4.9: Average sales per type of point of sale for vegetables in thousands BAM (farm survey, N=97)



markets are those that produce and export significant amounts of fruit and vegetables (Poland, Italy, France and Spain).

The existing wholesale markets in Bosnia and Herzegovina (the most important are those in Capljina, Bijeljina, Brčko and Sarajevo) have not managed to develop all of these functions. They are mainly market places where traders, farmers and consumers meet. However, (i) working conditions are inadequate; (ii) the turnover is lower than it should be because a large portion of goods is handled by middlemen who avoid wholesale markets or direct contract.

Therefore, investments and capacity development of managing staff is needed to progressively include all functional dimensions of modern wholesale markets. It is preferable that investments be based on private or public-private partnership, but also that producers play a substantial role in their management. IPARD support may be an option for accomplishing this.

4.2.1 Fruit and vegetable supply chains

The fruit and vegetable sector is characterized by supply chains that are diverse and have their own specificities. Essentially, there are two large fruit and vegetable supply chains to be distinguished: perishable (quickly produced and consumed) and non-perishable (can be stored for a longer period). Within these supply chains, there are many other chains, such as fresh, export-oriented, frozen, dried or preserved. Each of those has its own specificities implying specific analysis for each of them. However, some common characteristics to all fruit and vegetable supply chains can tentatively be formulated:

- Fruit and vegetables are local specific in terms of consumption and production;
- To a great extent, products cannot be transported over long distances, so that foreign trade partners are mostly to be found in neighbouring countries;
- There are many varieties and types created to respond to different users needs and customer preferences;
- Fruit and vegetables are not commodities traded on the stock exchange and are not objects of forward trade;
- Fruit and vegetables are more quality determined than price determined in comparison with many other crops;
- Due to higher gross margin per surface compared to cereals and industrial crops, many of the producers, especially those who own small parcels, privilege fruit and vegetable crops;
- Fruit and vegetables have a great potential for processing, so they are traded in fresh and processed form. Processing may take different forms: juice, freezing, drying, preserves, pasteurizing and sterilizing.

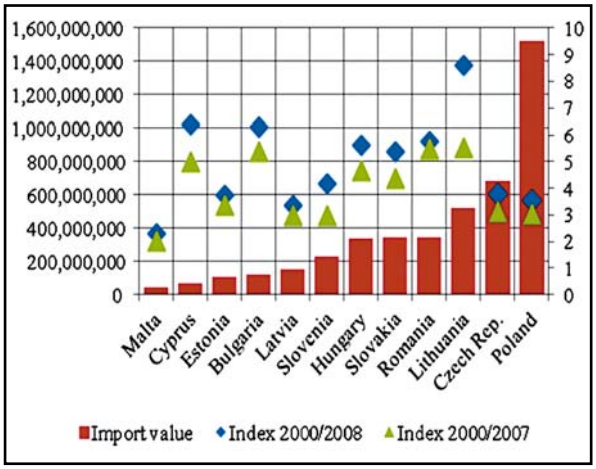
Yet, another of its characteristic is that the supply chain undergoes rapid changes. These changes are primarily determined by demands from customers and supermarkets. One of the recent developments is an increase of overall consumption, which has led to an increase in production worldwide. Worldwide, the main trends of the sectors are as follow:

- The increasing orientation towards safety and quality guaranteed by Business to Business (B2B) and Business to Consumer (B2C) certified quality standards (Organic, Protected Geographic Indication (PGI), Protected Designation of Origin (PDO), GlobalGAP);
- Changes in consumer behaviour and polarization of quality and prices – discounters and delicatessens, premium and low-cost products;
- Creation of platforms gathering and shipping fruit and vegetables from affiliated producers (having or not a say in the management of these structures), that have a framework contract with the supermarkets they supply;
- Strict requirements and enhancement of traceability, packaging and labelling;
- Improvement of technologies enabling longer storage either in warehouses or stores;
- A large increase in global trade – the value of the fruit trade increased by nearly 43 percent between 2005 and 2008.

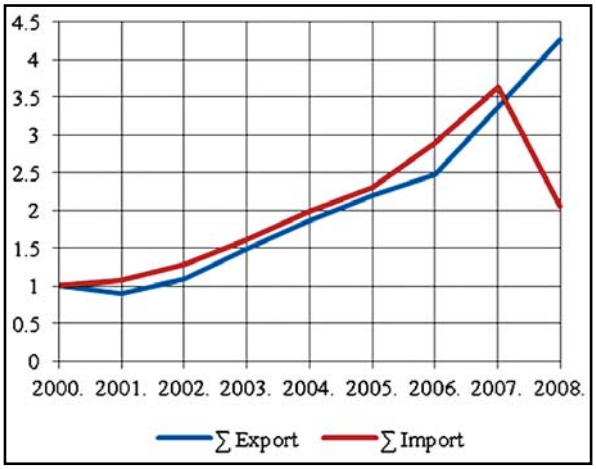
The experiences of NMS show that in the fruit sector and even more in the vegetable sector imports grow faster than exports, both in the pre-accession period and in the period immediately after accession to the EU (see Graph 4.12. and Graph 4.13). This is the case even though it was expected that the release of all tariff barriers would have a positive impact on NMS trade balances, which had in principle a huge comparative advantage of a cheaper labour force. However, it is obvious that production technologies, access to the market and preference for local products contribute to the incapacity of NMS to significantly benefit from market liberalization without serious reforms. On the contrary, imports have grown much faster than exports. The best example is Hungary, where fruit imports increased 5.6 times in 2008 compared to 2000, while exports increased just 2.6 times during the same period. This analysis underlines the need for Bosnia and Herzegovina to strengthen its fruit and vegetable sector before joining the EU.

There are two main challenges in establishing efficient fruit and vegetable supply chains. The first is how to involve small-scale producers in modern supply chains, as they are often not competitive, operate in informal channels and cannot afford investments to comply with market standards. The second is how to increase the fruit and vegetable processing competitiveness to penetrate new markets

Graph 4.10: Total export of fresh fruits from 12 NMS in 2008 (USD million) and export growth index (2000/2008)

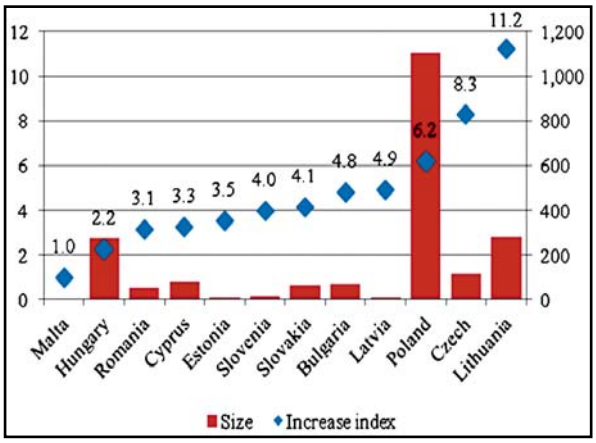


Graph 4.11: Base index of fruit trade (group 7) in 12 EU NMS

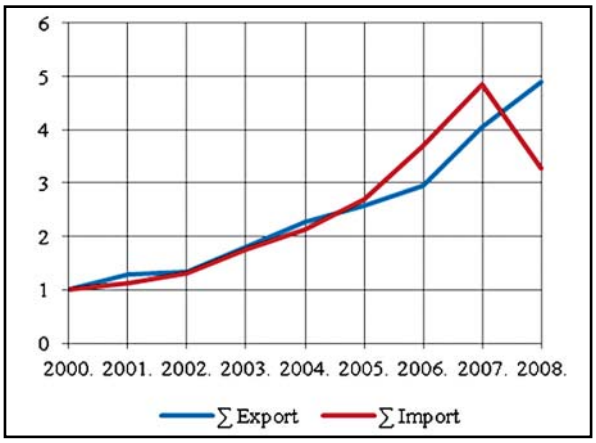


Source: Eurostat

Graph 4.12: Total export of fresh vegetables from the 12 NMS in 2008 (USD million) and index of export increase



Graph 4.13: Base index of vegetable trade (group 7) in the 12 EU NMS



Source: Eurostat

and subsequently increase demand for the raw materials. In Bosnia and Herzegovina, the current situation is characterized by high competition in primary production and low competition among food processors. The low number of processors is primarily caused by the limited interest shown by investors. Outsiders consider the processing industry as a risky business having to rely mostly on domestic and regional markets. The EU market remains difficult to access due to standards non-compliance and lack of business relations. The unpredictability of a support policy, lack of institutional support and a lack of real competitiveness caused by high tariff protection against products originating from competitive countries, such as the EU and similar, are other reasons for this lack of competitiveness.

4.2.2 Fruit and vegetable prices in Bosnia and Herzegovina

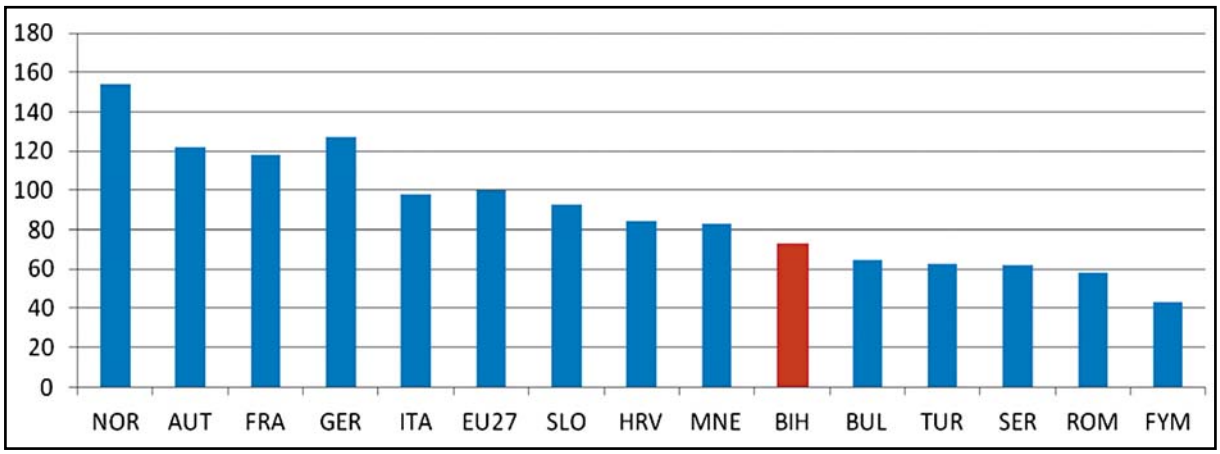
Prices vary according to selling points, but strong interdependencies can be observed. For example, supermarket retail prices are aligned to those on wholesale markets and are close to prices on the green market. However, there are significant regional variations between green markets, revealing underdeveloped market information and infrastructure. Prices are based on daily supply and demand, but due to great volume heterogeneity from one selling point to the other, prices might differ significantly. This phenomenon can be mitigated by traders activity who follow the situation via ad hoc means – often the mobile phone – and move products on more profitable wholesale/green markets contributing to price harmonization.

Bosnia and Herzegovina does not have a functional market information system that gathers the prices from the most important local green markets, wholesale markets, supermarkets and regional and international markets. Such a system should disseminate prices and market analysis to the sector stakeholders on a daily basis. This information helps farmers to make short-term decisions when and where to sell their products and to plan production using historical series, whether to invest in storage or not, etc. Finally, this system would help policy-makers improve their analytical capacity and create prompt and appropriate policies. Therefore, the project "Development of an Agriculture Market Information System" will be implemented under IPA 2009.

However, according to the data available and analysis performed for the purpose of this study, it can be concluded that compared to the EU the main characteristics are:

- Price fluctuation amplitudes are greater than in the EU
- The difference between wholesale prices and retail prices in Bosnia and Herzegovina is

Graph 4.14: Price index of fruit and vegetables (EU 27 = 100) in 2009



Source: EUROSTAT

significantly lower than in the EU, primarily due to lower turnover in supermarkets and the fact that producer prices are often the same as consumer prices, because sales are carried out directly between primary producer and final consumer.

- Retail prices of fruit and vegetables in Bosnia and Herzegovina are lower than in the EU 27, Croatia and Montenegro, but higher than in Serbia, TfYR Macedonia and NMS of the region (see Graph 4.14).

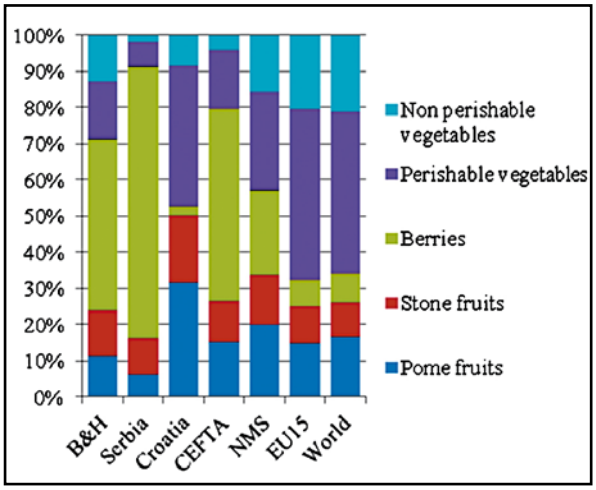
4.2.3 Foreign trade of fruit and vegetables

Fruit and vegetable exports from Bosnia and Herzegovina are low (EUR 37,5 million in 2010) compared to CEFTA and EU countries. There is constantly a trade deficit (EUR 70 million in 2005 and EUR 45 million in 2010). Nevertheless, Bosnia and Herzegovina does not lag behind these countries when the percentage exported from production in total is observed. In addition, export trends are positive and import trends are negative.

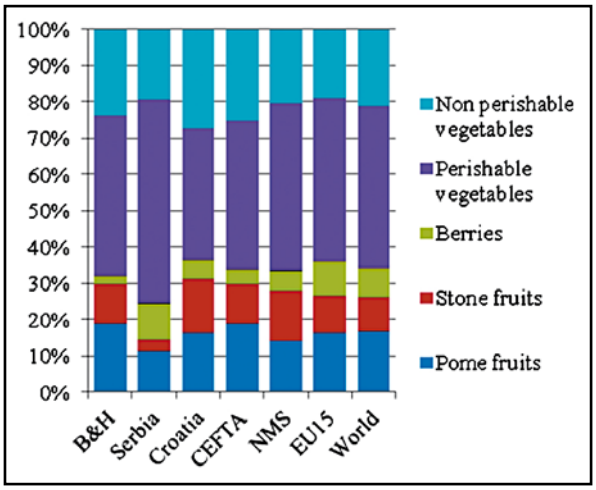
In CEFTA countries, particularly Bosnia and Herzegovina and Serbia, fruit exports exceed vegetable exports. This differs from the EU where vegetable exports prevail. Berry fruits are the main exported fruit, while pome fruits are neighbouring countries number one export product (see Graph 4.15).

Bosnia and Herzegovina exports 5 percent of its total fruit production, which is more

Graph 4.15: Average distribution of fruit and vegetable exports of different types – Bosnia and Herzegovina and selected countries (average 2005–2009)

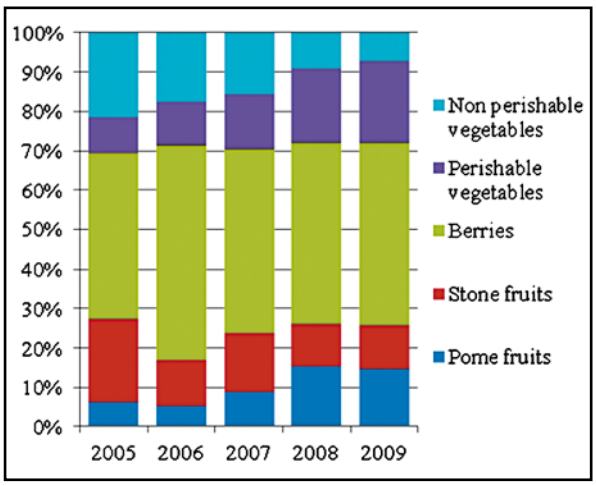


Graph 4.16: Average distribution of fruit and vegetable imports of different types – Bosnia and Herzegovina and selected countries (average 2005–2009)

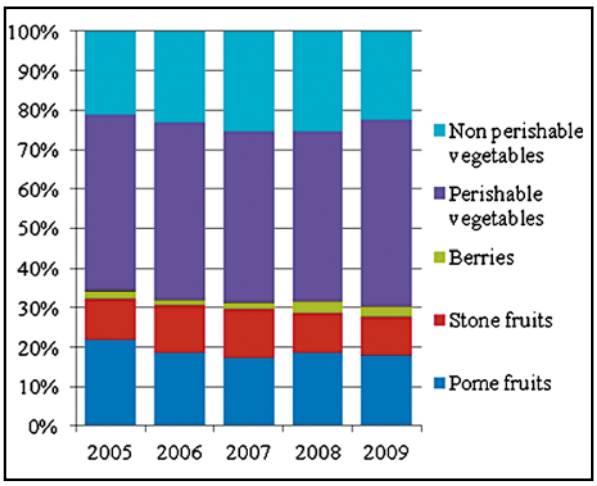


Source: COMTRADE database and Bosnia and Herzegovina statistics

Graph 4.17: Distribution of fruit and vegetable exports of different types – Bosnia and Herzegovina



Graph 4.18: Distribution of fruit and vegetable imports of different types – Bosnia and Herzegovina



Source: United Nations COMTRADE database and Bosnia and Herzegovina statistics

than Croatia, but several times less than Serbia. Bosnia and Herzegovina exports only 2 percent of the vegetables it produces, which is lower than both Serbia and Croatia.

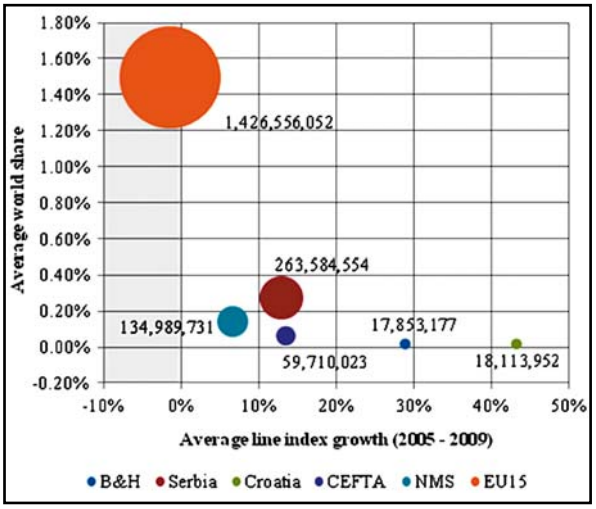
In terms of the distribution of exports of fruit and vegetables, trends in Bosnia and Herzegovina are no different from EU or CEFTA trends. About 70 percent of total imports of fruit and vegetables are vegetables with perishable vegetables prevailing (see Graph 4.16).

The increase of exported pome fruits share is noticeable compared to overall fruit and vegetable exports, although this is at the expense of a reduced export share of stone fruits. For vegetables, the export share of perishable vegetables has increased compared to non-perishable (see Graph 4.17).

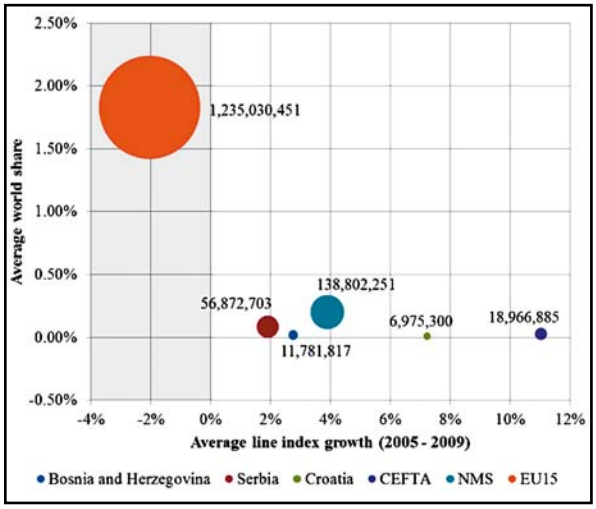
The distribution of fruit and vegetable exports has not changed significantly during the same period (see Graph 4.18).

Bosnia and Herzegovina has recently recorded a positive trend in export growth. The growth index almost reached 30 percent and only Croatia has a higher growth index. A positive trend is notable in other countries of the region and NMS countries, unlike the EU as a whole, which is around the world average (see Graph 4.19).

Graph 4.19: Fruit exports – Bosnia and Herzegovina and selected countries (in USD)



Graph 4.20: Vegetable exports – Bosnia and Herzegovina and selected countries (in USD)



Source: United Nations COMTRADE database and Bosnia and Herzegovina statistics

With regard to vegetables, the situation is different. Western Balkan countries and NMS countries have recorded a positive growth index, while the growth rate of the EU is far lower. The growth of vegetable exports for Bosnia and Herzegovina compared to world global figures is slightly higher than 2 percent, which is similar to the export growth rate of Serbia and NMS. Bosnia and Herzegovina exports more vegetables than Croatia, but Croatia has a higher growth rate (see Graph 4.20).

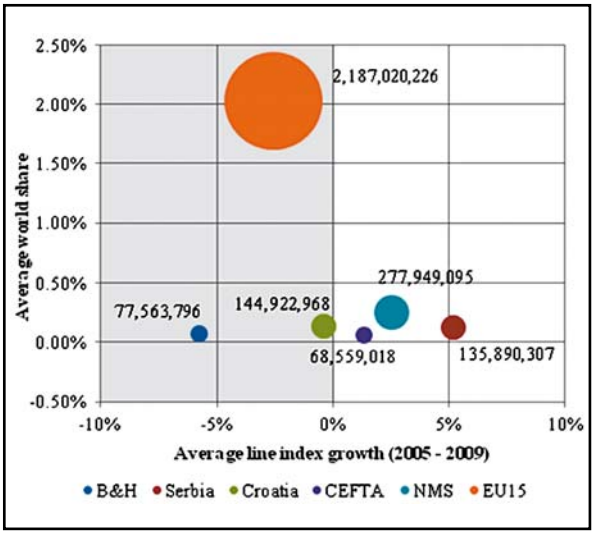
The positive aspect is that unlike other countries, Bosnia and Herzegovina has a lower growth in fruit imports than the world average. Only the EU and Croatia have similar import trends. The imported volumes of fruit in Bosnia and Herzegovina are similar to the average imports in CEFTA countries (see Graph 4.21).

The situation is similar with regard to the index of vegetable imports, except that export growth is more significant for other countries in the region and NMS. Bosnia and Herzegovina has negative import growth, as does the EU (see Graph 4.22).

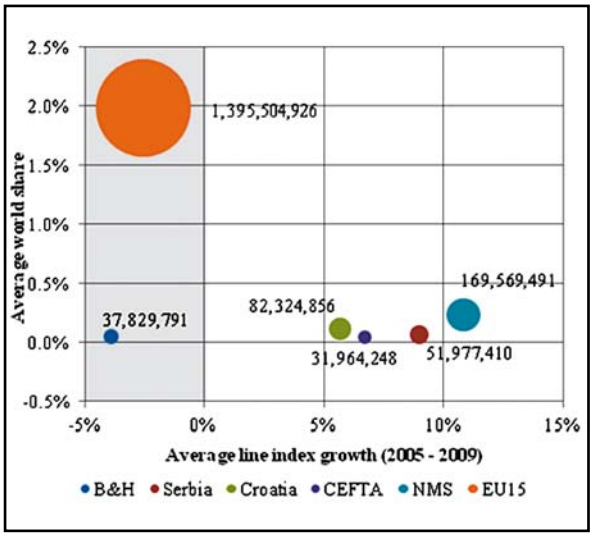
4.3 *Fruit and Vegetable Consumption*

Fruit and vegetables are essential for a balanced diet. The availability of affordable fruit and vegetable products on the market is therefore crucial. Quantitative data on fruit and vegetable intake in Bosnia and Herzegovina does not exist. In terms of expenditure, the 2007 Household Budget Survey[17] indicates that fruit and vegetables represent 7.4 percent and 9.5 percent of average household expenditure on foodstuffs respectively. In the section addressing fruit and vegetable prices, it is mentioned that prices of fruit and vegetables in Bosnia and Herzegovina are lower than in many other countries. However, if we combine average income and average prices, thus taking into account purchase power, fruit and vegetables can be considered relatively expensive, in particular for the lower socio-economic population groups. We can assume that this does not threaten the rural poor, who are likely to have easier access to fruit and vegetable products, but some concerns can be raised for the diet of the urban population.

Graph 4.21: Fruit imports – Bosnia and Herzegovina and selected countries (in USD)



Graph 4.22: Vegetable imports – Bosnia and Herzegovina and selected countries (in USD)



Source: United Nations COMTRADE database and Bosnia and Herzegovina statistics

[17] *Sample: 9,274 households in total, 5,661 in the Federation of Bosnia and Herzegovina, 3,135 in Republika Srpska and 478 in the Brčko District of Bosnia and Herzegovina.*

4.3.1 Fruit consumption

A recent survey measured fruit consumption in Bosnia and Herzegovina.[18] Consumers were asked "How often do you consume fruit: A portion of fruit is approximately 80–100 grams, for example an apple, two spoons of fruit salad or 1 glass of freshly squeezed juice." The results show that two-thirds of people in Bosnia and Herzegovina consume fruit at least once a day (see Graph 4.23).

The consumer perception of fruit is very positive for the vast majority of respondents (85 percent stated that "fruit is very good" and 9 percent qualifying fruit as good; 82 percent and 12 percent stated respectively that fruit is very pleasant and pleasant). The people interviewed within the framework of this survey stated they would eat fruit at least once more per day if it were more accessible. 39 percent of consumers claimed that price is a major problem and an additional 30 percent express dissatisfaction about the price of fruit.

Unlike western European consumers and like the rest of the region, consumers in Bosnia and Herzegovina (87 percent) do not care about convenience (ready to eat, fresh cut fruit and vegetables).

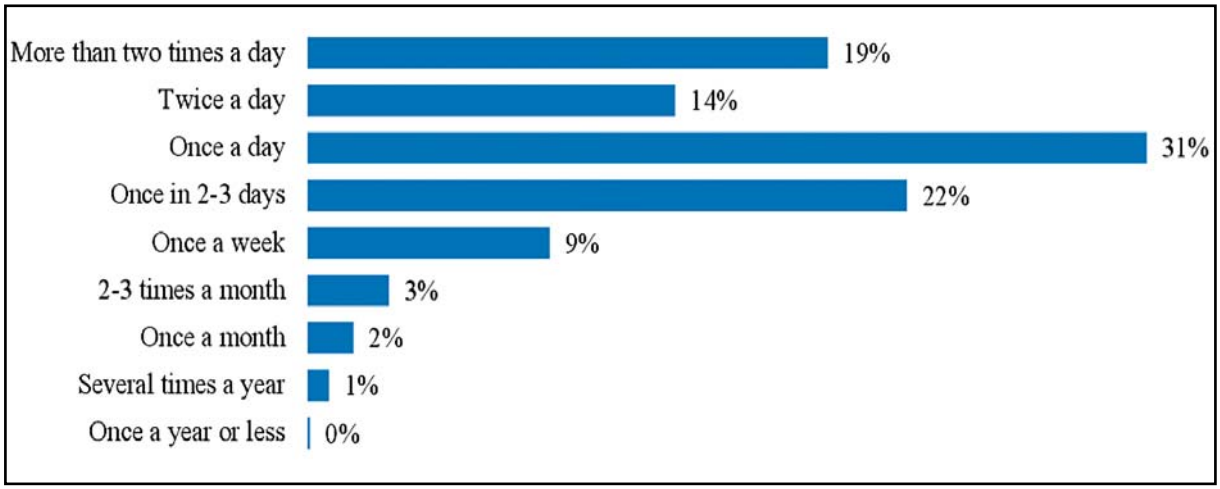
4.3.2 Vegetable consumption

Vegetable consumption in Bosnia and Herzegovina is still characterized by high seasonality with high consumption of fresh perishable vegetables between May and September and high consumption of nonperishable vegetables and *zimnice* (preserves, often pickled, but also fermented or caviar) during the winter months. Consumption periods are slightly extended thanks to the import of tomatoes and other fresh vegetables from neighbouring countries and Turkey.

4.3.3 Place of purchase

According to the 2007 Household Budget Survey, the main place of purchase for fruit and vegetables is the traditional "next-to-home shop" (where the consumer is commonly called *komsjia*, i.e. neighbour). One of the possible reasons is the convenience due to proximity of this type of outlet. Compared to other food items (bread, meat, fish), consumers still purchase their fruit and vegetables on the open market. This is particularly the case in urban areas, where fruit and vegetables are more often purchased in open markets (38.9 percent and 39.6 percent) as compared to households

Graph 4.23: Fruit consumption in Bosnia and Herzegovina (sample of 517 consumers)



Source: Jasna Milosevic (IPSOS) , Hana Baronjan (IPSOS), M. Cvetkovic , Banja Luka, Consumer quantitative survey –– Bosnia and Herzegovina, FOCUS BALKANS project, 2010

[18] *FOCUS BALKANS project, 2010.*

Table 4.1: Households main purchasing place (2007)

Purchased item	Traditional shop	Department store	Super/ Hypermarket	Open market	Kiosk (excluding kiosks in open-markets)	Other
Vegetables	59.6	0.9	8.1	27.1	0.1	4.1
Fruit	62.5	0.9	7.8	26.4	0.1	2.2

Source: Agency for Statistics of Bosnia and Herzegovina (BHAS), the Federal Office of Statistics (FOS) and the Republika Srpska Institute for Statistics (RSIS), 2007. Bosnia and Herzegovina Household Budget Survey (HBS), 2007

in rural/semi-urban areas (17.5 percent and 18.3 percent). Large retailers still have a reduced market share, though this might have slightly increased over the past four years (see Table 4.1).

4.3.4 Self-consumption levels

Surprisingly, the Household Budget Survey (HBS), 2007, observed that households that produce fruit and vegetables themselves have a much lower consumption in comparison to households which purchase them. A possible reason is that the producing households limit their consumption at the period of harvest, while other consumers keep buying these products over a longer period. Apples are the most frequent own produced fruit with 7.3 percent of households which produce their own apples, followed by pear production (2.7 percent), plums (2.4 percent) and grapes (1.7 percent). The level of self-consumption is much higher for vegetables with 32.2 percent of households producing the potatoes they consume, while this value is 25.8 percent for onions, 20.1 percent for beans and 7.8 percent for tomatoes.

5. Governmental policies for the sector

5.1 Overview of policy framework in Bosnia and Herzegovina

In Bosnia and Herzegovina, the complex and sometimes dysfunctional institutional framework results in numerous strategic and operational programmes requiring some clarifications. The analysis of this framework shows that support policy measures are mainly the competence of the three entities and to a certain extent of the cantons in the Federation of Bosnia and Herzegovina. Regarding other policy issues, the State of Bosnia and Herzegovina plays mainly a harmonization and coordination role for a number of issues.

Due to the difficulty in establishing effective mechanisms to assure this role, a harmonization process has been initiated at State level with the Bosnia and Herzegovina Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). Operational programmes for Bosnia and Herzegovina, the Federation of Bosnia and Herzegovina, Republika Srpska and Brčko District have been prepared and measures defined along the lines of the priorities identified by this umbrella document. The proposed actions of the Strategic Plan are in line with the Bosnia and Herzegovina Mid-Term Development Strategy (2004–2007).

In addition to these documents, other parallel strategic documents define the policy framework in the different entities. The existence of various documents does complicate policy analysis, even though in essence the different documents are generally similar. The Rural Development Strategic Plan of the Republika Srpska, the Federation of Bosnia and Herzegovina Mid-term Strategy for Agricultural Sector Development (2006–2010) or the Brčko District Strategy for Development of Agriculture, Food and Rural Development (2009–2013) are part of them.

Supplementary to these key documents related to the agriculture and rural development sector, others related to socio-economic or environmental policies complete the overall framework influencing the sector.

5.2 Strategies regarding agriculture and the fruit and vegetable sector at State and entity levels

5.2.1 Rural Development and Agriculture Development Strategies

At **State level**, the Strategic Plan of Bosnia and Herzegovina for the Harmonization of Agriculture, Food and Rural Development was adopted in January 2009, together with the Harmonization Operational programme for the period 2008–2011 with the objective of improving the competitiveness of the agricultural and food processing sectors and harmonizing and implementing rural development measures throughout the country.

This plan intended to ensure that all preconditions would be fulfilled for the implementation of pre-IPARD actions, commencing in 2008, and to pave the way for receipt of EU rural development funds in 2011. Furthermore, the Agriculture, Food and Rural Development (AFRD) Harmonization Strategic Plan provides a framework that allows sector reforms in order to strengthen the coordination and management of the sector, enhance the role and focus of executive agencies responsible for food safety, veterinary and phytosanitary issues and ensure gradual compliance with international standards.

The general objectives for Bosnia and Herzegovina Agriculture, Food and Rural Development are defined in the Bosnia and Herzegovina Law on Agriculture, Food and Rural Development. They are longer term objectives, intended to provide the policy framework within which all Bosnia and Herzegovina sector policies and measures will be developed. The objectives are to:

a. Promote the development of a diverse, sustainable, competitive and dynamic agriculture, forestry and food sector;
b. Ensure harmonization and integration of the sector in the EU and world market place;
c. Encourage the diversification of economic activity, improve employment and income opportunities and the quality of life in rural areas;
d. Ensure access to, and availability of, high quality, affordable and safe food;
e. Ensure the rational use and protection of natural resources and biodiversity.

To achieve the above stated AFRD Harmonization Strategic Plan objectives, implementation focuses on six Priority Areas:

1. Priority Area: Establish the required functional institutional capacity, coordination and implementation mechanisms, at all levels
2. Priority Area: Enhance the quality and safety of domestic products with a competitive advantage in production, processing and trade
3. Priority Area: Support primary production with direct farm support measures to gradually align between entities and with EU mechanisms
4. Priority Area: Increase competitiveness of the agro-food sector of Bosnia and Herzegovina through indirect support measures for production, processing and trade
5. Priority Area: Protect the rural environment of Bosnia and Herzegovina through support for agroenvironmental programmes
6. Priority Area: Diversify rural activities and improve the quality of life in rural areas

All State and entity strategic and operational plans, strategies and measures are based on these priority areas (see Table 5.1).

At Federation of Bosnia and Herzegovina level, the Mid-Term Strategy for Agricultural Sector Development (2006–2010) was adopted in 2007 together with its Action Plan. Eleven specific goals and priorities are identified in the Strategy. All of them can potentially impact the fruit and vegetable sector.

In addition to the Republika Srpska Agriculture, Food and Rural Development Operational Programme (2008–2010) that

Table 5.1: Priorities of strategies developed at entity level

Republika Srpska	Brčko District	Federation of Bosnia and Herzegovina
Rural Development Strategic Plan (2009–2015)	**Strategy for Development of Agriculture, Food and Rural Development (20092013)**	**Mid-Term Strategy for Agricultural Sector Development (20062010)**
	Improve legal framework for agriculture of Brčko District Adapt the agrarian policy to good European practices and the real needs of the sector	Legal establishment of agriculture institutions and clear definition of farms and other subjects in the agricultural sector. Establish unified management of agriculture and rural development at state level. Establish a single economic space and support the agriculture products marketed throughout Bosnia and Herzegovina.
		Continuation with rehabilitation of the sector following the consequences of the war. Clear up mine fields and restore the land to its previous purpose. Support returns and improve life quality in rural areas.
Farm investments	Intensify crop and animal production Rehabilitation of existing and construction of new pastures roads	Establishment of sustainable development of agriculture and food processing industry profitability and competitiveness Preparation for membership of the World Trade Organization (WTO) and the EU. Elaborate support programmes and preparation for implementation of the Payment Agency for distribution of EU funds. Ensure introduction of agricultural products on international markets under fair conditions Support the export of agricultural and processed products

Republika Srpska	Brčko District	Federation of Bosnia and Herzegovina
Rural Development Strategic Plan (2009–2015)	**Strategy for Development of Agriculture, Food and Rural Development (20092013)**	**Mid-Term Strategy for Agricultural Sector Development (20062010)**
Investment in processing and marketing of agricultural products	Support revitalization of the food processing industry	Build new facilities for food processing
	Support modernization and introduction of European and world standards in agricultural production and processing	Establishment and accreditation of reference laboratories. Enable standardization and certification of agricultural products, and establish a system of guarantees and quality management
Support to organizations of agricultural producers and private forest owners	Develop vertical and horizontal integration with strengthening of market infrastructure	Strengthen cooperatives, enterprises, and other producers' organizations
Improvement of human resources in rural areas	Improve the professional education and skills of producers in agriculture and the food processing industry Support existing and establish new institutions to support agriculture	
Finance support to rural areas	Develop financial resources for the agricultural sector Increase financial support to the agricultural sector	
Sustainable management of natural resources in rural areas	Support to preservation of the environment through raising awareness of local population Develop organic production, and apply principles of preservation of the environment Improvement of the quality of the sewage system in Brčko District area Construction of system for carrying away waste from rural areas Improve use and protection of genetic resources in agriculture	Harmonization of protection of animals and plants Support organic and environmentally friendly production Protect and rationalizes the use of natural resources. Support to sustainable economic use of agriculture and forestland and waters.
Diversification of nonagricultural and agricultural activities in rural areas	Support to development of nonconventional agricultural production Support to the development of complementary activities on farms	
Establishment of micro, and small and medium enterprises in rural areas	Support to the establishment of Small and Medium Enterprises (SMEs) in rural areas	
Improvement and development of rural tourism services	Support to the development of agrotourism	Carry out external media campaigns to attract tourists to visit Bosnia and Herzegovina
Support to local rural development initiatives	Establishment of Local Action Groups (LAGs) and development of capacities for initiation of rural development Creation of movable social infrastructure in the rural area of Brčko District	
		Supply a sufficient quantity of quality food to consumers at affordable prices
		Development of the agricultural market and support lease of agricultural land

has its equivalent in the Federation of Bosnia and Herzegovina and Brčko District, the Republika Srpska is currently implementing the Rural Development Strategic Plan (2009–2015) adopted in 2009. The Plan outlines three strategic objectives:

1. Improvement of competitiveness in agriculture and forestry;
2. Preservation of nature and rational management of natural resources;
3. Improvement of life conditions and introduction of diversification in income in the rural economy.

The document indicates that "Choosing these strategic objectives for Republika Srpska rural development is fully in compliance with European Commission Regulation No. 1698/2005 regulating support for rural development by the European Agricultural Fund for Rural Development (EAFRD) for EU Member States", showing the intention of the Republika Srpska to clearly insert its policy within the EU framework. The three strategic objectives are further divided into 16 specific objectives. From these, 10 can directly benefit the fruit and vegetable sector.

Similarly to Republika Srpska, **Brčko District** has developed the Strategy for Development of Agriculture, Food and Rural Development (2009–2013) and Action Plan, which are currently under adoption procedure.

5.2.2 Other Sector and Cross-cutting Policies

Social and economic policies

At State level, the Draft Bosnia and Herzegovina Development Strategy (2008–2013) and Social Inclusion Strategy have been completed. With regard to rural development, the priorities are identical to the priorities defined in the Strategic Plan of Bosnia and Herzegovina for the Harmonization of Agriculture, Food and Rural Development. The Bosnia and Herzegovina Directorate for Economic Planning (body of the Bosnia and Herzegovina Council of Ministers) is responsible for the coordination of development of the Strategies. Action plans for Bosnia and Herzegovina, entities and Brčko District levels have been developed as well. Both strategies have been sent for adoption procedure.

The Revised Bosnia and Herzegovina Mid-Term Development Strategy (2004–2007) makes reference to the strengthening of institutions in the agricultural sector and for supporting the effectiveness of existing subsidy systems as well as redirection of support measures in line with agriculture and rural development priorities. This has resulted in sector strategies at the entity level, outlining plans for specific support for rural development, with increased funding in 2007 at the entity level.

Environment

At **State level**, the environment and water sectors are not expressly mentioned in the Constitution. Neither are they mentioned in the competencies of the State of Bosnia and Herzegovina nor in those of the Entities. However, according to Article III.3c, "all governmental functions and powers not expressly assigned by the institution to the institutions of Bosnia and Herzegovina shall be those of the Entities".

However, the Law on the Ministries and Other Administrative Bodies of Bosnia and Herzegovina (Official Gazette Bosnia and Herzegovina 5/03, 26/04), enacted in March 2003, assigns responsibilities for environmental protection to the Ministry of Foreign Trade and Economic Relations. Specifically, this includes responsibility for operations and tasks within the jurisdiction of Bosnia and Herzegovina relating to the definition of policy, fundamental principles, and coordination of activities and harmonizing the plans of the entities' governmental bodies and institutions at the international level.

Adopted in the Republika Srpska and Federation of Bosnia and Herzegovina in early 2003, the National Environmental Action Plan (NEAP) identified eight priorities. However, in the absence of a proper action plan and clearly

defined responsibilities for implementation, the NEAP gave general directions without significant impacts on policies and concrete measures.

The Poverty Reduction Strategy Paper (Mid-Term Development Strategy of Bosnia and Herzegovina 2004–2007) adopted in early 2004 addresses economic and social issues, which also cover the environment and water, following the priorities listed by NEAP. An overall strategy for the environmental sector is yet to be formulated.

In **Republika Srpska**, the law will regulate the protection, use, improvement and management of public goods, as well as payment of charges and taxes for their use (Art. 59). The Republika Srpska protects and supports the reasonable use of natural resources in order to preserve and improve the quality of life and the environment.

In Republika Srpska, the Ministry of Spatial Planning, Civil Engineering and Ecology is responsible for policy aspects related to overall environmental protection, management planning and monitoring. The Ministry of Agriculture, Forestry and Water Management is responsible for water management policy, users permits and setting of standards and regulations; as well as maintaining compliance with laws and regulations through licensing and inspections.

In the **Federation of Bosnia and Herzegovina**, the Federal Ministry of Physical Planning and Environment is responsible for the preparation of environmental policy and strategy related documents, quality standards for air, water, and the soil, environmental monitoring as well as the supervision of relevant institutions from the environment sector. The Ministry of Agriculture, Water Management and Forestry (MAWMF) is responsible for water strategy and policy, the issue of approvals and permits, setting of standards and regulations; and the maintaining of compliance with laws and regulations through licensing and inspections. The cantons' environmental authorities are the respective ministries of civil engineering, physical planning and environmental protection and the ministries of agriculture, water management and forestry.

The **Brčko District** Government consists of ten departments. Dealing with environmental issues is one of the functions and powers of the District. The Department of Utilities has a logistics unit, with one environmental specialist, directly responsible for environmental protection.

There are two institutions responsible for **inter-entity coordination** in the field of environment and water management, namely the Inter-entity Steering Committee for the Environment and the Inter-entity Advisory Commission for the Coordination of Water Management. Both bodies are formed on a parity basis and are under the direct control of their respective governments. The Bosnia and Herzegovina institutions do not have any responsibility or influence on their work. The Inter-entity Steering Committee for the Environment was established in 1998 specifically to deal with environmental issues delegated to it by the entities. The Inter-entity Advisory Commission for the Coordination of Water Management is responsible for cooperation on all water management issues among the relevant ministries of both entities.

The Poverty Reduction Strategy Paper (PRSP) and NEAP are somewhat vague and do not concretely address actual needs. In addition, the existing policy and strategy documents are not endorsed and integrated by the ministries responsible for sectoral policies. Implementation of environmental policies will not be possible without integrating environmental concerns into sectoral policies. This principle, fully recognized and endorsed within the EU through the instruments of the Cardiff process, is still missing in Bosnia and Herzegovina. The use and implementation of the two major adopted documents is little encouragement. Not many cantons are aware of the PRSP, and just slightly more have heard of the NEAP. Municipalities do not use these documents at all in their work and the cantons only use them to a negligible degree.

To sum up, fragmented institutions, inconsistent legal and organizational frameworks, with limited mandates, insufficient staffing, and lack of modern inspection equipment and low fines weaken the legislative reforms, as well as enforcement and monitoring of any standards and regulations.

5.3 Operational programmes and measures in support of the agriculture and fruit and vegetable sectors

5.3.1 Programming support

At State level, most of the actions foreseen in the AFRD Harmonization Strategic Plan are institutions and legal framework related. This includes phytosanitary priorities, in particular systems for disease protection in plants, ensuring that people have access to safe food (of plant origin) and aligning laws and practices for plant production, protection and consumption with international standards as required by the WTO and the EU.

In the field of direct support for primary production, the document highlights the importance of a coordinated shift from different complex schemes based on market support to common and harmonized direct payment schemes. In this perspective, the envisaged role of the State is primarily to create the conditions to enable these schemes, such as the establishment of farmer registries and payment agencies.

At entity level, the direct support to the agricultural sector is in theory based on the Agriculture, Food and Rural Development Operational Programmes (2008–2010) developed for the Federation of Bosnia and Herzegovina, Brčko District and Republika Srpska on the basis of the Strategic Plan of Bosnia and Herzegovina for the Harmonization of Agriculture, Food and Rural Development.

While the priority areas are common to all entities, the specificities of each of them have been taken into account especially in terms of improving the functioning, coordination and implementation mechanisms of institutions.

The measures also reveal the need for enhanced coordination between entities and with Bosnia and Herzegovina State institutions on issues such as risk monitoring, market standards and monitoring of hygiene and quality of food.

In **Republika Srpska,** the Rural Development Strategic Plan (2009–2015) defines a number of measures to achieve the objectives outlined in the previous section. The measures are being further divided into a large number of submeasures addressing a wide number of rural development issues. The most relevant measures for the fruit and vegetable sectors are related to investments in farm mechanization, investment in plant production, investment in processing and marketing of agricultural products (this includes the adoption of food safety and quality standards). The budget for these investment measures amounts to BAM 290 million over a period of six years. The targeted beneficiaries of these measures are the 60,000 farmers recorded in the farm registry. In addition, support for rural financing measures will increase the financial resources available for agricultural entrepreneurs (see Table 5.2).

The two documents reveal continuity in the investment priorities that address the need for:

- Improving orchard productivity
- Increasing the use of crops under cover
- Securing fruit and vegetable crops against weather hazards
- Improving post-harvest standards
- Upgrading equipment and irrigation

In addition, other measures intend to support organizations of agricultural producers and land consolidation incentives, development of human resources in rural areas (training of trainers, information, extension services, a Market Information System (MIS), specific measures for young farmers). A number of agroenvironmental measures should also improve producers' practices. In conclusion, fruit and vegetable producers

Table 5.2: Comparison between the investment support measures of the Agriculture, Food and Rural Development Operational Programme (2008–2010) and the Rural Development Strategy (20092015) of the Republika Srpska

Republika Srpska Agriculture, Food and Rural Development Operational Programme (2008–2010)	Republika Srpska Rural Development Strategy 2009–2015
Plantation or renovation of permanent orchards and vineyards	Supporting investment in establishing new orchards and vineyards Supporting renovation and reconstruction of existing and construction of new fruit and vegetable processing facilities
Construction or renovation of protected production facilities (permanent and temporary plastic tunnels, greenhouses, etc.)	Supporting construction of greenhouses/plastic greenhouses and procurement of equipment for plastic greenhouse/greenhouse production, including use of thermal waters
Equipment for fruit and vegetable protection (e.g. Hail protection)	Supporting anti-hail protection programmes and other natural disaster prevention programmes (building dykes, protection belts, weather stations, etc.)
Harvesting and post-harvest equipment, storage rooms	Included in other measures
New constructions and renovations of sorting, grading and packing rooms compliant with domestic standards	Investments in processing and marketing of agricultural (and forestry) products to restructure those activities and upgrade to Community Standards
Purchase of agricultural machinery	Supporting procurement of agricultural machinery on farms
Irrigation systems and equipment	Supporting farmland regulation activities (draining, irrigation, calcification)
Purchase of specialized technological equipment including Information Technology (IT) and software	No measures

might also benefit from measures favouring diversification (SME development, on-farm processing, support to female entrepreneurs, links with rural tourism, LEADER, and similar initiatives) (see Table 5.3).

In summary, measures of the Rural Development Strategy do not differ in essence from those of the Agriculture, Food and Rural Development Operational Programme (2008–2010), as most of them have their equivalent in each of the two documents.

However, even though the Rural Development Strategy is more concrete in terms of proposed measures and identified sources of funding, the actual support to agriculture is oriented towards market support with only marginal resources allocated to competiveness and standards upgrade.

In the Federation of Bosnia and Herzegovina, measures envisaged by the Action Plan are as follows:

1. Define the existing situation of rural areas (economic, infrastructure and demographic specifics);
2. Adopt the Rural Development Programme;
3. Define economically less favourable areas (remote areas and less favourable areas) and set out support measures;
4. Establish credit and micro-financing systems while giving special allowances for development of agriculture, food industry and other forms of employment for the rural population outside of agriculture;
5. Develop and apply a system of education for the rural population and establish advisory and extension services to implement these activities;
6. Develop a Strategy for setting up gender equality through strengthening the role of women in rural society;
7. Establish a system of support to female entrepreneurs;
8. Develop a Strategy for women and children's health preservation, and promotion of their education;
9. Develop a Programme for preservation and sustainable utilization of autochthonic fruit resources;

Table 5.3: Comparison between investment support and other measures for alignment with EU standards measures of the Agriculture, Food and Rural Development Operational Programme (2008–2010) and the Rural Development Strategy (2009–2015) of the Republika Srpska

Agriculture, Food and Rural Development Operational Programme (2008–2010)	Rural Development Strategy (2009–2015) of Republika Srpska
Purchase of harvesting and other machinery, storage facilities, packaging equipment, processing facilities with equipment or shared stables, etc. For servicing more users and improving market efficiency (for Producer Groups).	Supporting joint procurement of specialized agricultural machinery housing and servicing Supporting work and functioning of machinery rings
	Supporting construction of eaves for agricultural machinery
	Arranging an inventory for agricultural machinery in existing machinery rings
Laboratories and equipment to improve control of product quality and hygiene	
Equipment and facilities for storage of raw and processed product	
Costs related to the administrative operations of producer groups	Supporting establishment of business activities between producers, processors and distributors Supporting organization and work of agricultural production and processing clusters
Purchase of machinery and equipment for the upgrading of existing processing lines or the development of new processing lines (for Producer Groups) Establishment of food safety systems (HACCP, good manufacturing practices (GMP) and good hygiene practices (GHP)) Construction or renovation of buildings and installations Construction or renovation of installations to attain the prescribed hygiene and veterinary standards	Supporting introduction of food quality and safety systems in processing facilities
Certification for production of Halal and Kosher food, registering Protected Designation of Origin (PDO), Protected Geographic Indication (PGI) or Traditional Speciality Guaranteed (TSG), organic etc. Specialized technological equipment including IT and software	Supporting certification of food production technology in line with food quality and safety system standards
Conversion Payments for Organic Farming (per head and per ha) Costs related to certification Costs related to pre-qualification training	Financing activities on raising producers' and consumers' awareness of agricultural product quality Supporting introduction of Good Agricultural Practice on Republika Srpska farms Certifying farms according to Good Agricultural Practice principles
Marketing costs, training costs, consulting and advisory costs and other operational costs	Introducing compulsory trainings for farmers in controlled and proper use of pesticides, manure and artificial fertilizers Co-financing the process of transition to organic and whole-grain production, including the certification process
Purchase of harvesting and other machinery, storage facilities, packaging equipment, processing facilities with equipment or shared stables, etc. For servicing more users and improving market efficiency.	Supporting construction of facilities and procurement of equipment required for collection of agricultural products
No measure	Promoting direct sale of traditional agricultural products on farms
No measure	Organizing local fairs and exhibitions of agricultural and home processed products

10. Define a set of traditional products with the potential to become products with protected origin, craft products and souvenirs;
11. Develop a Programme for the development of new products (from the list of traditional products);
12. Intensify the implementation of the prescribed measures for protection and rescue from natural and other disasters.

The Government of Bosnia and Herzegovina plans to include activities related to the establishment of a Payment Agency and IPARD.

Brčko District is the only entity that has shifted towards a single area payment (SAP) that is the objective for the sector during the accession process. This is made possible by the relatively easy task of monitoring and control in an entity that has only 2,500 registered farmers. In addition, the conditions for eligibility are strict enough to limit to a very small number the producers benefiting from the very sizeable payments (see Table 5.4).

5.3.2 Implementation of the support measures

Policy support is only one part of the overall agricultural policy, as the agricultural policy falls under economic policies. So they should not be viewed as isolated, but as part of the whole system. Defining adequate policy support, in these circumstances, is one of the most important factors that determines to what extent and when the set objectives will be achieved. Bearing in mind that Bosnia and Herzegovina has a complicated organizational structure, policy formulation structure, implementation and control system, it is necessary to constantly explore, analyse and challenge support policies in agriculture.

The budget allocated to support to agriculture in 2010 was BAM 55 million in the Federation of Bosnia and Herzegovina, BAM 80 million in the Republika Srpska and BAM 3.6 million in Brčko district. This is in line with the financial capacity of transition countries such as Bosnia and Herzegovina, where other sectors are not able to provide sufficient funds to finance agriculture and rural development. That is why grants should be as economically efficient as possible, and in accordance with social needs and policy objectives.

The current system of support in Republika Srpska and the Federation Bosnia and Herzegovina has many elements of the old support system based on price support, but also many elements of the EU measures. Support in Brčko district is closer to the EU approach to supporting agriculture due to the established eligibility criteria for receiving area based payments, but this does not mean that in the current circumstances, this is the best option for Bosnia and Herzegovina. Although single entities budgets for support measures differ, the level of support, beneficiary selection, development of the registers and monitoring are very similar in the three entities and consist of three types of support: market, investment and institutional. In addition to the three main types of support, credit support and support to the crop insurance scheme can also play a major role in improving the position of fruit and vegetable sector stakeholders.

In the Federation of Bosnia and Herzegovina, each budget year, the Government issues a single decision on the subsidy policy for that specific year, including purpose, subsidy amounts, criteria and implementation modalities. Allocation for plant and other sectors production is performed according to a special allocation plan by canton. In 2007, in

Table 5.4: Area payments for fruit and vegetable crops in Brčko District

Purpose of the subsidy	Open-field vegetable	Apple, Pear	Plum, Cherry, Peach, Apricot	Nuts	Berries	Fruit and vegetable PGH	Establishment of new PGH
BAM per ha	2,000	2,500	1,200	1500	5,000	15,000	60,000

Source: key informant's interviews

order to avoid overlapping in terms of parallel funding from both federal and cantonal level, an agreement was reached on the types of crops to be supported from the Federation of Bosnia and Herzegovina budget, leaving the Cantons the freedom to support other crops from their own budgets. In 2007, existing support was reinforced by support to rural development. That was meant to avoid duplication of support for certain purposes and/or beneficiaries, i.e. to enable for this support to also be used by those agricultural production actors who do not qualify for support according to federal regulations on subsidies.

There is an obvious harmonization effort with regard to the regulation and implementation of support measures at the federal and at the cantonal level, resulting in a wider scope of funds and a larger number of users of the support measures. One of the objectives of the 2007 decision was that provisions of the Programme excluded the possibility of use of support from both federal and cantonal levels at the same time for the same production, which was not the case in earlier periods. Still, this multilevel and parallel set up induces an unavoidable complexity of the system.

At the same time this gives the Cantons the possibility to define particular measures tailored to local specific needs and potential. This can be illustrated by the example of Tuzla Canton, where cantonal measures also benefit semi-subsistence farmers, while primary agricultural production support from the federal level focuses exclusively on commercial farmers. One of the objectives of such measures is to boost these types of producers anticipating that some of them might migrate to the group of commercial farmers by increasing progressively their production surpluses to be marketed.

Market support for fruit and vegetables

Market support measures that directly affect the market are usually the most common measures used by governments in support of agricultural production and farmers. Direct price support is one of the ways in which markets could be supported. Due to low economic efficiency and pressure from the WTO, the use of these measures in many countries has been gradually replaced by measures of rural development support, direct income support, agro-environmental measures and others that are more effective, socially better accepted and in line with WTO rules. In Bosnia and Herzegovina this is still not the case (apart from in Brčko District). In 2010, 9.2 percent of the Federation of Bosnia and Herzegovina total support measures budget was for price support, with a 2.3 percent share for the vegetable sector. In Republika Srpska 2.8 percent of the total support measures are used for price support measures with 1.9 percent for the vegetable sector.

Although premiums are directly addressed to the producers, the main beneficiaries of premium pricing are the wholesale buyers, because *de facto* the amount of premiums reduces the price paid to the producers. A positive impact of these measures is the cheaper raw material supplying the processing sector that is underdeveloped in Bosnia and Herzegovina.

Other market support measures that impact the fruit and vegetable sector are input subsidies, prohibited by WTO rules, but these are very effective when competition among input suppliers exists. Republika Srpska supports their farmers with BAM 7.2 million that represent 9 percent of the overall budget.

Rural development and investments support for fruit and vegetables

The process of Bosnia and Herzegovina Rural Policy formulation is ongoing, following the orientation and principles of EU rural policy. However, there are major differences in the capabilities and readiness for funding of rural policy between the EU and Bosnia and Herzegovina. Fruit and vegetable farmers in Bosnia and Herzegovina, regardless of the entity, have the possibility to access different types of investment support for setting up new orchards, greenhouses, storage facilities, irrigation equipment, etc. Fruit and

vegetable cooperatives have the possibility of receiving money for their activities. In 2010, rural development support represented half of Republika Srpska's overall support and 28 percent for the Federation of Bosnia and Herzegovina.

The process of prioritizing measures is not always transparent and coherent. In addition, the implementation of the different measures must be drastically improved. The budget for each measure should be known; controls at farm level must be established and eligibility criteria of beneficiaries should be made transparent.

Currently, users do not have sufficient incentives for investment due to uncertainties about the terms of payment of the support measures. In addition, funds dissemination and a large number of small investments make it difficult to monitor the use of resources.

Currently rural development support is implemented in such a way that all farmers collect receipts for eligible investments and at the end of year submit them for approval. The percentage level for support is calculated based on the available money and on the number of applications. Consequently, farmers do not know what percentage of grants will be allocated for the year. Furthermore, it is not assured that they are beneficiaries at all. Therefore, measures must be planned for several years and changes introduced two to three years after the decisions are made.

Support for adoption of standards (GlobalGAP, Organic, IPM, Geographic Indication (GI), and PDO), in both primary and processing industries is marginal and should be increased and promoted.

Institutional support measures

The absolute priority when budgeting resources should be support to institutions that provide certain services to agriculture such as: the Ministry with its administrations, the Agency for Payment, the advisory service, the National Laboratory, capacity development of policy-makers, procedures, systems, food safety, market information system, quality standards, an integrated border management, registry of farms and FADN. These are all functions that need to be developed and enforced by an effective system of direct support to farmers.

Additionally, nowadays promotion and information are powerful tools. The private sector constantly promotes their products, but the state and local communities should also participate in the promotion, of certain types of products for collective benefit. In that sense with regard to fruits and vegetables, promotion on the domestic market could be linked to public health policies. Regions could promote goods and services baskets to promote the products and the regions.

Recommendation

Bearing in mind that the fruit and vegetable sector was well represented in the overall support scheme and that there are variations in the support measures that already cover almost every segment of the production, (price support, investment support, insurance, etc.), a set of specific recommendations are limited and comprise:

- Emphasis should be placed on major investments (storage capacities, processing capacity) that are expected to have a major impact throughout the supply chain. These have to be given special attention and are considered "national projects".
- The existing insurance support scheme needs to be improved so as to be more affordable for fruit and vegetable farmers. Consideration should be given to the establishment of a special scheme for fruit and vegetable farmers due to the high investment and risk.

Support measures focus should be:

- Support to rural development and investments
- Improvement of farm structure
- Development of land markets
- Development of support institutions
- Providing a minimum of social protection through the creation of income support measures separated from production for the most vulnerable groups of producers

5.4 Institutional support

5.4.1 Research and Development

All research and development (R&D) in Bosnia and Herzegovina is publicly funded. There is no history of private sector funding and no consultative mechanisms allowing industry views to be taken into account in formulating overall or sector priorities for R&D. Funding responsibility lies with the entity ministries responsible for education and with the institutes responsible or able to undertaken R&D. Funding from the budgets of the entity Ministries of Agriculture has virtually ceased. The absence of an overall national strategy and policy for R&D, coupled with the influence exerted by senior staff of the larger institutes, results in an *ad hoc* selection of the few projects that are undertaken. Overall public expenditure on R&D is well below average regional and EU levels.

Table 5.5: Research institutes in agriculture and related subjects

Institute for Agropedology, Federation of Bosnia and Herzegovina, Sarajevo	Main focus: development of geographic information systems (GIS) (Federation of Bosnia and Herzegovina) and development of land quality monitoring systems, land quality controls and certification (laboratories), extension in the area on how to manage land and crops (fertilization), environmental impact assessments.	small (up to 50 full-time employees)
Agricultural Institute, Federation of Bosnia and Herzegovina, Sarajevo	Main focus: to provide extension services to the clients (farmers cooperatives and farmers), to control new varieties of all plants for production of food, control of plant health status of plant material, virus free testing and sporadic food quality control. Research: development and application of new production techniques	small (up to 50 full-time employees)
Institute for Gene Technology, Sarajevo (FBH)	Main focus: to provide services connected with gene identification Research: to upgrade knowledge about genes	small (up to 50 full-time employees)
Agricultural Institute, Mostar	Main focus: Mediterranean fruit, wine and tobacco Control of the plant health status of plant material and selection services, milk control, keeping vineyard cadastre; laboratory for analysis and certification of wine and tobacco production	small (up to 50 full-time employees)
Agricultural Institute, Republika Srpska, Banja Luka	Main focus: to provide extension services for clients, to perform regulatory (control) functions in the area of plant health, seed quality, Genetically Modified Organisms (GMOs) Research: development of new varieties of different crops (mostly corn)	small (up to 50 full-time employees)
Republika Srpska Administration for Geodetic and Legal Property Issues, Banja Luka	Main focus: Focused on survey and development of digitalized land cadastre, making maps of the territory of the Republika Srpska, basic geodetic works and other data obtained by performing geodetic works, inspection, legal property rights, evidence on real estates and evidence of ownership. Within the Administration there are 62 regional offices situated in municipalities.	Large
Federation of Bosnia and Herzegovina Administration for Geodetic and Legal Property Issues, Sarajevo	Main focus: It is focused on surveying, establishing and restoring a real estate cadastre, cartography of F&B territory, keeping a technical archive on original plans and maps of basic geodetic operations and other data obtained through geodetic operations, records on real estates, inspection,	Small (up to 50 full-time employees)
Bosnia and Herzegovina Geodetic Institute	Main focus: This is the enterprise that was involved in the past more than any other institution in the activities related to the establishment of the new survey and real estate cadastre, and because of that has a great deal of data that can serve for the survey and real estate cadastre.	Large
Secondary vocational schools in all towns offering secondary education		

Source: MoFTER

As a result, hardly any R&D is undertaken in the fields of agriculture and rural development, especially in the critical areas of disease prevention and control, farm management, and in developing suitable production techniques and practices for smaller privately owned farms.

There are four scientific institutes of agriculture (two in each entity), three professional cantonal institutes of agriculture, the institute of genetic engineering and biotechnology and numerous veterinary stations. There are also 14 secondary schools of agriculture in Bosnia and Herzegovina, which educate agricultural technicians.

5.4.2 Education

Universities and equivalent institutes

Currently there are six university faculties of agriculture and two faculties of technology with food technology included. They award diplomas to engineers, as well as science degrees at master and doctoral (PhD) levels. Other faculties provide education and qualifications in related subjects such as environmental and biodiversity protection, etc. None of the degrees are fully recognized as equivalent to similar qualifications given by EU universities and institutes (see Annex 3).

Vocational education: Data on numbers of students taking part in vocational training is not available. The most recent information on institutional provision is contained in the report presented in 2007 by the University of Sarajevo's Central Eastern European Countries (CEEC) Agri Policy project team. According to this report, eight universities and similar institutions and one college provide vocational training. There are no private providers. The courses that are most in demand (based on a sample survey) are arable cropping, livestock production and business management.

Number of universities in other countries

France has 9 University institutes in the field of agriculture, Germany and the United Kingdom have 19 each and Switzerland has 1.

If we consider the GDP (total and agriculture) and the population of each country, it is clearly noticeable that the number of universities in Bosnia and Herzegovina is in relative terms very high.

5.4.3 Extension Services

Extension services are provided in the Republika Srpska by the Agency for Extension and Advisory Services (38 positions, no information on vacancies) and in the Federation of Bosnia and Herzegovina by the Cantonal Extension Services and those institutes that have a role in extension service provision (38 positions in total). In Brčko District, the Department of Agriculture and Rural Development (DARD) has three advisors. No information is available on the numbers of private companies providing farmers with extension advice either as 'free' advice linked to purchase of agricultural inputs or as paid for commercial service. In addition to government-funded extension services, Bosnia and Herzegovina universities and other tertiary and secondary institutes make significant contributions to direct education and training (extension services) for farmers, either on their own initiative or on the basis of engagement by producers' associations, cooperatives, and municipalities, international governmental and nongovernmental organizations. In addition, international institutions and organizations play a very important, if not the most important, role in transfer of knowledge, techniques and skills to farmers as well as in technical support in Bosnia and Herzegovina through implementation of various projects in the sphere of agricultural production development. For example, over the last three and a half years, the Linking Agriculture Producers to Market (LAMP) project funded by the United States Aid for International Development (USAID) trained over 20,000 people, mainly in dairy and fruit and vegetable production, with over 275 experts from institutions such as the government extension services, veterinary institutes and chambers of commerce being trained to give further training. The World Bank, the International Fund for Agricultural Development (IFAD), Italy, Norway, Switzerland and Sweden have supported several projects with important outputs with regard to training and extension.

Although impressive numbers of people have been trained as a result of these projects, the absence of an official strategy does not allow building on these new capacities to favour further skills and knowledge transfer. Systematic collection of information will enable gaps to be identified and will maximize possibilities for making use of less expensive local consultants and experts able to cover new subjects or geographic gaps. This activity will also help generate more interest amongst donors who are increasingly under pressure to demonstrate the sustainability of their projects.

5.4.4 Information Services

A key constraint for improving the agricultural sector management in Bosnia and Herzegovina is the lack of accurate, reliable and updated information. Despite substantial EU and international donor assistance between 1998 and 2002, current information collection, collation and dissemination is still undertaken in an *ad hoc* manner and is not linked or guided by strategic priorities or policy demands. Existing published sector information is very limited and that which is made available is generally considered to be of poor quality and lacking statistical rigour or relevance to the emerging market economy:

- **Current status of an Agricultural Information System (AIS)**: There is currently a complete lack of any AIS in either Bosnia and Herzegovina Entity Ministry or at a central level.
- **Statistics:** Agricultural statistics are not currently covered by the tasks of either Ministry.
- **Hardware and software:** The Entities are poorly provided with functional hardware and software, which is necessary for efficient or effective work.
- **Databases:** Ministries are not using efficient computerized databases. The information is gathered in an inconsistent way and therefore not properly utilized.
- **Market Information Services:** Agricultural Market Information Services do not exist in either Entity. Past systems have collapsed due to a lack of resources and Ministry capacity to manage pilot systems. Price information is an important part of any AIS. Such information could be collected in a relatively low cost manner based on a simple information exchange system between users and distributed via the net in downloadable Excel tables containing basic data and simple statistical charts.
- **Agricultural, Socio-Economic and Statistical Information:** There is no clear and precise collection of information (or database development) regarding farmers, agriculture or the rural economy in general. There is a great need for an agricultural census and/or a complete register of farms, which could be utilized to provide the basis for establishing a system for sample and/or detailed sector specific surveys.

A programme for the gradual and systematic improvement in an AIS in both Entities and Bosnia and Herzegovina as a whole is therefore required. An agricultural information system is urgently required in the short term to cover (where feasible) data on productivity, import/export data, financial and economic performance data and market prices of the sector at different levels in the agro-food chain. The aim will be to generate a continuous flow of information to monitor developments and trends to guide policy analysis and decision-making. It is also essential that Bosnia and Herzegovina be in a position to harmonize information in line with the EU *acquis* requirements and provide suitable, user-friendly information for farmers and traders on market opportunities and prices.

5.5 International trade policy

Bosnia and Herzegovina has made some major progress in its economic development and integration into the world economy, particularly through the conclusion of international agreements such as the Stabilisation and Association Agreement/ Interim Agreement (SAA/IA) and CEFTA. However, a very liberal trade regime is not sufficient to ensure sustainable development. Therefore, formulating and projecting a realistic and integrated trade policy that

maximizes the benefits of signed international agreements and minimizes the costs to those most adversely affected should be one of the key priorities of the Government. Furthermore, the institutional capacity for preparing and carrying out bilateral and multilateral negotiations, as well as for implementing their results has to be strengthened.

The progress achieved by Bosnia and Herzegovina in the area of trade policy is to date limited and fragile. Except for a slight increase in staff numbers at the Ministry of Foreign Trade and Economic Relations (MoFTER), there has been no change in the trade-related institutional structure of the country (e.g. there is no Ministry of Agriculture at State level). MoFTER still does not have enough capacity to carry out the tasks it is supposed to (especially with respect to WTO, implementation of the CEFTA, and SAA/IA negotiations and implementation).

Trade policy in Bosnia and Herzegovina is still conducted on an *ad hoc* basis, and relies on relatively low import tariffs and a reduced number of non-tariff barriers that limit imports from neighbouring countries. More effective trade policy tools (e.g. standards, export service programmes and market development programmes) are either lacking or not used. Bosnia and Herzegovina signed a number of bilateral agreements with neighbouring countries that were asymmetric in favour of Bosnia and Herzegovina. However, due to the inefficient trade policy mechanisms currently in place in Bosnia and Herzegovina, this did not result in a significant increase in exports.

Bosnia and Herzegovina's ongoing efforts to comply with the requirements for accession to the WTO and with the *acquis communautaire* have resulted in significant results on the road towards integration into the world economy and towards EU accession.

Although Bosnia and Herzegovina has generally observed the commitments of the Interim Agreement (IA), the preparations for forthcoming obligations under the SAA present a real challenge to the Government. Another important challenge for Bosnia and Herzegovina is the implementation of CEFTA, which is likely to significantly increase the benefits to Bosnia and Herzegovina of further integration into the region.

In the area of trade policy, Bosnia and Herzegovina has registered slight progress in all three of its key negotiating areas, namely:

- CEFTA 2006 is signed and its implementation is ongoing;
- The SAA/IA is signed and the IA is in the implementation phase;
- WTO negotiations are in the final stages and the accession of Bosnia and Herzegovina to the WTO can be expected soon according to MoFTER who stated in September 2011 that "Bosnia and Herzegovina was steadily completing the remaining accession tasks and approaching the final goal".
- Negotiation of a Free Trade Agreement with European Free Trade Association (EFTA) countries started in March 2011

Additionally, bilateral agreements on preferential trade are also expected in the coming period.

5.5.1 Accession to the World Trade Organization (WTO)

In July 1999, Bosnia and Herzegovina filed its application for WTO membership and a WTO Working Party was established. Bosnia and Herzegovina submitted a Memorandum on the Foreign Trade Regime in October 2002. Bosnia and Herzegovina also sent several documents to the WTO Working Party Members and responded to several sets of questions raised on agriculture, Sanitary and Phytosanitary (SPS), Technical Barriers to Trade (TBT) and Trade-Related Aspects of Intellectual Property Rights (TRIPS) issues. Bilateral market access negotiations are currently underway on the basis of revised offers in goods and services submitted by Bosnia and Herzegovina.

An action plan for Bosnia and Herzegovina's accession to the WTO has been developed and is used to monitor the implementation of scheduled activities and the planning of

further activities related to the harmonization of legislation. The action plan is updated continuously to the progress made in the accession process and in line with future membership requirements.

The latest Working Party meeting was held on 28 September 2011. However, the latest revision of the Working Party report took place on 15 June 2011. Members of the Working Party requested clarifications on issues related to trading rights, anti-dumping and countervailing duties, sanitary and phytosanitary measures, technical barriers to trade, free zones, agriculture and intellectual property rights. All these aspects are directly or indirectly related to agriculture.

5.5.2 Stabilisation and Association Agreement (SAA)

Bosnia and Herzegovina is a potential candidate for EU membership. The SAA between Bosnia and Herzegovina and the EU was signed in June 2008. The Interim Agreement, which focuses on trade-related areas of the SAA, has been in force since July 2008.

The proper preparation for implementing the SAA is contingent on Bosnia and Herzegovina meeting political rather than economic conditions. The process of legislative harmonization began with the establishment of the working groups in 2006, but most of the groups are not yet fully operational. It is expected that these groups will be recomposed according to the Negotiations Chapters related to accession negotiations with the EU.

The negotiation structures have been established for all agreements (Bosnia and Herzegovina groups for negotiations and participation in the subcommittees established under the CEFTA and IA agreements) and they are operational. However, a significant number of institutions are not aware of the importance of the work of the subcommittees, resulting in a lack of active participation in the preparatory meetings of the various subcommittees by these institutions.

What is diagonal cumulation of origin?

Any preferential free trade agreement needs rules of origin defining which products shall benefit from the preferences. Cumulation allows products that have obtained originating status in one partner country to be further processed or added to products originating in another participating country as if they had originated in that latter country. The existing Free Trade Agreements with the Western Balkans (Stabilisation and Association Agreements with Croatia and The former Yugoslav Republic of Macedonia) are based on a system of bilateral cumulation. This means Croatia and The former Yugoslav Republic of Macedonia can cumulate with the Community but not amongst each other. Under the system of diagonal cumulation they will also be able to cumulate amongst each other. For a system of diagonal cumulation to work, it requires that all partners have Free Trade Agreements with the same rules of origin amongst each other.

5.5.3 Central European Free Trade Agreement 2006 (CEFTA)

On 19 December 2006, Bosnia and Herzegovina signed the CEFTA. By establishing a free trade area amongst its members, CEFTA serves as preparation for full European Union membership. The CEFTA replaces the bilateral agreements that were in place between Bosnia and Herzegovina and individual CEFTA members.

Bosnia and Herzegovina ratified CEFTA in September 2007 and it came into force in November 2007. The initial perception was that CEFTA would bring no benefits because Bosnia and Herzegovina opened its market to CEFTA members that were considered more competitive. Yet, Bosnia and Herzegovina has made significant progress in increasing its benefits from this regional integration process. However certain obstacles remain in the areas of TBT and SPS, and in a lack of understanding of the diagonal cumulation. Nevertheless, it should be noted that Bosnia and Herzegovina is playing a very active role in all CEFTA subcommittees.

In September 2007, the Joint Committee decided to create a Secretariat and three Subcommittees: TBT and Non-Trade Barriers (NTB), Agriculture and SPS, Customs and Rules of Origin. In 2011, Bosnia and Herzegovina will chair the Subcommittee on TBT and NTB. In 2011, Bosnia and Herzegovina will have the Chairmanship position for the CEFTA Subcommittee on TBT and NTB.

6. Level of attainment of relevant EU standards

6.1 Payment System Harmonization and Coordination

In order to implement the IPARD programme, each state must have an agency able to disburse money and monitor its use according to a certain number of standards and principles. Article 13 of the Law on Agriculture, Food and Rural Development of Bosnia and Herzegovina (Official Gazette of BiH, No. 50/08), (hereinafter: the Law), confers most of the duties related to role to the Payment System Harmonization and Coordination Office, that is supposed to cooperate with competent authorities of the entities and Brčko District of Bosnia and Herzegovina. This includes the following:

a. Develop a legal framework for the establishment and development of the institutional support structures in the policy implementation and in obtaining funds of the EU and the resources from other international funds;
b. Establish uniform practices and procedures pertaining to the functions of approval, execution and accounting transactions in the sector of agriculture, food and rural development, which shall be applied in the entities and Brčko District;
c. Harmonize the administrative control system to ensure the transparency and access to information on all support measures and payments;
d. Establish the function of control;
e. Promote uniform application of payment procedures and requirements at all levels, in accordance with the EU rules;
f. Coordinate staff training at all levels to ensure a uniform application of the procedures and proper implementation of measures;
g. Provide support in the establishment of registers under Article 14 of the Law and other records, and coordinate the work of respective technical support teams at all levels, for the purpose of a consistent application of the reference registration system and the data storage system within the overall technical framework;
h. Establish communication with payment organizations and other internal and external bodies in relation to the procedures and data exchange for statistics and other purposes as requested;
i. Establish an effective harmonized monitoring and evaluation system in accordance with the best European practice;
j. Identify and help the development of other relevant services, in order to promote agricultural and food products;
k. Identify and help the development and implementation of the import-export measures and interventions on the market.

6.2 Common market organization for fruit and vegetables

The EU actively supports the fruit and vegetable sector through its market-management scheme (element of the "common organization of agricultural markets"), which has four broad goals:

1. A more competitive and market-oriented sector
2. Fewer crisis-related fluctuations in producers' income
3. Greater consumption of fruit and vegetables in the EU
4. Increased use of eco-friendly cultivation and production techniques.

The key concepts for the Common Market Organization (CMO) for fruit and vegetables include producers' organizations, operational programmes and marketing standards for fruit and vegetables.

In preparation for accession, Bosnia and Herzegovina must align its rules covering

Fruit and Vegetable Cooperative in Sarajevo Region

This cooperative, created by a strong entrepreneur, is formed of relatives and friends and behaves de facto like a limited company.

Strong business relations with several hundred local producers of fruits and vegetables are based on a diversification strategy of the cooperative that plays a key role in the value chain coordination through:

- Production of certified quality seedlings (from France, The Netherlands, Israel) and PGH that are then supplied to the fruit and vegetable growers
- Supply of plant protection inputs and fertilizer of PGH to the same growers
- The cooperative organizes trainings and ensures technical assistance during the season to the producers
- The cooperative buys and ensures the marketing of the fruits and vegetables produced by the growers, who focus mainly on production. The market is supermarkets, institutions (schools, hospitals) and the wholesale market in Sarajevo where the cooperative has its own selling point.

The cooperative has so far invested KM 1.6 million for cooling facilities, transport means, glasshouses for seedling production and selling points infrastructures. In addition, the cooperative mobilizes KM 1 million to finance other growers' campaigns.

Further investments shall be oriented towards freezing and other processing capacity.

This strategy has allowed the cooperative to secure quality and quantities and to have grown from 600 tonnes in 2008 to 1,000 tonnes in 2010.

market organization so that they are compatible with the CMO operating throughout the EU.

6.2.1 Producer organizations

Cooperative Unions

Bosnia and Herzegovina has three cooperative unions: The Republika Srpska Union of Cooperatives (around 100 member-cooperatives); the Federation of Bosnia and Herzegovina Union of Cooperatives (200 member cooperatives) and Bosnia and Herzegovina Union of Cooperatives. The Bosnia and Herzegovina union represents cooperatives abroad, collaborates with international organizations and is involved in legislation that regulates cooperative practices and sets standards for auditing of cooperatives.

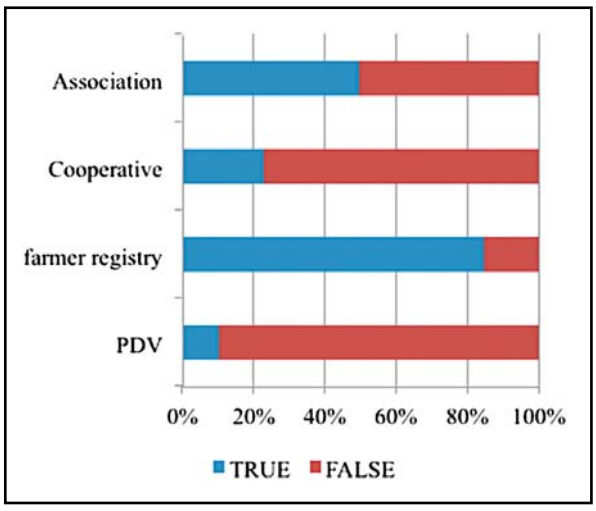
Cooperatives

Officially, there are more than 500 agricultural cooperatives in Bosnia-Herzegovina, but the number of operative cooperatives is much lower. In many cases cooperatives are defunct or function only as land renting agencies.

The most dynamic are characterized by an entrepreneurial leadership (one to four individuals), who cluster several producers. The leaders act as company owners that provide services (production marketing, advisory services, campaign credit for inputs) to the "cooperators", who are actually not members of the cooperative which usually gathers family members and close friends of the leaders.

This form of cooperation is the most successful in the Bosnia and Herzegovina context. However, in the perspective of IPARD, the absence of institutional linkages between the leaders and the farming community might limit the access to IPARD resources by the latter.

Graph 6.1: Organization and formalization (based on the farm survey, N=97)



A large number of producers are part of an association. This is especially the case in the Federation of Bosnia and Herzegovina, where two-thirds of the growers interviewed in the farm survey declared themselves to be members of an association.

In the same survey, a little less than a quarter of them declared themselves to be members of a cooperative.

6.2.2 Marketing Standards

EU marketing standards are set for all main fresh fruits and vegetables in order to inform the consumer and to allow for fair competition by:

- Defining minimum quality;
- Classifying products;
- Setting the rules for presentation and labelling.

EU marketing standards are aligned on United Nations Economic Commission for Europe (UN/ECE) international standards.

Marketing standards, in particular relating to the definition, quality, grading into classes, sizing, packaging, wrapping, storage, transport, presentation, marketing and labelling, should apply in respect of certain products to permit the market to be supplied with products of uniform and satisfactory quality.

The new European regulations are based on General Marketing Standards for most fruits and vegetables and specific standards for 10 products:

1. Apples
2. Citrus fruit
3. Kiwi fruit
4. Lettuces, curled-leaved and broad-leaved endives
5. Peaches and nectarines
6. Pears
7. Strawberries
8. Sweet peppers
9. Table grapes
10. Tomatoes

Fruit and vegetables not covered by a specific standard must meet the general standard – or the applicable UNECE standard (sometimes less strict than the EU standard). Operators are free to choose which.

The national authorities must also ensure that compliance checks are carried out selectively, based on risk analysis and with appropriate frequency, to ensure compliance with the standards and other statutory requirements for marketing fruit and vegetables.

None of the above-mentioned parameters are regulated by any legal act on marketing standards, and no inspection body has been designated to carry out conformity checks at each stage of marketing. While the Institute for Standardization of Bosnia and Herzegovina has developed rulebooks defining standards for a number of products, nothing has been undertaken so far in the field of fruits and vegetables.

6.3 Agro-environmental measures

6.3.1 Impact of agriculture on the environment

A number of serious agro-environmental problems exist in Bosnia and Herzegovina today. They pose serious threats to the health of rural populations and ecosystems and are also responsible for the destruction of natural resources and for the poor quality of agricultural and livestock products. These include:

- Improper and uncontrolled use of pesticides;
- Inadequate management of soil fertility and application of fertilizers (although their use has declined since the early 1990s);
- Agricultural practices encouraging soil erosion;
- Low levels of environmental awareness amongst agricultural producers.

Changing farmers' management practices, especially regarding use and storage of pesticides, will therefore play a key role in reducing nutrient and pesticide pollution from agriculture.

6.3.2 Agro-environment policy and measures

General principles of the agro-environment policy of the Common Agricultural Policy (CAP)

Agro-environment measures are a key element for the integration of environmental concerns into the CAP They are designed to encourage farmers to protect and enhance the environment on their farmland by paying them for the provision of environmental services. The principle is that farmers, who commit to go beyond legal obligations, receive payments for the environmental services they provide to society.

The integration of environmental concerns into the Common Agricultural Policy is based on a distinction between:

- Ensuring a sustainable way of farming by avoiding environmentally harmful agricultural activity;
- Providing incentives for environmentally beneficial public goods and services.

Cross-compliance

Cross-compliance is a mechanism that links direct payments to compliance by farmers with Good Farming Practices, basic standards concerning the environment, food safety, animal and plant health and animal welfare, as well as the requirement of maintaining land in good agricultural and environmental condition.

Cross-compliance represents the “baseline” or “reference level” for agro-environment measures. For all requirements falling under cross-compliance, the compliance costs have to be borne by farmers.

Good Agriculture Practices (GAP)

Usual Good Farming Practices are defined as encompassing mandatory legal requirements and a level of environmental care that a reasonable farmer is expected to apply anyway. They are compiled in Codes, which regions or countries draw up and submit to the Commission with their Rural Development Plans.

National scheme

Agri-environment measures may be designed at the national, regional, or local level so that they can be adapted to particular farming systems and specific environmental conditions. This makes agro-environment a targeted tool for achieving environmental goals.

Types of commitment covered by a future national or regional agro-environmental scheme relevant to the fruit and vegetable sector are:

- Integrated farm management and organic agriculture;
- Maintenance of high-stem orchards for the conservation of the landscape, high-value habitats and their associated biodiversity.

Integrated Production (IP) and Integrated Pest Management (IPM)

The EC Directive 2009/128/EC frames the sustainable use of pesticides by risk mitigation and the reduction of impact on human health and the environment and promotes integrated pest management and alternative methods and techniques (such as non-chemical plant protection). This regulation commits EU Member States to ensure application of IPM by all professional producers by 2014, while as of 2016 the sale of pesticides will be allowed only to certified professional producers. One could expect such rules will be applied to the producers out of the EU market, who wish to market their products in the EU.

Importance of establishment of IPM

Progressively, IPM is becoming part of the minimum required standards under the CAP. As of 2014, Member States will have to establish an institutional framework that favours its adoption by the largest number of producers. One can assume that at a certain point IPM might be compulsory and the same standard will be applied to agricultural products imported from other countries, including Bosnia and Herzegovina.

The Directive 2009/128/EC of 21 October 2009 requires the establishment of a framework of EU practice aimed at sustainable usage of pesticides. The Directive requires the adoption of National Action plans, which should set quantitative objectives, measures, timetable of adoption, as well as indicators for reducing the risks and impact of pesticides on human health and the environment; to encourage the development and implementation of integrated plant protection, alternative approaches and techniques in order to decrease pesticide dependence. Member States should promote a reduced use of pesticides, integrated plant management (IPM) and establish all the necessary conditions and measures for their implementation. Therefore, based on EC regulation No. 1107/2009 and Directive 2009/128/EC, the use of integrated pest management is strongly promoted and each Member State should specify the description of its national action plan; how principles of integrated plant protection will be provided, with priority to use nonchemical measures of protection in all cases possible. The Directive also requires that Member States establish support for setting of all the necessary conditions for the implementation of IPM. It is especially required to provide advisors and professionals who will have information and tools for monitoring pests and diseases and provide advice on integrated protection of plants at their disposal. By 30 June 2013, all Member States should inform the Commission on implementation of all these measures, especially whether there are all the necessary conditions for the implementation of IPM. By 1 January 2014, all Member States should submit action plans for implementation of the IPM principles described in the Directive.

Currently, nothing has been undertaken at State or entity level in terms of regulation of IPM. In addition, producers have no information or awareness about the developments on the EU market and the regulations that will be in power as of 2014.

Institutions in Bosnia and Herzegovina should therefore follow the agenda of IPM implementation in the EU in order to enable unimpeded access to the EU market for their producers.

Table 6.1: Directive 2009/128/EC Establishing a framework for Community action to achieve the sustainable use of pesticides

Deadline	Task
By 14 December 2012	Member States shall communicate their National Action plans to the Commission and to other Member States
By 30 June 2013	Member States shall report to the Commission whether the necessary conditions for implementation of integrated pest management are in place
By 14 December 2013	Member States shall establish certification systems and designate the competent authorities responsible for their implementation. These certificates shall, as a minimum, provide evidence of sufficient knowledge acquired by professional users, distributors and advisors either by undergoing training or by other means
By 1 January 2014	Member States shall describe, in their National Action Plans, how they ensure that the general principles of integrated pest management are implemented by all professional users
By 14 December 2015	Member States shall take necessary measures to restrict sales of pesticides authorized for professional use to persons holding a certificate Member States shall ensure that distributors have sufficient staff in their employment holding a certificate. Such persons shall be available at the time of sale to provide adequate information to customers as regards pesticide use, health and environmental risks and safety instructions to manage those risks for the products in question.
By 14 December 2016	Member States shall ensure that pesticide application equipment has been inspected at least once. After this date only pesticide application equipment having successfully passed inspection shall be in professional use.

Organic farming

Different European regulations govern the production and the labelling of organic food.[19] Besides defining agriculture practices allowed under organic farming and defining the rules of logo use, these regulations also define the required tasks and authorities at member state level. The European regulation requires in particular the need of a competent authority in charge of official controls of organic production in accordance with the provisions of national and EU regulations. The competent authority may delegate the control tasks to control bodies providing this control body meets certain requirements, which include the accreditation for the norm EN 45011 or ISO 65, approved by the competent authority.

The EC regulation regarding the arrangements for imports of organic products from third countries gives the possibility for Certification Bodies to be recognized for the purpose of equivalence in accordance with the Regulation (EC) No 834/2007.

There are a number of obstacles preventing organic production from developing in Bosnia and Herzegovina. The legal framework is still very incomplete, as only Republika Srpska has adopted a Law on organic food production.[20] A national Law on Organic Farming is being prepared and is in the phase of adoption. This law will be fully harmonized with the new EU regulation on organic farming, food processing and marketing (834/ 2007 and 889/2008). In the Federation of Bosnia and Herzegovina, the absence of a regulatory framework is a clear *de facto* deterrent for domestic market-oriented producers. Indeed, anybody can label his/her products as organic with or without certification and the cost resulting from it. In Republika Srpska, despite a legislative framework, enforcement is still weak, in particular on the markets, where eco-, bio-, organsko and other appellations appear on non-certified products.

Exported organic production is certified by foreign certification bodies (CBs) usually paid by the buyers who will trade the goods in the EU. Organska Kontrola is the first certification body in Bosnia and Herzegovina, established in 2004 by the 'OK Association' for development and support of organic agriculture in Bosnia and Herzegovina. "Organska kontrola" (OK) has developed a certification programme and OK standards for organic production and processing in accordance with the requirements of the International Organic Accreditation Service (IOAS) – the accreditation arm of the International Federation of Organic Agriculture Movements (IFOAM) – basic standards, as well as with European Economic Community (EEC) legislation for organic production, resulting in an international recognition under the European Recognition Programme.

The absence of regulations on certified organic production and labelling, the weak controls and the absence of communication to consumers create a great opacity on the markets. The statement of respondents of the FOCUS BALKANS project illustrates the current situation characterized by a great misconception of organic agriculture. Indeed, more than 50 percent of them stated that they consume organic products at least once per day, which is unrealistic with slightly more than 27 producers, cropping 0.3 percent of the total agricultural land in the whole country. Most of these are vegetable growers. On the domestic market, organic products are sold mostly through specialized shops, Internet and large retail chains.

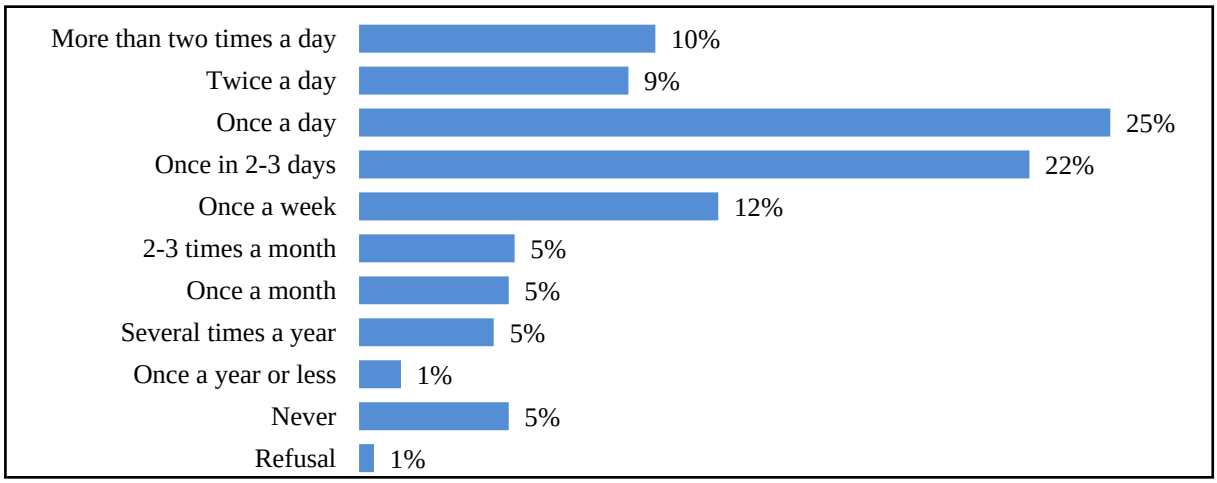
Landscape and biodiversity

High-stem meadow orchards – as elements of biodiversity conservation and aesthetic

[19] *Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 which has been amended since then by: Council Regulation (EC) No 967/2008 of 29 September 2008 amending Regulation (EC) No 834/2007 on organic production and labelling of organic products and Commission Regulation (EC) No 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control*

[20] *Official Gazette of Republika Srpska number; 75/04*

Graph 6.1: Consumer statement about consumption frequency of organic products (sample of 517 consumers)



Source: Jasna Milosevic (IPSOS), Hana Baronjan (IPSOS), M. Cvetkovic Banja Luka, Consumer quantitative survey – Bosnia and Herzegovina, FOCUS BALKANS project, 2010

value of the region – are still valued in many regions in Europe including in Western Europe (Slovenia, Austria and Switzerland). In many regions of Bosnia and Herzegovina, and in particular in mountainous and hilly areas, large areas of land are still occupied by low-density orchards that poorly contribute to the agriculture GDP. In addition, these orchards that have shaped the landscape of Bosnia and Herzegovina for centuries are sometimes declining because of underutilization and a lack of maintenance. In the long term, the three most likely scenarios are (i) the disappearance of these areas, which will return to forests; (ii) their conversion into high-density orchards, other crops or pasture/meadows; or (iii) their conservation by improved care.

The last option could be justified in areas where tourism is more relevant than agricultural production. If this is the case, measures could be adopted under IPARD, particularly for Less Favoured Areas (LFAs). None of these types of measures are presently in place in Bosnia and Herzegovina.

6.4 Food safety and plant protection

6.4.1 Current situation and key figures

At State level, two institutions are responsible for food safety issues:

1. Ministry of Foreign Trade and Economic Relations through:
   a. The State Veterinary Office responsible for food safety and animal health/ welfare
   b. The Plant Health Protection Office responsible for plant protection
2. The Food Safety Agency of Bosnia and Herzegovina (FSA) and the independent administrative organization at state level are also responsible for food safety as defined by the law on food (Bosnia and Herzegovina Official Gazette no. 50/04).

Currently, the Department of Foreign Policy and Control within MoFTER is responsible for the coordination and oversight of the relevant State Agencies. Specific tasks include "administrative surveillance" (Control of application of legislation in Bosnia and Herzegovina on veterinary and phytosanitary protection), and an input into the harmonization of foreign trade law.

At each Entity level, there are administrations that deal with food safety, animal health/ welfare and plant health issues. Entities also have branches at canton and municipality level in charge of the same issues.

However, it should be noted that, under the current structure, the legislation has not yet

defined competencies to more clearly avoid overlapping of responsibilities at State, Entity and district level.

The current legislative framework does not properly define the competencies and responsibility for institutional structures involved in the system, with the consequence that some sectors are over controlled and others are totally ignored.

Each government Entity is individually responsible for administering and financing its own food safety system, and Brčko District runs its own food safety system over which it has a limited authority. Prior to the break-up of former Yugoslavia, the food safety and health system was centralized at the level of the Socialist Republic of Bosnia and Herzegovina.

Currently, Republika Srpska operates a centralized system, with the Ministry of Agriculture overseeing the food safety system, and the Federation of Bosnia and Herzegovina operates a decentralized cantonal system, with each canton responsible for its food safety system administration and financing. The decentralization of the health system has resulted in an uneven geographical distribution of official laboratories in charge of food safety analyses, which has not been optimal for guaranteeing the effectiveness of controls.

Other problems include low salaries for professionals in the sector and the use of outdated equipment that sometimes undermines the effectiveness of controls.

6.4.2 Strategic plan of the Council of Ministers and medium to long-term priorities

The Stabilisation and Association Agreement with the EU was signed on 16 June 2008, confirming commitment to continued reforms. MoFTER, with the assistance of the EU funded the Support for Establishment of the State Ministry of Agriculture and Rural Development (SESMARD) project, has prepared the "The Bosnia and Herzegovina Agriculture, Food and Rural Development Harmonization Strategic Plan for the period 2008–2010". The key objective is to provide a framework for the gradual harmonization of policies, programmes, institutions, laws, regulations and services between Bosnia and Herzegovina and the EU. The operational programme established by the project, lays down six priority areas, two of which are of particular relevance to the country profile:

- Priority 1: institutional capacity, coordination and implementation mechanisms at all levels;
- Priority 2: enhance the quality and safety of domestic products (covering veterinary/animal health, plant health/protection, food safety and hygiene and staffing).

6.4.3 Competent Authorities at central level

Council of Ministers

The Council of Ministers is the executive body of Bosnia and Herzegovina with responsibility for ensuring that the Government functions in accordance with the Constitution, laws and other legislative acts. It is responsible for adopting the legislation drafted by the Senior Veterinary Officer (SVO) and the Food Safety Agency (FSA) and consequently for submitting it to the Parliamentary Assembly of Bosnia and Herzegovina for ratification and subsequent publication in the Official Gazette.

Ministry of Foreign Trade and Economic Relations

During the post-war reorganization of the administrative system, a Central Competent Authority (CCA) to be nominated responsible for agricultural issues was not available, and neither was an authority for veterinary related issues. For this reason, it was decided to insert these two sectors under the umbrella of the most relevant organization, and the Ministry of Foreign Trade and Economic Relations was chosen (Annex 6). MoFTER is, *inter alia*, the competent Ministry responsible for the implementation of foreign trade policy, customs tariff policy, relations with international organizations and institutions in the domain of foreign trade and economic relations. In relation to the agriculture and food

sector, MoFTER has specific responsibilities for consumer protection, veterinary medicine, agriculture, environmental protection, and the development and use of natural resources. Inside the Ministry, two offices deal specifically with issues related to food safety and plant protection; namely, the State Veterinary Office and the Plant Health protection office.

The Plant Protection Agency

The Bosnia and Herzegovina Plant Health Protection Administration was established under the 2004 Decision of the Council of Ministers ("Official Gazette of Bosnia and Herzegovina" No. 23/04), and has its seat in Sarajevo. It is an administrative organization within the Ministry of Foreign Affairs and Economic Relations.

The Administration is a national authority for plant health protection, competent for coordination and communication on issues pertaining to plant protection, and provisions ensuing from the International Plant Protection Convention (Official Gazette of Bosnia and Herzegovina No. 8/2003) ratified by Bosnia and Herzegovina in 2003, as well as national legislation:

- Law on Plant Health Protection (Official Gazette of Bosnia and Herzegovina, No. 23/03) governing plant health protection, prevention of introduction and spreading of harmful organisms, and taking actions against harmful organisms by introducing measures for the protection of plants, plant products and other regulated articles in the area of Bosnia and Herzegovina, and other issues of relevance for plant health protection.
- Law on Phyto-pharmaceutical Products (Official Gazette of Bosnia and Herzegovina, 49/2004) governing the registration, trade and supervision of active substances, and other issues related to phyto-pharmaceutical products.
- Law on Seed and Planting Materials of Agricultural Plants (Official Gazette of Bosnia and Herzegovina, No. 3/05) which stipulates the requirements for production, preparation for placement on the market, importation and placement on the market of seeds and vegetative planting material, and other issues relevant for this area.
- Law on Protection of New Varieties (Official Gazette of Bosnia and Herzegovina, No. 46/04) which governs the procedure regarding protection of new plant varieties, and obtaining and protection of plant breeders' rights.
- Law on Mineral Fertilizers (Official Gazette of Bosnia and Herzegovina, No. 46/04) which stipulates the requirements for the composition, quality and marking of mineral fertilizers placed on the market, as well as their use.

The Bosnia and Herzegovina Plant Health Protection Administration has numerous duties and responsibilities ensuing from the International Plant Protection Convention, Law on Plant Health Protection (Official Gazette of Bosnia and Herzegovina, No. 23/03), Law on Phyto-pharmaceutical Products, which is to a great extent harmonized with the Directive 91/414/EEC (Official Gazette of Bosnia and Herzegovina, No. 46/04), Law on Seed and Planting Materials of Agricultural Plants (Official Gazette of Bosnia and Herzegovina, No. 3/05), Law on Protection of New Varieties (Official Gazette of Bosnia and Herzegovina, No. 46/04) and the Law on Mineral Fertilizers (Official Gazette of Bosnia and Herzegovina, No. 46/04).

Plant protection from harmful organisms is required on many grounds, primarily in order to prevent yield decrease and to increase agricultural protection. The competences and duties of the Bosnia and Herzegovina Plant Health Protection Administration are clearly defined under the Decision on Establishment of the Administration, the International Convention and the provisions of applicable laws.

Department for Plant Health Protection

The Plant Health Protection Department has the following duties:

a. Coordinate and cooperate with the entities and Brčko District in policy-making in the field of plant health;

b. Draft legal regulations and carry out other administrative duties in the area of plant health, and attend to their implementation;
c. Monitor harmful organisms on a regular basis and draft reports pursuant to the law;
d. Analyse and evaluate plant health in order to assess the emergence and spreading of harmful organisms in the country and abroad;
e. Coordinate with competent entity authorities in relation to duties and authorizations in the field of plant health as stipulated by the law;
f. Establish and keep registers, records and lists pursuant to the law;
g. Draft and monitor special programmes related to measures on prevention of introduction and spreading of harmful organisms, and provide for the implementation of these programmes;
h. Propose and monitor the measures of prevention, suppression and elimination of harmful organisms;
i. Ensure the implementation of phytosanitary measures;
j. Administer and implement public notices for the assignment of public competences pursuant to the law, issue decisions on authorizations of the institutions and supervise the work of competent institutions pursuant to the law;
k. Draft reports, analyses, information and other materials for the official authorities and international organizations for plant protection and plant production;
l. Attend to the implementation of uniform procedures pursuant to regulations and international requirements;
m. Cooperate with other official authorities and organizations in the country and abroad in the field of plant health;
n. Represent Bosnia and Herzegovina before international authorities and organizations in the field of plant health;
o. Other duties related to plant health pursuant to regulations and upon orders of the Administrative Director.

Department for Phyto-pharmaceutical Products and Mineral Fertilizers

The Department for Phyto-pharmaceutical Products and Mineral Fertilizers has the following duties:

a. Coordinate and cooperate with the entities and Brčko District in relation to duties and responsibilities in the field of phyto-pharmaceutical products and mineral fertilizers stipulated by laws;
b. Draft law and regulation proposals and carry out other administrative duties in the field of phytopharmaceutical products and mineral fertilizers, and attend to their implementation;
c. Coordinate activities in the preparation of document evaluation, and conduct the procedure of registration of phyto-pharmaceutical products and issuance of permits;
d. Establish and keep the register, records and lists pursuant to the law;
e. Administer and implement public notices for the assignment of public competences pursuant to the law, issue decisions on authorizations of the institutions and supervise the work of competent institutions pursuant to the law;
f. Monitor the market situation, that is, the use of phyto-pharmaceutical products, and cooperate in the preparation of measures;
g. Pass the programme related to the proper use of phyto-pharmaceutical products, and cooperate in application of the principle of good agricultural practice and integral plant protection;
h. Draft reports, analyses, information and other materials for the official authorities and international organizations;
i. Cooperate with other official authorities and organizations in the country and abroad in the field of phyto-pharmaceutical products and mineral fertilizers;
j. Represent Bosnia and Herzegovina before international authorities and organizations in the field of phyto-pharmaceutical products and mineral fertilizers;

k. Other duties related to phyto-pharmaceutical products and mineral fertilizers pursuant to regulations and upon the orders of the Administrative Director.

Department for Seed and Planting Materials of Agricultural Plants and the Protection of Varieties

The Department for Seed and Planting Materials of Agricultural Plants and the Protection of Varieties performs the following activities:

a. Drafts legal regulations in the field of seed and planting material production, in cooperation with competent authorities of the entities and Brčko District of Bosnia and Herzegovina,
b. Prescribes requirements for production and preparation for placement on the market,
c. Prescribes requirements for the importation and placement on the market of seed and planting materials of agricultural plants (grain, industrial plants, fodder plants, vegetable crops, medicinal plants, aromatic and pot herbs, fruit, vines, hops, and horticultural plants),
d. Prescribes requirements for the entry of suppliers in the central register of suppliers,
e. Prescribes in detail the content and the keeping of the register of suppliers, as well as other records and keeping the register of varieties,
f. Prescribes in detail the procedure for entering varieties in the register of varieties,
g. Prescribes the seed categories and detailed requirements in terms of the purity of varieties or species, and the minimal quality requirements when certain varieties of seeds and planting materials are not included in the stipulated categories,
h. Undertakes other duties in the area of seed and planting materials production pursuant to the Law on Seed and Planting Materials of Agricultural Plants of Bosnia and Herzegovina (Official Gazette of Bosnia and Herzegovina, No. 03/05),
i. Drafts legal regulations on the protection of new plant varieties and plant breeders' rights, in cooperation with competent authorities of entities and Brčko District of Bosnia and Herzegovina,
j. Prescribes in detail the requirements for allocating the plant breeders' rights.
k. Prescribes in detail the content and keeping of the register of new plant varieties and the plant breeders' rights.

Food Safety Agency

The Food Safety Agency of Bosnia and Herzegovina is an independent management organization, authority for food safety and quality and application of international conventions and international treaties in the area of food and feed safety, which are binding for Bosnia and Herzegovina. Pursuant to the Law on Food ("Official Gazette of Bosnia and Herzegovina", No.50/04 (hereinafter: the Law), the Agency is in charge of risk analysis (assessment, management and notification of risk), initiating, preparing, developing and proposing food regulations, as well as other tasks in its sphere of activity, and pursuant to the provisions of the Law the Agency performs the following activities:

a. The Agency is obligated to provide scientific advice, as well as scientific and technical help to the legislation and policy of Bosnia and Herzegovina in all areas that directly or indirectly affect food and feed safety. It provides independent data on all issues within these areas and forwards data on risks.
b. The Agency is the contact point for activities of the Codex Alimentarius Commission.
c. The Agency is obliged to contribute to a high level of animal protection and protection of people's health and, therefore, to take care of the welfare of animals, and the health of plants and the environment on the territory of Bosnia and Herzegovina.

d. The Agency is obliged to collect and analyse data in order to provide for characterization and monitoring of risks that directly or indirectly affect food and feed safety.

e. The Agency's tasks also include providing:
   1. Scientific advice, and scientific and technical help related to human food under the legislation of Bosnia and Herzegovina, as well as providing communication assistance in relation to food issues within the health protection programme in Bosnia and Herzegovina.
   2. Scientific opinion about other issues related to the health and welfare of animals and plants,
   3. Scientific opinion about products, including food and feed in relation to genetically modified organisms.

f. The Agency is obliged to provide scientific opinion that would serve as scientific basis for the development and adoption of measures of the Council of Ministers within the sphere of activity of the Agency.

g. The Agency is obliged to perform its tasks in the circumstances allowing it to be the point of reference owing to its independence, the scientific and technical quality of the opinions it provides, the information it forwards, the transparency of its procedures and work methods, and the focus it places on tasks it is entrusted with.

h. The Agency is obliged to closely cooperate with competent authorities, who must ensure fulfilment of the Agency's tasks within their competencies.

i. The Agency and the competent authorities cooperate to improve effective relations between risk assessment, risk management and risk announcement functions.

In addition to the foregoing, the Law defines the Agency's tasks, as follows:

a. Provide competent authorities with the best scientific opinion in all cases defined by law and on all issues within its sphere of activity;

b. Improve and coordinate the development of unique risk assessment methodologies within its sphere of activity;

c. Initiate, prepare and organize development of implementation regulations from this Law;

d. Provide competent authorities with scientific and technical support within its sphere of activity and, when requested, in the interpretation and analysis of the risk assessment opinions;

e. Make available scientific studies within its activities;

f. Request, collect, compare, analyse and summarize scientific and technical data within its sphere of activity;

g. Undertake measures to determine and characterize risks occurring in its sphere of activity;

h. Establish the network system of organizations operating within its sphere of activity and undertake responsibility for their actions;

i. Provide scientific and technical help in the procedures of crisis management conducted by competent authorities in relation to food and feed safety;

j. Ensure that public bodies and interested parties urgently receive reliable, objective and comprehensive data within the Agency's sphere of activity;

k. Independently present its own conclusions and orientation on the issues within its competence.

The Rulebook on Internal Systematization of the Food Safety Agency of Bosnia and Herzegovina defines the following:

- Office of the Director
- Common Services Sector
- Risk Analysis Sector
  - Food Safety Department
  - Declaration – Labelling Department
  - Pathogenic Microorganisms Department
  - Chemical Substances Department
  - Safety Production Department

- Department for Cooperation with the Codex Alimentarius Commission
- Department for Development and Cooperation with Laboratories
- Beverages and Water Department

- Crisis and Urgent Cases Management Sector
  - Department for Cooperation with International Project Organizations
- Sector of Official Control, Traceability, Risk Management and Risk Information

6.4.4 Competent Authorities at Entity level

Competent Authorities at Entity level (veterinary services and plant protection) are defined under federal law. The process of harmonizing Entity veterinary legislation with national veterinary legislation is underway.

- In the Federation of Bosnia and Herzegovina, the veterinary/phytosanitary services are organized at Federal (Entity), Cantonal and Municipal levels.
- In Republika Srpska, the veterinary/ phytosanitary services are organized at Republic (Entity) and Municipal levels.

Entity Ministries of Agriculture, Water Management and Forestry

These Ministries have the primary responsibility for the development and promotion of plant and animal production, fisheries and hunting, agricultural land and forestry, the food industry and animal feed production, water protection and veterinary and phytosanitary matters, including public health protection (for products of animal origin up to the point when they are placed on the market). However, they are not in charge of field inspections as this task has been delegated to the Inspectorates (see below).

Entity Ministries of Health

These Ministries have the primary responsibility for the protection and improvement of public health, including the training of health professionals and the supervision of the medical profession. While responsible for some public health controls in relation to food/water, this function has largely been transferred to the Entity inspectorates.

Brčko District Department of Agriculture, Forestry and Water Management

Within the Brčko District, the Department of Agriculture, Forestry and Water Management has broadly the roles described for the Entity MAFWMs, but also includes inspection tasks. A subdepartment deals with veterinary certification, veterinary checks on products, animal feed (including labelling) and water, farm waste, use of veterinary medicine (including monitoring of effectiveness and adverse reactions) and controls on animal semen, ova and embryos. The subdepartment also maintains the registers of farms/animals at regional and national levels, monitors harmful substances/residues in food, and monitors the introduction and development of the information system in the veterinary sector.

Administrations for inspection affairs (the "Inspectorates")

In 2006, the task of carrying out inspection activities in the public and private sectors was transferred to independent administrative organizations (the inspectorates), under the direction of the state administration. Relevant Entity Ministries (including Brčko District) can submit proposals for the inclusion of certain areas of food safety in their control plans. One of the reasons for establishing the inspection services was to avoid multiple inspections (veterinary, sanitary and labelling inspection – each charging a fee) and to make better use of technically qualified official inspectors.

However, it seems that this arrangement has led to the institutional separation of inspection functions from technical departments in Ministries and the creation of a more complex management structure.

The inspectorates specifically deal (in the Entities and Brčko District) with food and feed safety on farms and food businesses, including border inspection (except for veterinary inspection which is a Senior Veterinary Officer

(SVO) role). It seems that in the Federation of Bosnia and Herzegovina, exceptionally, these federal tasks can be delegated to the municipality and city administrations and undertaken by the Cantonal Inspectors (public servants with special authorizations and responsibilities).

6.4.5 Competent Authorities at local level (Cantons and Municipality)

Canton level

In the Federation of Bosnia and Herzegovina, all cantons have a MAWMF that is responsible for food and feed safety, animal health, animal welfare and plant health.

With regard to inspection activities, agricultural and veterinary inspection activities have been transferred from the Ministries to the new Cantonal inspectorates (see above). In the other five Cantons, Ministries are in charge and have to organize inspections.

Municipality level

Municipalities represent the lowest administrative unit in Republika Srpska; the Competent Authority (CA) for food safety at this level is the Major who is also responsible, in some municipalities, for the nomination and authorization of inspectors working in the food safety area.

6.4.6 Annual/Multiannual control plan

At present, the Food Safety Agency (FSA) and Plant Health Protection Office (PHPO) do not have a direct input into the annual plans adopted at Entity level (except the National Residue Control Programme and Avian Influenza surveillance work – State funded, the animal health control plans – Entity funded and certain FSA ad hoc monitoring programmes). Annual plans are drawn up by the chief inspector of the Entity/district "inspectorate", and other relevant Entity bodies (e.g. veterinary/plant institutes) taking on board certain Senior Veterinary Officer (SVO)/FSA requests. Once finalized, they are submitted to the competent Entity Ministries in order to get their opinion. Once the annual plan is approved, monthly work plans are prepared. There is no coordination of planned official controls at State level and the SVO, FSA and PHPO do not set the strategic objectives for planning official food and feed controls at Entity level, and they have little influence on the strategic priorities set by the Federation of Bosnia and Herzegovina/Ministry of Agriculture, Forestry and Water Management of Republika Srpska or the Brčko District Agriculture Department.

In addition, official control procedures are not available and neither are guidelines or checklists to be used during field visits.

Though competencies are attributed to different public institutions, the legislative framework is not always in place to clearly define the extent of these competencies and the procedures they have to comply with. For instance, the Rulebook on Maximum Residue Levels of Pesticides on Food and Feed of Plant and Animal Origin, according to the Regulation of the European Parliament and of the Council, No.396/2005 and the set of regulations of the so-called "hygiene package", has not yet been adopted. Hence, the role of the Food Safety Agency of Bosnia and Herzegovina is not yet clearly defined on that matter. The hygiene package must include four sets of rules that make a legal framework for food safety in Bosnia and Herzegovina, in addition to the food law: Rules on the Hygiene of Foodstuffs, Hygiene Rules for Food of Animal Origin, Rules on Official Controls on Products of Animal Origin, Rules on Official Control in the Food Area. The Agency has prepared draft rules from the hygiene package equivalent to the Regulations 852/2004, 853/2004, 854/2004 and 882/2004, passed by the European Parliament and the European Union Council, with respect to the basic principles of the Regulation 178/2002 stipulating the basic principles and provisions of the EU food law, which was the basis for the adoption of the Bosnia and Herzegovina Food Law, except the definition of "competent authority" as the central state authority in the area of food safety.

Table 6.2: Overview of the distribution of responsibilities in relation to control systems and operational levels.

Sector	Policy Coordination	Coordination of control	Control enforcement	Laboratories	Risk assessment, scientific advice
Food safety	SVO, FSA	SVO, MoA, Brčko District AD	INS	VF, VZM, VB, VZBI, VZT, VZB, KVS, VZZ	SVO, FSA
Imports of food of plant origin	PHPO	PHPO, MoA, Brčko District AD	INS	Republika Srpska Agriculture Institute Banja Luka, Agriculture Institute Bijeljina, and others authorized by the entity competent authorities	PHPO
Plant protection products – authorization, marketing and use	PHPO	PHPO, MoA, Brčko District AD	INS		PHPO
Plant protection products – residues	PHPO	PHPO, MoA, Brčko District AD	INS		PHPO
Plant Health	PHPO	PHPO, MoA, Brčko District AD	INS		PHPO

Source: Own compilation

6.4.7 Competent Authority audit systems

There are no first or second level audits at present other than for establishments seeking export approval, as the central CA does not have any control power on the Entity CAs. In addition, there are no establishments authorized for export, as the authorization provided to the fish processing farms, six in total, has been suspended due to non-compliance with hygiene requirements.

Furthermore, specific tasks related to official controls are not always possible (e.g. on farm inspection of the use of Plant Protection Products (PPPs) or some small municipalities that have no veterinary inspector) due to the lack of staff, or staff not being specialized in the relevant area (e.g. phytosanitary matters).

6.4.8 Collection of data from control activities in the field

Now it seems there are no direct connections (IT system) between the local, Entity and Central CAs in relation to the communication of data coming from official control activity.

Data is currently collected at Municipal/ cantonal level and then transmitted to the Entities, which aggregate them and send the results to the Central Competent Authority (CCA) (MoFTER).

A project is underway to introduce an IT system for transmission of instructions to field staff and for the submission of reports by field inspectors to the Entity chief inspectors.

6.4.9 Control system for foodstuffs and food hygiene

Competent Authorities

The CCAs for foodstuffs and food hygiene are the SVO and the FSA. Within the SVO, responsibilities for public health fall within the Department for Food Safety and Condition, and import controls to the Border Veterinary Inspection Department (BVID). Within the FSA, the responsibility falls within the sector of official control. At Entity level the Republika Srpska/Federation of Bosnia and Herzegovina inspectorates and the inspectorate of the Government of Brčko District carry out the

official controls. The inspectorates draw up the annual plan taking on board certain SVO/ FSA requests.

Licensing and Registration of food premises

The procedure for registering facilities starts with a request for the registration of facilities requiring official supervision being submitted to the authorized body of the Entity or Brčko District Mayor's office. On receipt of the request, the authorized body nominates at least three members who must examine the facilities. The decision on licensing the establishment is then taken by the authorized Entity and Brčko District on the basis of the opinion provided by the commission. The final resolution establishes a record for the establishment with a control number, and lays down the type and volume of trade. Registration and inspection data is provided to the FSA on a monthly/three monthly basis.

Official controls of food premises

A systematic control of the establishment is carried out at least once during the period of approval. This is done by an inspection team nominated by the Entity/district authorized body (the FSA currently has no control systems neither does the SVO). The following types of food premises are subject to official controls (veterinary inspectors are also responsible for food premises/retail sector) of food hygiene, following procedures laid down in Entity laws on inspections and regulations on food hygiene:

- Food processing
- Wholesale/distribution sectors
- Retail sale sector
- Catering sector

Within the official control of food premises, the FSA is responsible for:

- The risk analysis process
- Drafting food safety regulations, harmonized with Community requirements
- Instructions for the promotion of proper hygiene practices
- Keeping the register of registered and approved establishments (Act 24 of the Food Law)
- Annual collection of data from market controls
- The criteria used to determine the inspection frequency of food business operators (FBOs) as required under the annual food inspection plans
- Criteria for the conduct of "own controls" and HACCP
- Risk communication
- Preparation of the general plan dealing with crisis management

The FSA is an institution established a few years ago and therefore still in a transitional phase. As such, it is in the process of acquiring the staff that will allow it to perform all the roles cited above.

Good Hygiene Practice Guides

None are available at present. However, the FSA is to provide guidance on the interpretation of the by-laws linked to the "hygiene package".

Rapid Alert System for Food and Feed

The FSA is the contact point for the RASFF system. It coordinates the follow-up and receives notification from DG SANCO. To date, it has dealt with thiabendazole in apples, organoleptic changes in beef, contaminated figs (by insects), food in contact with manganese and nickel, and dioxin/pentachlorophenol in chocolate beverages. Once the appropriate measures have been taken, the FSA reports back to the Council of Ministers.

Laboratories

At present there are several laboratories in charge of food safety analysis. Please refer to the specific chapter for further information.

Competent authorities for Genetically Modified Organisms (GMOs)

At the moment no controls are carried out in the field and the inspectors in charge have not yet been trained on sampling techniques. Procedures are not yet available. The FSA is currently preparing a schedule of trainings to be carried out in the coming months together

with the preparation of guidelines and Standard Operating Procedures (SOPs).

Official controls of GMOs in food, import and propagating material

A draft law on GMOs is in the adoption procedure and the FSA is to implement the requirements. Analyses will start shortly (once the by-laws are in place). Bosnia and Herzegovina is keen to see how GMO legislation is to be implemented in Member States. Two laboratories have equipment for detection and quantification of GMOs. Please refer to the dedicated chapter for further information.

6.4.10 Control system for imports of food of plant origin

Competent Authorities for control of imports of food of plant origin

The CCA for imports of food of plant origin is the Plant Health Protection Office (PHPO) within MoFTER. At regional level, the Entity Ministries of Agriculture and the Department of Agriculture in Brčko District have official responsibilities (e.g. import approval is given by the Republika Srpska MAFWM and on the basis of that approval, MoFTER issues the permits for importation). Official controls are carried out by the Republika Srpska/Federation of Bosnia and Herzegovina inspectorates and the inspectorate of the Government of Brčko District. The inspectorates draw up the annual plan taking on board certain PHPO requests.

Import controls

The Republika Srpska/Federation of Bosnia and Herzegovina inspectorates and the subdepartment for inspection activities in Brčko District are responsible for the management and operation of phytosanitary inspection at border crossings, as well as the implementation of supervision on the Entity territory.

One of the roles of the phytosanitary border inspectors is to control products of plant origin.

For foodstuffs of plant origin, samples can be submitted to one of the 40 food and plant control laboratories. In particular, the CCA intends increasing the level of testing for mycotoxins.

6.4.11 Control system for plant protection products (PPPs) and residues

Competent authorities for Control of marketing and use

The CCA for PPPs is the PHPO within MoFTER and, in particular, the Department for phytopharmaceutical products and mineral fertilizers. The Ministry has proposed the establishment of a Pesticide Commission to be responsible for proposing the registration of PPPs following the completion of toxicological evaluations by the Ministry of Health. As the Ministry has not yet assumed the responsibility for PPP registration, in practice, permits for use of PPPs are still issued at the level of the respective Entities (for example, in Republika Srpska, registration is undertaken by the Republika Srpska Plant Protection Commission, nominated by the Republika Srpska MAFWM. Documentation is to include a decision on classification into a “Poison Group”, issued by the Republika Srpska Ministry of Health and Social Protection). Official checks are performed by agriculture and plant protection inspectors from the Republika Srpska/Federation of Bosnia and Herzegovina inspectorates and the inspectorate of the Government of Brčko District.

Authorization of PPPs

Legislation

The Law on PPPs was adopted in 2004 (OG Bosnia and Herzegovina No: 49/04). However, there are no by-laws in force at present. This Law (which regulates trade and controls over PPPs) needs to be revised and supplemented by the requirements laid down in Council Directive 94/414/EC. A committee formed by the PHPO has drawn up a draft list of active substances traded in Bosnia and Herzegovina, identifying those the trade of which is limited/prohibited in the EU. Nonetheless, it seems that no enforcement measures are currently in place. Pesticides forbidden by the

EU are still used in the territory of Bosnia and Herzegovina and such products can be found at local retail shops.

Official controls on marketing (i.e. placing on the market)

There is no production of PPPs in the Federation of Bosnia and Herzegovina (there is some limited production in Republika Srpska) meaning they are all imported. Pure active substances are not imported, as there is no demand for them. There is no registration of PPPs in the Federation of Bosnia and Herzegovina, only temporary permits, which are valid for one year. In the absence of key elements for the control and registration of PPPs, the Federal Ministry authorizes the import and use of PPPs on the basis of a) documentation submitted by the importer or from the country of the original producer of the respective product, or b) the documentation of the competent institution in the country from which the product is imported.

As the exporting country carries out the required analyses of PPPs, the Federal Ministry issues permits for import and use of PPPs on the basis of their documentation. Before PPPs are placed on the market, importers shall ensure that their physical and chemical properties comply with the instructions for use, and that the instructions for use are written in one of the official languages of Bosnia and Herzegovina.

In the Republika Srpska PPPs are registered. Two types of approvals (temporary and permanent) are issued for the placing of veterinary medicinal products (VMPs) on the market. Temporary approvals are issued for a period of two years, while permanent approvals are valid for ten years. These approvals may be valid for longer than the Decision on Classification of Poisons into Groups, issued by the Republika Srpska Ministry of Health. Import approvals may only be issued for registered products. The product may only be placed on the market if it is accompanied by a declaration in the original package in accordance with the permit. The declaration and instructions must be written in one of the official Bosnia and Herzegovina languages. On the basis of approval issued by the Republika Srpska MAFWM, MoFTER issues the import permit.

Agriculture and plant protection inspectors at wholesale markets have made official checks at retail outlets selling PPPs. In Republika Srpska 190 wholesalers and retailers were inspected in 2007 and 115 were found not to be fulfilling conditions regarding the expertise of their staff. The sale of medications was banned until the non-compliance was rectified.

Laboratories

The phytosanitary inspectors submit samples to the following authorized laboratories: Agricultural Institutes of Banja Luka, Bijeljina, Sarajevo and Mostar.

Residues

Competent Authorities

The CCA for pesticide residues is the PHPO within MoFTER and, in particular, the Department for Phytopharmaceutical Products and Mineral Fertilizers. The CAs for inspections are the Entity inspectorates.

Official controls on residues

At present, the CCA is awaiting the implementation of Regulations upon which national and regional monitoring programmes will be developed in line with international standards. They recognize that the standard of laboratory and field testing needs to be improved. However, the CCA highlighted the fact that, in the Federation of Bosnia and Herzegovina, there is no (legal) use of PPPs made from active substances that are not registered in any of the exporting countries.

Laboratories

The phytosanitary inspectors submit samples to the following authorized laboratories: Agricultural Institutes of Banja Luka, Bijeljina, Sarajevo and Mostar.

6.4.12 Control system for Plant Health

Competent authorities

The CCA for plant health is the PHPO within MoFTER. The PHPO is a member of the International Seed Testing Association (ISTA) and the European and Mediterranean Plant Protection Organization (EPPO). At Entity level, the Entity Ministries (Agriculture Departments) and the Department of Agriculture in Brčko District have official responsibilities (e.g. application of Entity Laws and other Regulations). Official controls (in relation to phytosanitary matters) have been assigned to the Republika Srpska/Federation of Bosnia and Herzegovina inspectorates and the inspectorate of the Government of Brčko District. The inspectorates draw up the annual plan taking on board certain PHPO requests.

In cooperation with the European Union Trade Development Initiative (EUTDI) and with representatives of Entity and Brčko District Ministries and Entity and Brčko District inspectorates, the PHPO has drawn up 22 rulebooks (with the agreement of the Legislation Office and responsible Entity and Brčko District authorities) that are to be adopted in due course. In particular, a rulebook has been established on the measures for prevention, entering, spreading and suppression of pests on plants/plant products harmonized with Directive 2000/29/EC.

National surveys and protected zones

Bosnia and Herzegovina has not yet adopted legislation dealing with protected zones. However, procedures are in place based on Community legislation, surveys are conducted and an extensive list of harmful organisms (economic pests) confirmed and appearing every year is maintained. In particular, procedures are in place for protected zones (based on Directive 2001/32/EC), such as the movement of plants and plant products through protected zones (Directive 93/51/EEC), and entering points (Directive 98/22/EC).

The plant health programme plans to define monitoring areas with names of producers (especially in the case of potato crops, both mercantile and seed potato), and the scheme for sampling and analysis. For example, the Republika Srpska CA indicated that their authorized inspectors can issue phytosanitary certificates and producers could export their products without further checks being necessary for diseases and pests.

Research institutions and plant health checks

The following research institutions are authorized to carry out the compulsory health supervision of production and reporting in the field of agriculture:

- The Faculty of Food and Agriculture in Sarajevo
- The Federal Institute of Agriculture in Sarajevo
- The Federal Agro-Mediterranean Institute in Mostar
- The Agriculture Institute in Bosnia and Herzegovina
- The Agriculture Institute in Tuzla.

Research projects include the monitoring and eradication of *Diabrotica virgifera* and *Erwinia amylovora*.

In 2007, the Republika Srpska MAFWM began co-financing projects aimed at improving phytosanitary controls and plant protection measures. These measures were taken to revoke certain third country bans on Bosnia and Herzegovina and Republika Srpska. At present, the Faculty of Agriculture and the Agriculture Institute in Banja Luka and the Agriculture Institute in Bijeljina carry out a number of projects on control, surveillance, identification and destruction of harmful organisms.

Plant passport system and internal market checks

Five framework laws were adopted between 2003 and 2005, including the Law on Plant Health Protection adopted in 2003. The by-laws relating to plant health protection (covering plant passports) are in the process of being adopted.

Import controls

The Republika Srpska/Federation of Bosnia and Herzegovina inspectorate and the subdepartment for inspection activities in Brčko District are responsible for the management and operation of phytosanitary inspection at the border crossings as well as the implementation of supervision in the national territory. The Federation of Bosnia and Herzegovina has 18 agricultural inspectors, 12 on the border and six in the country. The Republika Srpska inspectorate/Brčko District have 13 and 3 phytosanitary inspectors on the border respectively. There have been some problems with setting up the inspectorate in the entities and assistance is required to establish suitable expert checklists for phytosanitary controls.

The role of the border inspectors is to conduct health control of plants, products of plant origin, facilities, seeds, seedlings that are imported, exported, re-exported or transported through the territory of Bosnia and Herzegovina. The protection of the domestic market (production and consumer protection) is achieved through the implementation of procedures at the border crossings.

Phytosanitary inspectors carry out the examination, which consists of:

- A document check (validity of phytosanitary certificates)
- Identification check
- Transport vehicle examination
- Examination of the health condition of plants and when required, the taking of samples following the removal of vehicle seals by the customs service
- Issuing phytosanitary certificates for consignments of plants/plant products exported/re-exported from regulated facilities in Bosnia and Herzegovina (if required by the importing country or country of transit).

Imports can take place through three Border Inspection Posts (BIPs) in Brčko District, 13 in the Republika Srpska and even in the Federation of Bosnia and Herzegovina.

Laboratories

General laboratory services relating to plant health (and in some cases seed quality) are available in the Federation of Bosnia and Herzegovina from the Faculty of Agriculture in Sarajevo, the Federal Institute of Agriculture in Sarajevo, the Institute of Agriculture in Bosnia and Herzegovina, the Institute of Agriculture in Tuzla and the Federal Agro-Mediterranean Institute, Mostar. In the Republika Srpska these services are available from the Agricultural Institute and the Faculty of Forestry (Banja Luka), the Agricultural Institute, Doboj, the Agricultural Institute, Bijeljina, and the Centre for Development of Hilly and Alpine Areas, Sokolac.

6.4.13 The main challenges associated with attaining an efficient food safety and plant protection system

Establishing a unified chain of command for the entire chain of food safety and separate strategic and control mechanisms in the implementation of the law

Although formally, this is the role of central institutions (MoFTER, SVO, PHPO, FSA) it is clear that the authority and control of this complex system of institutions is limited. It is very unclear how they can access information on what happens at the different levels of the system, and consequently how they can be held accountable for the consequences of uncoordinated and ad hoc actions in the implementation of the law. In addition, the laws themselves do not clearly define the responsibilities of certain actors in the food safety system. The result is that many competences are “shared” in a disorganized manner by central, entity, cantonal and local institutions. As a result, some of the producers are being over controlled, while others are not subject to any control at all. This lack of coordination and authority unity is also a source of corruption.

The creation of the General Inspectorate has not solved the problem of control.

On the contrary, responsible bodies lost their inspection functions, due to the fact that inspectorates themselves create and implement a plan of control. The FSA and the PHPO have no influence on control plans, and consequently cannot coordinate any action. What is more critical is that the SVO, FSA and PHPO do not set the strategic objectives for official control of food and animal feed and do not have any influence on priorities set by the Federation of Bosnia and Herzegovina/ Republika Srpska MoAFWM or the Brčko District Agriculture Department.

Audit of existing diagnostic and inspection system

The existing diagnostic and inspection system must be audited rigorously and fully. Only once the capacities, procedures and results of the work of all inspectorates and laboratories have been reviewed, can a diagnosis be made, disfunctionality identified and improvement measures determined. Measures might include investments in infrastructure, equipment and capacity development.

The design and implementation of a system which allows the implementation of food safety and other standards required for marketing of fruit and vegetables is highly relevant for the sector. This primarily refers to control of quarantine diseases and pests, the import of pesticides, certification of seeds and seedling material and the registration of pesticides.

For example, the Republic of Srpska officially uses the list of permissible active substances and pesticides registered in Serbia. It is known that in Serbia the Law on plant protection products, which regulates the registration of pesticides, allows the use of generic products without valid procedures of toxicology checks, and pesticides registered that way could be used over the next 10 years.

6.5 Voluntary standards

Voluntary standards, whether private (e.g. GlobalGAP, British Retail Consortium) or public (PDO/PGI, IPM, Good Farming Practice (GFP)) have become of utmost importance in the EC policy for food quality and the environment.

Voluntary standards cover a wide range of different initiatives that function at different stages of the food supply chain. They can operate at the business-to-business (B2B) level or at the business-to-consumer (B2C) level. They can make use of logos but, especially at the B2B level, many do not.

In Bosnia and Herzegovina, voluntary standards are being adopted by a growing number of producers. For the fruit and vegetable sector, GobalGAP is one of the mostly commonly

Table 6.3: The main B2B and B2C standards relevant for fruits and vegetables

	Standard owners	Focus	Communication	Logo on the product	Supply chain	Mandatory
IP/IPM	Private	Process/Product	B2C	Yes	Production	No
Global G.A.P	Private	Process	B2B	No	Production	No
Organic	Private/State in charge	Process/Product	B2C	Yes	Production/Processing	No
HACCP	Private	Process	B2B	No	Production/ Processing/Distribution	Yes
ISO	Private	Process	B2B	No	Production/ Processing/Distribution	No
BRC	Private	Process	B2B	No	Processing/Distribution	No
IFS	Private	Process	B2B	No	Processing/Distribution	No
PGI/PDO	Private/State in charge	Process/Product	B2C	Yes	Production/Processing	No
Halal	Private	Process/Product	B2C	Yes	Processing/Distribution	No
Kosher	Private	Process/Product	B2C	Yes	Processing/Distribution	No
Cost - R	Public	Process/Product	B2C	Yes	Production/Processing	Yes (for exporting in Russia)

Table 6.4: GlobalGAP certification costs (approximate)

Individual Farmer (single visit)	Individual Farmer (multiple visits)	Producer Group (Option 2)
1,200 Euro	1,500 Euro	2,500 Euro

Source: Bojana Karalic, REDD, Benchmarking of Standards, 2011

required standards in Western Europe. The GlobalGAP annual report indicates that 501 producers were certified in 2011.[21] Out of 20 cases studies, five producers are looking to adopt the standard. Producers' decisions are often driven by donor programmes. Between the two producers who were certified, one will renew their certification, while the other decided not to re-certify due to a sound cost/ benefit assessment. On the one hand due to the fact that the certification costs (BAM 2,200 per year) are not negligible for a medium-scale holding and on the other hand since domestic retailers do not request GlobalGAP.

Besides the financial costs and market demand issues, another obstacle for the adoption of GlobalGAP and other standards is the documentation effort, implying a lot of bookkeeping records required by all the standards.

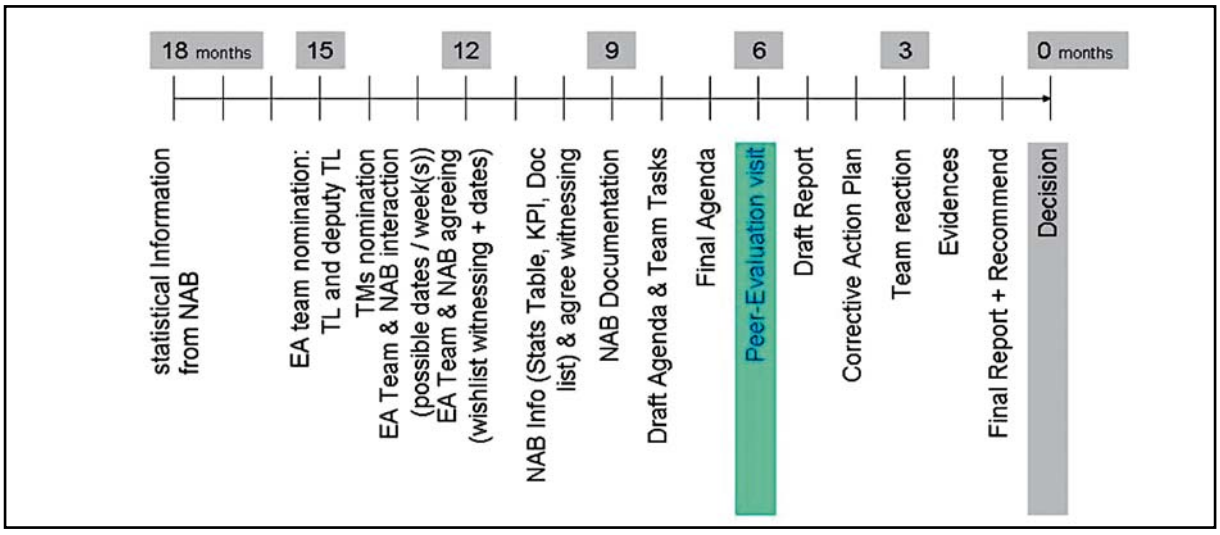
In the processing sector, premises are in good general condition and processors are aware of EU standards. As mentioned in the processing section, agro-industries have been HACCP certified and in some cases Halal certified.

6.5.1 Institutional constraints for a wider use of standards

Most of the standards rely on an accreditation, certification and inspection system that must be supported by national institutions to be efficient and affordable for users. The principle is that bodies that have procedures complying with international standards, guaranteed by competent accreditation bodies themselves recognized by peer institutions at international level, certify production processes and outputs.

The Institute for Accreditation of Bosnia and Herzegovina[22] (BATA) is the state level organization responsible for the criteria, procedures and practice of accreditation, for conducting accreditation of conformity assessment bodies, certification bodies for

Figure 6.1: Typical timeline for the Assessment of the Accreditation Bodies



TL: Team Leader *NAB: National Accreditation Body* *Doc: Documents*
TMs: Team Members *KPI: Key Performance Indicator*

[21] *A Year of Initiatives and Advance. Global G.A.P. Annual report. GLOBALG.A.P. c/o FoodPLUS GmbH, Cologne, Germany*
[22] *Law Establishing the Accreditation Institute of Bosnia and Herzegovina (Official Gazette of Bosnia and Herzegovina, no. 29/00, November 2004); Law on Accreditation (Official Gazette of Bosnia and Herzegovina, no. 29/00, November 2004)..*

certification of products, services, quality systems and personnel, and inspection bodies, etc. The Institute is responsible for performing certification of the processing facilities (i.e. dairies, meat processing) and laboratories according to the established procedures.

The Institute has also initiated multilateral agreements on cooperation and mutual recognition in the field of accreditation and represents the interests of Bosnia and Herzegovina in European and international accreditation organizations. BATA submitted an application for signing of the European Co-operation for Accreditation Multilateral Agreement (for testing and calibration laboratories and inspection bodies) on 9 March 2010. European Co-operation for Accreditation pre-peer evaluation took place in May 2011. The European Accreditation Multilateral Agreement Council (EA MAC) approved the results of the preevaluation visit. At the European Co-operation for Accreditation Multilateral Agreement Council meeting on 18 October 2011 a decision has been adopted that full evaluation takes place in May 2012. A similar process has to be carried out for product certification (EN 45011). Once BATA is accredited by EA, BATA will be able to accredit certification bodies recognized internationally. For the time being, the only way for CBs from Bosnia and Herzegovina to circumvent this handicap is to be accredited by foreign Accreditation Bodies (ABs), but this option is often costly.

Technically, the main challenge for the accreditation system is the capacity of assessors who will certify CBs. These assessors or assessor teams must have a sound knowledge of accreditation and certification mechanisms and procedures, but also very specific sectoral expertise (organic, meat or dairy processing, IPM, etc.).

The Multilateral Agreement: A long process to be recognized internationally

The Accreditation Body (AB) applies for the first time or for extension of scope. The AB has to specify and justify the scope (testing, calibration, etc.) for which it seeks signatory status;

- The Multilateral Agreement (MLA) Council secretariat reviews the application documents;
- The secretariat selects a lead assessor and deputy and team members. The evaluation team is then appointed;
- The team performs the document review (quality management system documents, procedures of the AB, etc.);
- Where applicable, a pre-evaluation is conducted;
- The team carries out the on-site evaluation. The evaluation combines evaluation of the management system at the AB office and observations to evaluate how the AB performs accreditation.
- The team drafts the evaluation report at the end of the evaluation. Findings have been approved with the AB at the closing meeting.
- A task force group appointed by the MLA Council management group looks at the evaluation report in order to issue a recommendation for the MLA Council on the result of the peer evaluation.
- The MLA Council makes a decision. Note: for applicants to EA membership, the recommendation made by the MAC has to be confirmed by the EA General Assembly where the final decision is to be taken.
- The EA publications and website are updated accordingly.

7. Subsector trends and specific investment needs

7.1 Pome fruits

Areas planted with pome fruits are increasing annually with a total amount of 27,000 ha in 2009, accounting for more than 20 percent of all the area planted with fruit. This is more than in Serbia, Croatia, the EU and CEFTA countries, but close to the average in NMS countries. Between 2005 and 2009, Bosnia and Herzegovina has produced on average around 80,000 tonnes of pome fruits, while in 2009 it produced over 97,000 tonnes. Over 70 percent of pome fruits produced are apples, while 25 percent are pears.

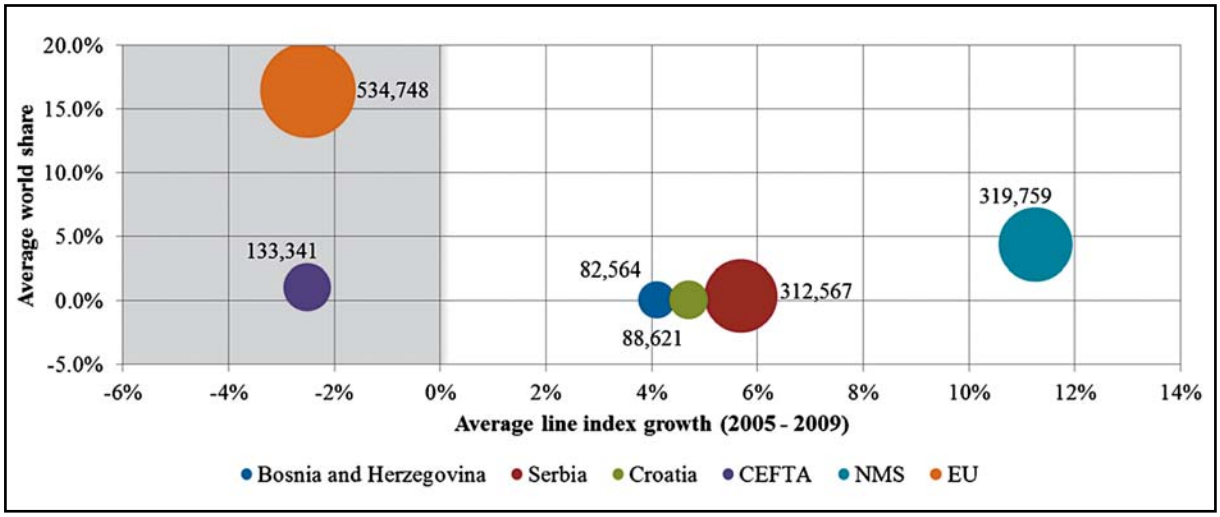
In recent years, production has constantly increased, mostly as a result of the establishment of new orchards with new technologies. The growth is 4 percent higher than average world growth and lower than the growth rate in Croatia and Serbia, but significantly higher than the CEFTA countries averages (see Graph 7.1.). Bosnia and Herzegovina is developing faster than EU countries, but is significantly behind NMS countries. NMS have a significant pome fruits production growth trend of around 11 percent, higher than world growth, and their production reaches 5 percent of total world production. According to statistics, yields of pome fruits are lower than for competitors and are not increasing significantly. This has resulted in a reduced yields index compared to the world average.

Globally production growth comes mostly as an after-effect of (i) positive pricing trends which are followed by an increase of demand for pome fruits especially in the Russian Federation market; (ii) increase of consumption in the country and the region; (iii) incentives supporting both entities to grow new plantations and (iv) both small farmers and businessmen not having many better investment options and profitable activities. The sector is thus very diverse in terms of producer types.

They can be grouped as follows:

- Small producers with very few hectares, who mostly produce for green markets or are selling onfarm where they have very basic storage capacities. They are either experienced in extensive production or are beginners. The varieties and technology they use are not suitable for foreign markets.
- Producers who have from a few to 20 ha, who have years of experience in production and are familiar with advanced technology and market demand. They usually do not have modern storage capacities. This limits

Graph 7.1: Average pome fruit production by selected countries[23] (world growth = 0)



Source: FAO database and Bosnia and Herzegovina statistics

[23] *EU is related in the graph to EU 27*

their marketing options. As for production technologies, these producers usually have experience in production, but do not heavily invest, for instance, in anti-hail nets or modern storage capacities, because of lack of financial resources or/and risk aversion.

- Companies with large plantations, acquired through privatization and thanks to capital accumulated in other sectors. Most of them have quality Ultra Low Oxygen (ULO) storages or are planning to build them. Their production is completely based on new technologies.

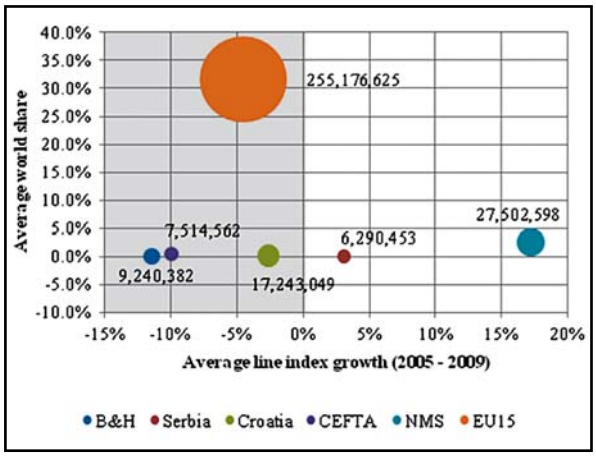
If Bosnia and Herzegovina wants to maintain a positive and sustainable trend in pome fruit production, it should encourage producers to enter into the second group by expanding surfaces. Currently this group of producers – based on family farms with 5 to 20 hectares of pome fruits and engaged in production only – accounts for a very small part of production in Bosnia and Herzegovina and almost zero in ownership of quality storage capacities. In the EU, and in the most advanced CEFTA countries, these producers are the backbone of fruit production development. This is why encouraging small producers (2–5 ha) to become medium producers (5–20 ha) and encouraging medium producers to become large producers, should be a clear objective of agrarian policy and politics of support through the national budget and IPARD.

Domestic and especially international trade in pome fruits has significantly developed in past years. Between 2005 and 2009, Bosnia and Herzegovina's export of pome fruits increased from EUR 1.2 million to almost EUR 2.15 million in 2009 (see Graph 7.2 and Graph 7.3). The export of pome fruits shows a positive trend in Bosnia and Herzegovina compared to the world average of 60 percent, which is somewhat lower than in Croatia and Serbia, but significantly higher than in CEFTA, the EU and NMS countries. However, despite such positive trends, pome fruits contribute only 10 percent of total fruit exports. Serbia is the only country that exports fewer pome fruits, while the largest exporters come from EU countries, where pome fruits represent nearly 30 percent of total fruit exports. Apple exports alone were worth EUR 1.44 million in 2009.

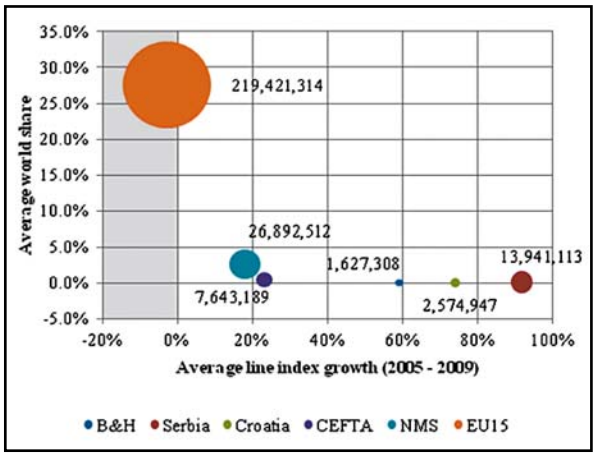
Such positive developments are primarily due to an increase in production resulting in particular from large plantations established after 2005.

However, Bosnia and Herzegovina has a negative trade balance, because it imports around EUR 6.7 million of pome fruits every year (see Graph 7.4). Approximately EUR 5.6 millions worth of apples and EUR 1.1 millions worth of pears are imported each year. This leaves a significant potential for import substitution with domestic production. The prerequisite for this would be to increase competitiveness. Not having customs barriers

Graph 7.2: Import of pome fruit into Bosnia and Herzegovina and selected countries (in USD)

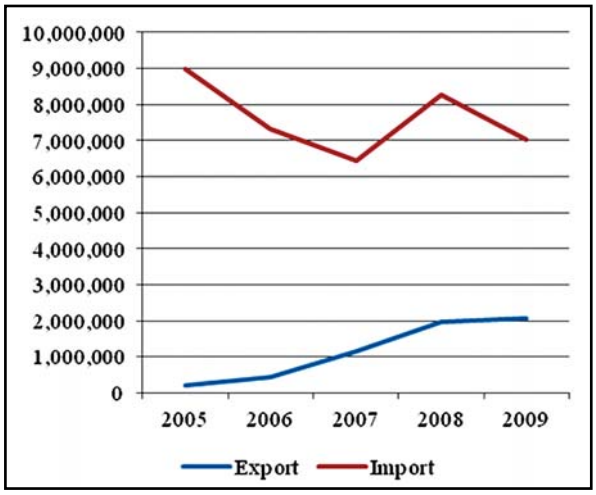


Graph 7.3: Export of pome fruit from Bosnia and Herzegovina and selected countries (in USD)

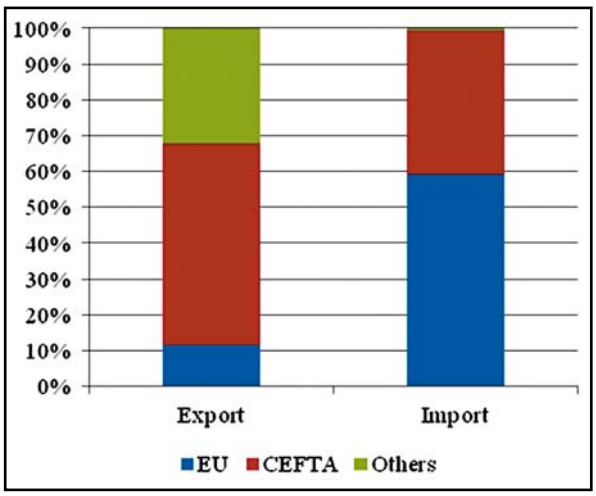


Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

Graph 7.4: Exports and imports of fresh apples



Graph 7.5: Import and export destination of apples (CEFTA, EU, others)



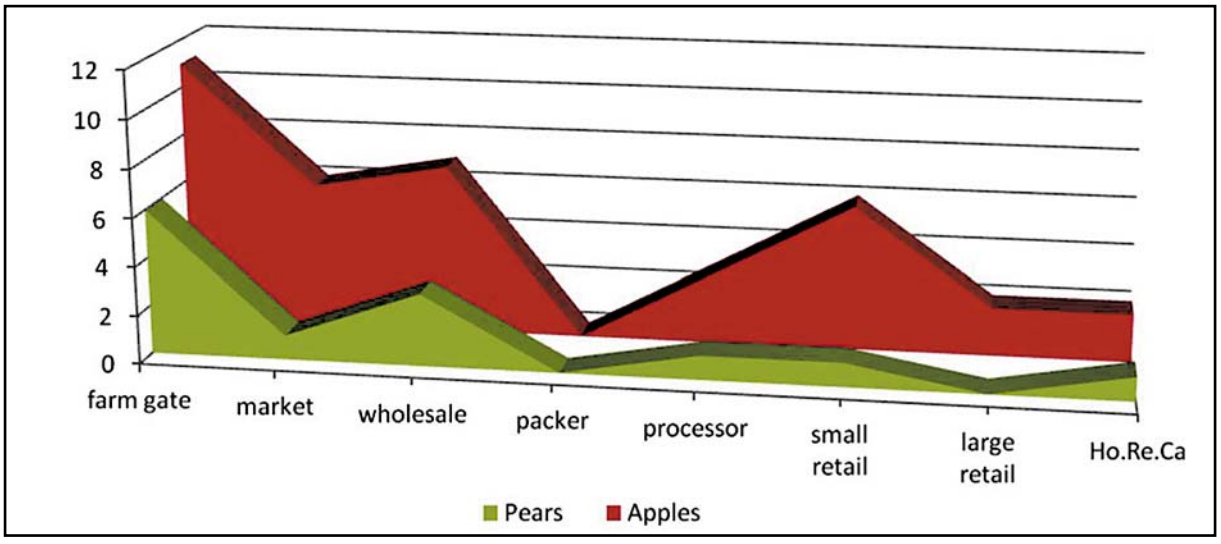
Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

with CEFTA countries, which are fast in adopting new technologies, and having reduced tariffs for very competitive products from the EU, increasingly exposes Bosnia and Herzegovina producers to competition. Under these circumstances, applying updated technologies and good practices is the only way to protect their position on the market.

Compared to the surrounding countries, Bosnia and Herzegovina imports more apples than Serbia but less than Croatia. Pome fruit imports are higher than CEFTA averages but significantly lower than NMS and EU country averages. The fact that Bosnia and Herzegovina has a negative import growth index compared to the world average indicates that the effects of liberalization revealed above have not yet impacted domestic producers. CEFTA countries, the EU and Croatia also have a negative trend, while Serbia and NMS have a positive trend in pome fruits imports.

Bosnia and Herzegovina has quality ULO storage capacities for pome fruits of about 25,000 tonnes, which corresponds to the current amount of first class pome fruit production. However, these facilities are unevenly geographically distributed and are not owned by growers. The consequences are that on the one hand part of the quality fruits cannot be stored and must be sold right after harvest; and on the other, a significant part of the ULO storage capacities remain unused.

Graph 7.6: Declaration of used point of sale for apples and pears (Farm Survey)



Although fewer pears are produced than apples, pear production is highly profitable and has great potential. Pear prices have been very high for years (EUR 0.4–0.5 per kg) due to low supply in the whole region. Pears represent a safe income for most of the apple producers, who try to increase plantations as much as possible depending on availability of agricultural land and seedlings, as well as problems caused by the presence of *fireblight* due to *Erwinia amylovora*. Although Williams is a standard variety with constant demand, other varieties such as Abate Fetel (Abbe Fetel) or Conference are more and more common.

A large number of autochthonous pear varieties can be found in rural areas of Bosnia and Herzegovina. They are used for processed products, mainly *viljamovka* or *rakija* (spirit).

Recommendations for the development of the pome fruit subsector

To strengthen the current positive development of pome fruit growing, Bosnia and Herzegovina should continue with the investments to improve competitiveness. Indeed, with the exception of a few producers, who planted orchards based on new technologies, production is traditional and uncompetitive compared to EU products. Improved competitiveness should be quality based with the adoption of an assortment of new varieties that are demanded by domestic and foreign markets. Specific recommendations include:

- *Establishing a system for certification of fruit planting material*. Planting material is identified as one of the limiting factors of production. Problems also arise due to varieties legality, varieties validity (false declarations to avoid licence fees for club varieties for instance) and seedlings with viruses and diseases. There is an urgent need for establishing a certification scheme for the production of virus free seedlings, but also rootstocks of market demanded apple and pear varieties, so that the nurseries can meet farmer needs.
- *Introduction of IPM guidelines, regulation, certification and labelling.* Some pome fruit producers, especially those export-oriented, fully implement the Integrated Production (IP) and/or IPM. However, due to the lack of certification and labelling, they are not able to differentiate their products on the market.
- *Development of standards meeting export markets requirements.* Export of pome fruits to the EU, especially to the EU supermarkets, implies quality standards. These standards are usually guaranteed by a certification system. Accreditation of domestic certification bodies reducing certification costs and coaching/advice services will help producers to implement the different standards. Other export markets, such as the Russian Federation market, require other types of compliance based on product control rather than certification of the production process. Controls aim mostly to check levels of residues and must be performed by authorized laboratories. Procedures and services, including accreditation of laboratories, should be established in that sense.
- *Better organization of producers.* This should facilitate the sales to more demanding markets, such as the EU market or supermarkets. It is very likely that in the next few years only joint marketing with unified offers and uniform quality will be possible. It would be best if these collaborative efforts materialize through cooperatives that will be prepared to market new rules, including Common Market Organization (CMO).

Generally speaking, most of the producers, especially the small ones, lack knowledge in production, storage and sales. These producers will have to furnish a greater effort to stay in the game. Some of the specific areas for training include:

- Information on standards, especially IPM
- Ways the pome fruits market functions as well as information regarding specific market requirements (assortment, standard, payment, etc.)
- Growing technology, especially pome fruits feeding
- Cost-benefit analyses on new technologies

- Ways of organizing a supply chain that would unify the offer
- Information on post-harvest management and storage techniques (including ULO cold storage) and their impacts on fruit physiology

Investment need for pome fruit development

Investments in the pome fruits sector are necessary across the whole supply chain, starting with production improvement, storing and processing.

Planting orchards based on new technologies (new high density orchards with quality certified seedlings/irrigation equipment/anti-hail nets/anti-frost system) should be one of the investment priorities. Such an orchard costs 35–40,000 EUR/ha and with adequate maintenance pays off within 4–7 years depending on storage capacities, yield and pricing. The main limiting factors that should be eliminated are access to the land, grouping parcels, providing constant access to irrigation water, financial means, knowledge while planting and a system of advisory services which should be capable of providing timely and adequate plant protection, if possible based on integrated production. The main goal to be achieved by new plantations is to decrease imports and increase production. This leads to a situation where every 50 new hectares can potentially decrease imports by 1 million EUR.

Promoting the building of new ULO storage capacities while there is unused capacity makes little sense as the newly established ULO could encounter the same fate. However, if growers are able to group sufficient volumes and are able to invest in and manage ULO cold storages, such initiatives should be supported and promoted. The reasons are (i) the need for sound distribution on the territory; (ii) gives the opportunity to growers to integrate the supply chain, and (iii) to trigger the emergence of producer organizations. The minimum of surface required to qualify for this type of investment should be 30 ha[24] while the capacities should not be less than 800 tonnes. The pricing for such a facility is around 800 EUR per tonne but the costs decrease as the capacity increases. Additional costs to be supported are investments in box pallets as well as in equipment for sorting, grading, washing and packing pome fruits. These are crucial to meet the prerequisites of the apple market whose quality requirements are progressively affected by EU market standards.

Besides ULO cold storages, the situation in Bosnia and Herzegovina, where most production takes place on small farms, justifies measures to support on-farm storage facilities for growers cropping at least 5 ha.

With production characterized by small producers and high production variability with different types of products, it is essential to develop the processing sector, which will buy off surpluses and valorize them in the form of juice, jam or rakija.

Although the Bosnia and Herzegovina market is not extremely demanding in terms of quality and thus lower quality pome fruits can be sold, processing still provides:

- Valorization of several thousand tonnes of apples which decay and for now are thrown away every year
- Better prices for fruit sold for fresh consumption
- Employment

These are sufficient reasons to justify investment in processing capacities, whether in large industrial ones (maximum 3 factories of over 3,000 tonnes processing capacity) or small ones with a capacity not under 50 tonnes per year, but certainly with standards necessary to export to the EU.

Producers in Bosnia and Herzegovina can have access to apple and pear seedlings thanks to qualityoriented nurseries, and this in spite of rather improper state control. However, there

[24] *This information is derived from experience in the Region based on the cost and price structures. A detailed analysis in this context was not possible.*

Table 7.1: Recommended investments specific to pome fruits

Investment	Specific	Conditions/ Limitations	Priority	Deadweight[25]	Eligibility
Axis 1					
Inv 1: Post harvest	Calibration equipment for grading and classification of pome fruits	Minimum capacity of 500 tonnes/yr	Medium	Low	Farmers or cooperatives with more than 30 ha of apple fruits
Inv 2: Storage	On farm storage facility	More than 200 tonnes	Low	Medium	Farmers with more than 5 ha of apple fruits
	ULO Storage facilities	Above 800 tonnes	High	Low	Farmers or cooperatives with more than 30 ha of apple fruits
	Box pallets – containers for storage	Only for ULO cold storage	Medium	Medium	Existing and new ULO storage
Inv 3: New technology on field	New high density orchards/ Irrigation equipment/Hail net/Anti-frost system	Minimum 2 ha	High	High	All IPARD eligible producers
Inv 4: Quality inputs	Pre-basic material for fruit in premultiplication centres	Existing nurseries	Medium	High	Existing nurseries and institutes
Inv 5: Quality orientation	Priority IPM and GlobalGAP	Existing nurseries and producers	Low	High	All IPARD eligible producers
Inv 7: Processing	Industrial processing plants	Not more than 3 factories Not less than 3,000 tonnes/yr	High	Medium	IPARD eligible cooperatives and farmers
	Small on-farm processing facilities for apple fruits	Minimum 50 tonnes/yr	Medium	Medium	IPARD eligible cooperatives and farmers including start up
Inv 9: Demand creation	Increase domestic consumption of apple fruits	Export-oriented Cooperatives			All IPARD eligible producer groups
Axis 2					
Inv 11: Organic and IPM	IPM and Organic	Minimum 3 ha	High	Medium	All IPARD eligible producers
Inv 13: Food processing standards	Waste management of processing industry	60% of processed apples are domestic	High	Medium	Apple fruit processors
Axis 3					
Inv 17: Training	IP and IPM		High	Low	Private and state advisory services

are still many nurseries with an urgent need for quality and food safety improvement. Upgrading existing nurseries and developing new ones will significantly improve the assortment of apple varieties, improve phytosanitary conditions and lead to higher quality products. It should also enable cutting costs for high quality seedlings. Therefore investment in nurseries has to be supported, though main activities related to nurseries improvement should come from the state and entities regulation and control enforcement.

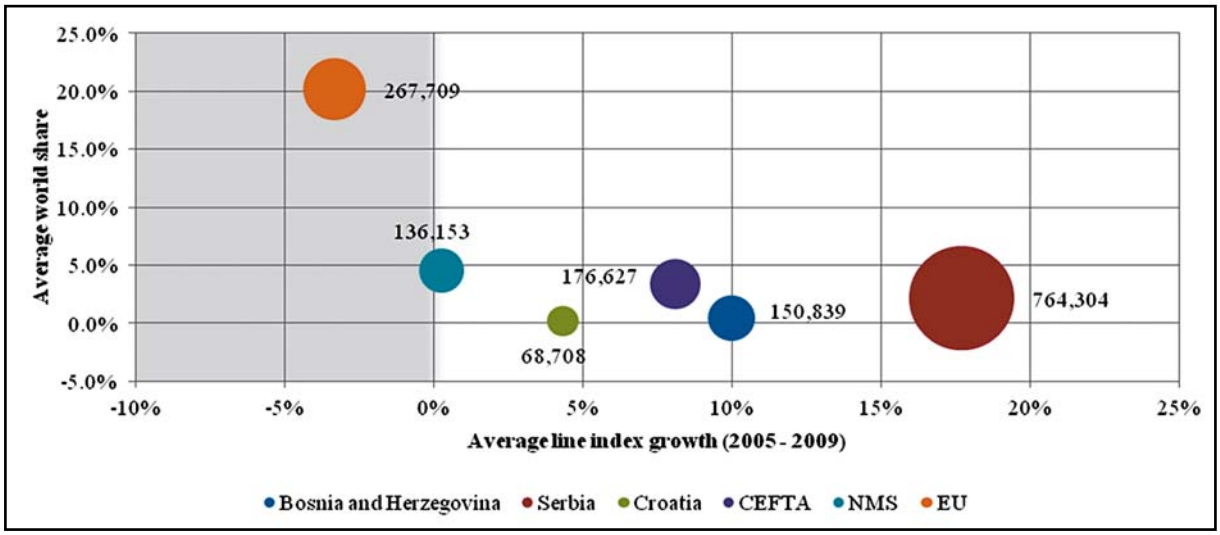
[25] Deadweight represents the losses incurred because of the inefficient allocation of resources. In the specific case of the proposed measures, it indicates, independently from the utility of the investment, which might be high or medium (indicated in the Priority column), the need to spend public money as the producers might make this investment anyway.

7.2 Stone fruits

Bosnia and Herzegovina has a long tradition in plum production, but also produces other stone fruits. Production of these other fruits is traditional, probably because they are not considered to be labour intensive (not seen as requiring cropping, pruning or protection). This might explain the significant surface area planted with extensive orchards. The average stone fruit production is around 150 thousand tonnes (180 thousand in 2009), which amounts to around 55 percent of total fruit production in Bosnia and Herzegovina. Such a large share of stone fruit is not typical for other countries except for Serbia where the share is somewhat lower than 50 percent. Stone fruit yields are mostly constant with relatively small variations compared to other groups of fruit and especially vegetables. These statistical averages do not actually show a realistic picture of the situation and trends in Bosnia and Herzegovina. The reality is a clear dual production system, similar to those in other countries of the region. On the one hand, there are relatively large but fragmented surfaces with extensive orchards, and on the other hand, high-density orchards with large areas and modern technologies. Bosnia and Herzegovina specificity is the decreasing production of traditional varieties used for making rakija prunes. In new orchards, new sorts demanded by the fresh market such as Čačanska lepotica (Cacak Beauty), Felicia Grosse, Čačanska najbolja (Cacak Best), Čačanska rana (Cacak Early) and Hanita prevail. Cacak's beauty is that it is one of those varieties that have succeeded in "modernizing" plum production because it is ripened between the end of July and the beginning of August when the price is twice as high as in mid-August when, for example, Stanley comes on the market. The fresh plum season is limited to 120 days and plums cannot be stored very long. Hence higher profit can be achieved with a variety assortment allowing to market plums over a long period and especially in early and late seasons. One of the problems this chain encounters is lack of and bad geographical distribution of cooling chambers where the product must be refrigerated before transport.

Innovation and adoption of new varieties is also happening in cherry production. Although Herzegovina is a traditional area for cherry production, producers are adopting low vigour varieties and low stem plantations. These technological changes over the past few years have significantly impacted the production and sales of stone fruits, primarily plums and cherries. The production growth is significantly higher than the global trend (see 7.7). Only Serbia has a

Graph 7.7: Average stone fruit production by selected countries[26] (world growth = 0)



Source: FAO database and Bosnia and Herzegovina statistics

[26] EU is related in the graph to EU 27

higher growth index, while Croatia and CEFTA countries also have positive trends, but still lower than in Bosnia and Herzegovina. Stone fruit production growth in NMS is running at the same pace as world production, while the EU as a whole has a lower increase than the worldwide production. The EU accounts for 20 percent of the worldwide production, NMS for 5 percent, Serbia for 2 percent, while other CEFTA countries, including Bosnia and Herzegovina each represent around 1 percent.

Plums account for over 85 percent of stone fruit production in Bosnia and Herzegovina. In 2009, Bosnia and Herzegovina had 75,000 ha planted with plums, which is more that 88 percent of total surfaces under stone fruit or around 60 percent of surfaces planted with any fruit. During 2009, 156 tonnes of plums were produced. Most of the production is based on old plantations, which give small and unstable yields. This means that yields in Bosnia and Herzegovina are lower than world averages and significantly lower than in EU countries where plums are grown intensively. Only Croatia has a somewhat lower yield. Typically, traditional low-density orchards have trees planted with a density of 10 meters on 9 or 6 meters on 4. When located on quality soil, such traditional extensive orchards are not economically sustainable in Bosnia and Herzegovina, where producers are struggling to access additional productive land. Such orchards also represent stocks of diseases that can spread to other areas and impact negatively yields of modern orchards. On the other hand, low-density orchards are also characterized by high-stem fruit trees that contribute to the landscape. However, this is only the case when orchards are maintained.

Another factor of low yields and reduced gross value added (GVA) per hectare is the obsolete pruning techniques applied in most of the new plantations resulting in pyramidal crown or vase shapes that require greater planting distances.

While the importance of plums is the result of tradition and consumption habits, symbolized by the rakija culture, growth trends after 2005 (see Graph 7.8.) have been possible thanks to:

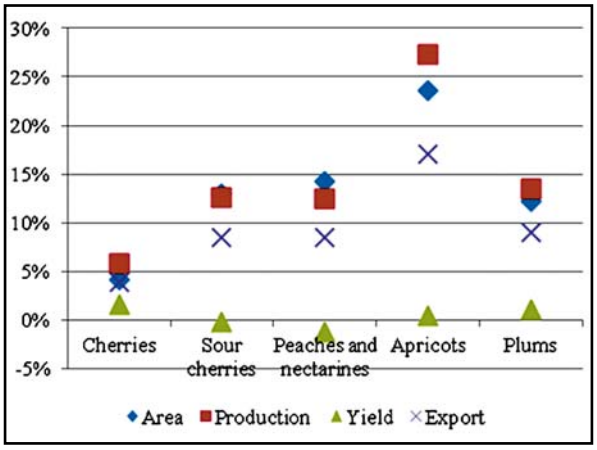
1. Increased global demand for plums
2. A tax free export regime from Serbia to the Russian Federation and the development of trade channels to benefit in an abusive way from this regime
3. Investments in processing capacities for prune production and marketing. Producers in Bosnia and Herzegovina obviously follow these changes that played as clear incentives to increase planted areas with new market demanded varieties

Although other stone fruit production is less significant, it has also grown. Cherries account for 6 percent of total stone fruit production. Peaches and nectarines have also experienced significant production growth. The highest growth can be observed in apricot production, but apricots cover just a few hectares of land. The reasons for growth with other stone fruits are the same as those related to plums. However, their production is not as influenced by tradition, and new plantations are intensive, with new assortments and modern technology.

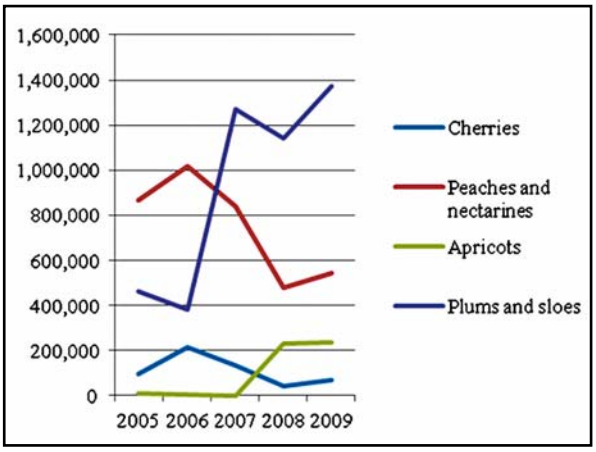
Bosnia and Herzegovina exports about EUR 1.4 million worth of stones fruits every year. Over 90 percent of the export takes place within former Yugoslavia countries, almost 80 percent with CEFTA countries or 63 percent exported to Serbia. Bosnia and Herzegovina exports only 10 percent (2,774.5 tonnes) of its stone fruit production.

The value of stone fruit exports grew significantly over the past years. This is primarily thanks to plum exports, which within two years (2006 and 2007) grew by nearly 300 percent. Production increase also occurred with plums, sour cherries and peaches by over 10 percent, while a somewhat lower increase occurred with cherry production (around 5 percent). However, looking at absolute production values and export, apricot is almost negligible because only 500 ha are planted with this fruit in Bosnia and Herzegovina, and that after all increases.

Graph 7.8: Average line growth index 2005–2009



Graph 7.9: Export of stone fruits in USD



Source: United Nations Comtrade, FAO database and Bosnia and Herzegovina statistics

The ratio between stone fruit export and other fruit export is similar to the world average, as well as to the average of surrounding countries, CEFTA and EU.

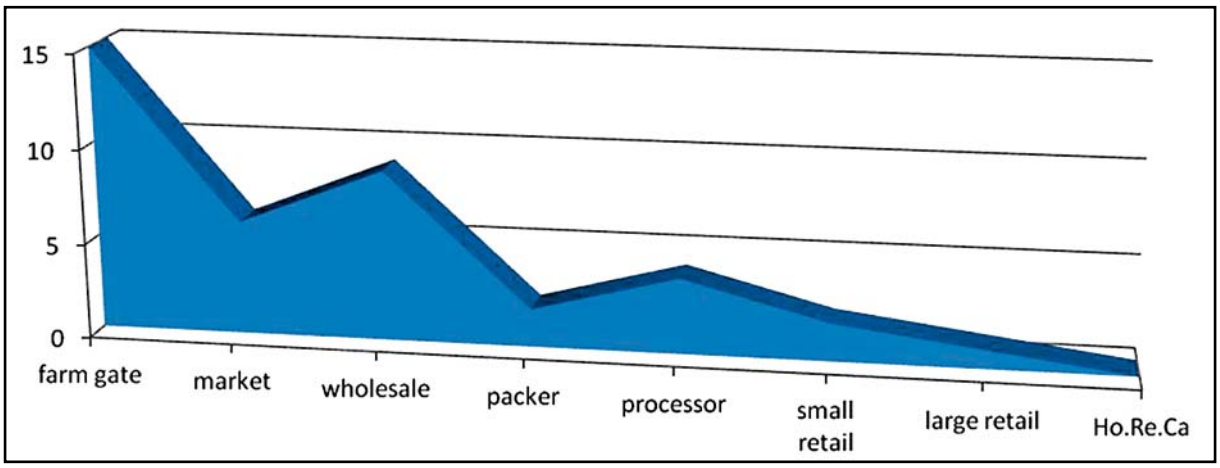
Export growth in stone fruits is positive compared to the global average but is significantly lower than export growth in Serbia, Croatia or CEFTA countries average. Leading products in stone fruit export were peaches and nectarines in 2005, and plums in 2007 (see Graph 7.9). Over 90 percent of stone fruit exported is exported fresh which is more than in competitor countries – Serbia (around 80 percent), NMS (around 50 percent), and Croatia (around 30 percent). Plum exports represent 61 percent of the total stone fruit exports. With EUR 550,000, peach and nectarine export is in second place (almost 25 percent). Over 30 percent of the peaches produced are exported, mostly to Serbia (44 percent) and Slovenia (31 percent).

Bosnia and Herzegovina imports yearly stone fruit to a value somewhat higher than EUR 3.7 million. Compared to the world average, the growth trend is negative and is lower than in comparing countries. EU and Croatia also have a negative growth rate, while CEFTA, NMS and Serbia have positive growth rates. The most imported stone fruits are peaches and nectarines, followed by cherries. 80 percent of stone fruit imported in Bosnia and Herzegovina are fresh; a rate comparable to CEFTA countries, NMS and Croatia. Only Serbia imports almost an equal amount of processed and fresh stone fruit, but these imports are negligible.

The growth of exports from Bosnia and Herzegovina has been made possible by the increased demand of certain markets, mainly the Russian Federation, the intermediary role played by Serbia and the few processing capacities who source raw material in all CEFTA countries. These new opportunities for quality products have reinforced the segmented character of the market. Three characteristic supply chains can be differentiated in the production and sales of stone fruit in Bosnia and Herzegovina.

- ***Short supply chain ending at farm or local market.*** This is the most common supply chain, it includes the largest number of small producers who have from several dozen to several hundred stone fruit trees and who process their products into rakija. Only a marginal quantity of fresh fruit is sold, mostly on-farm or locally. Production technology is basic and the quality is not always the main driver. It is estimated that over 70 percent of plums is transformed into spirit.
- ***Export oriented supply chain for fresh products.*** This chain is small in volumes but it is the fastest growing. It is quality and assortment oriented, and is mostly made up of producers with more than one ha of plantations. The key with this chain is quality orchard maintenance and an

Graph 7.10: Declaration of used PoS for plums (Farm survey)



assortment aiming at the highest prices with early varieties.

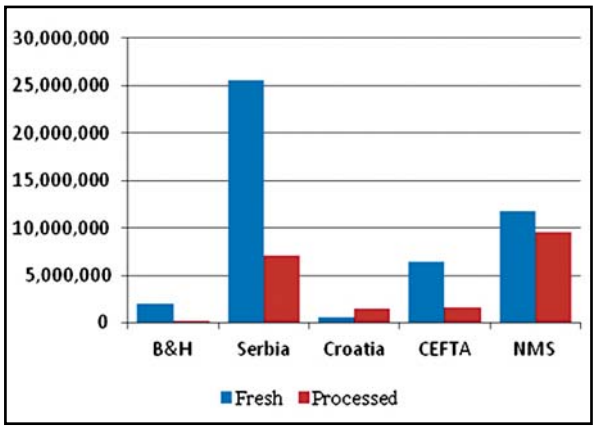
- ***Buying off for processing (drying, freezing, rakija, jams)***. Increased local consumption, export potential to the EU following the preferred status for Western Balkan countries, opportunities offered by the agreement between Serbia and the Russian Federation, are many of the factors that have triggered investments in processing capacities for stone fruit, primarily prunes and rakija. Orienting lower quality fruits in this value chain, hence diverting them from the fresh and export markets contributes to reduce the "noise" they create on the market and maintains higher prices for quality fruits.

A large amount of rakija production is self-consumed, offered or sold on-farm and local markets. That is a way for producers to avoid legal procedures and taxes. Although single households process limited quantities of fruit (from a few hundred kilograms to several dozen tonnes of fruit yearly per processing units), these processors buy off stone fruit on the local market thus contributing to the market value of this crop. One of the policy objectives should be to make possible the increase of producers distilling high quality products, with advanced marketing concepts to progressively penetrate highly demanding but also profitable markets.

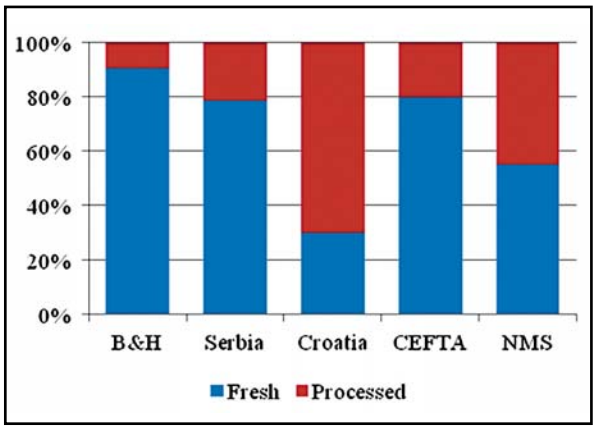
Specific recommendations for the development of the stone fruits subsector

Bosnia and Herzegovina has a long tradition, climate conditions, favourable trade linkages and increasing demand, which all create enough pre-conditions to have good performances in production and trade of stone fruits. The

Graph 7.11: Exports of fresh and processed stone fruits in absolute terms (USD)



Graph 7.12: Exports of fresh and processed stone fruits in relative terms



Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

country only partially uses these advantages. Planting new orchards and improving technique should lead to quality and yield increase, as well as extension of the supply chain towards export and processing. Such developments could result in substantial profits for farms. However, this can happen only if there is a sense among producers that, as any other crop, plum also demands investments and technologies, including planting high-density orchards and appropriate husbandry techniques. Other specific recommendations for all stone fruit crops include:

- *The possibility of certifying IP/IPM and creating additional value.* A large part of plum production as well as of other stone fruit production can be certified as IP/IPM, without major investments and for the most qualified producers, with little changes in production practices. Bosnia and Herzegovina growers who produce plum, cherry and apricot for the fresh market must anticipate future requirements of the market that are most likely to include IPM as the EC seems to promote this standard with the new regulative framework. Hence, the Bosnia and Herzegovina government should, as soon as possible, establish a system and all conditions that facilitate the adoption and the certification of IP and IPM. Similarly, other measures allowing the domestic certification of organic farming would represent a clear asset giving more chances for export to the EU market.
- *Research related to production and consumption of stone fruit.* Stone fruit plays a major part in total fruit production and must therefore be the subject of research in Bosnia and Herzegovina.
- *Conversion of current low-productivity plantations into new plantations.* A programme should aim at clearing land from unhealthy plants and replacing them with more productive ones. These programmes must include expert services and advisers, private or public ones.
- *Programmes which would convert small processors of either rakija or prunes into medium, registered market processors*. These programmes should include economic incentives and support for compliance with regulations while preserving specificities of the region, farm or product. An ad hoc marketing component should be added to such programmes.

In the case of plum production, tradition is often emphasized as the main advantage, but also a real weakness. There is a lack of knowledge in the sector and tradition is an obstacle to innovation. An additional problem is that a large portion of the rural population is engaged in plum production, while agriculture, or fruit production might not be their main source of income. Still, working with leaders who will for example show the new technologies productivity could play a demostrative role. Some of the specific areas for training include:

- Technology of growing high-density orchards, new technologies and stone fruits husbandry techniques
- Information on standards, especially IPM
- Market information, especially on the fresh plum market
- Improvement of processing, primarily rakija and prunes on small farms
- Handling and packaging of stone fruit for the market

Investment needs for development of the stone fruits sector

Plums are grown in the areas of Podrinje, Potkozarje, Majevica, Gradacac, Gracanica, Brčko, srednja Bosna, etc., all regions characterized by low agricultural productivity and social vulnerability. One of the possibilities recognized by many local development strategies is the increase in cropping and processing of stone fruit. Investing in stone fruits is expected to contribute to the rural development of less favoured areas. Additionally, these regions have a rich tradition of making stone fruit specialities that need to be protected, branded and promoted.

Priority investments in this sector should include four groups of measures: access to inputs, production, post-harvest management and processing.

The cost of new plum plantations varies significantly depending on the plant numbers and quality, and the technology level – irrigation systems and anti-hail nets. However, the payback period is between to 3 to 5 years provided that new technology is used, and export markets exploited (see in the annex Case Study FBH-4). Cherry production is also highly profitable. especially if taking advantage of export opportunities to the Russian Federation. This is why one of the investment priorities should be planting new plantations based on new technologies, especially in the case that the plantation means shifting from a current non-productive plantation to a productive one. New plantations are, as a rule, export-oriented. Every additional 60 ha of new plantations provokes an export increase worth around EUR 750,000.

Table 7.2: Recommended investments specific to stone fruits

Investment	Specific	Conditions/ Limitations	Priority	Deadweight	Eligibility
Axis 1					
Inv 1: Post harvest	Equipment for grading/ sorting/packaging of plums	Minimum capacity 500 tonnes/yr	High	High	Farmers or cooperatives
Inv 2: Storage	On-farm pre-cooling and storage facility	More than 20 tonnes	Low	Medium	Farmers and cooperatives with more than 3 ha of stone orchards
Inv 3: New technology on field	New high density orchards/ Irrigation equipment/Hail net/ Anti-frost system	Minimum 2 ha	High	High	All IPARD eligible producers
Inv 4: Quality inputs	Virus-free, pre-basic material for fruit in pre-multiplication centres	Existing nurseries	High	High	Existing nurseries and institutes
Inv 5: Quality orientation	Priority IPM and GlobalGAP	Existing nurseries	Low	High	All IPARD eligible producers
Inv 7: Processing	Refrigerated trucks for frozen and cooled products transport	Brand new	High	High	Existing owners and new investors as cooperatives and private entrepreneurs
	Equipment and complete lines for combined chemical and physical treatments including cooling, heating, extracting, drying operations.	Existing and new plum fruit processing	High	Medium	Existing owners and new investors in processing facilities. Presentation of a business plan for each application for funding
	Packaging material for fresh, frozen retail pack and packaging for processed products	New and existing facilities	High	High	Existing owners and new investors in processing facilities
Axis 2					
Inv 12: IPM	IPM		High	Medium	All IPARD eligible producers
Axis 3					
Inv 17: Training	Services for producers Support in trading fresh products		High	Medium	All IPARD eligible producers

Investments in existing and new nurseries aiming at improvement of planting material quality and assortment are necessary in order to achieve growth and adequately meet new plantation needs; primarily in the production of virus-free material, and pre-basic material for fruit in pre-multiplication centres for varieties in demand on the EU fresh market.

Although it is not stored, post-harvest management is key for stone fruit. Firstly, there is a need for equipment for cooling the fruit before transport in order to preserve the quality of plums, cherries and apricots. Such equipment extends the supply chain and increases product added value. Although fruit shipments take place shortly after harvest, the cold storages must allow cooling of significant volumes for a short timeframe. This technique improves fruit stability and transportability required in particular for export markets. Cold storage facilities are highly profitable investments indeed.

Pre-cooling facilities and fast-freezing facilities, that are lacking in Bosnia and Herzegovina, will allow further sales during the winter, when prices are considerably higher and allow the export of frozen products. Investments in storage capacities should be followed by investments in calibrating and packing stone fruit, as well as in transportation means.

Support measures will also boost investments in processing facilities because Bosnia and Herzegovina has sufficient volumes to generate significantly higher income from processing of stone fruit than it currently does. This would, on the one hand, increase raw material demand and its total value. Investments should benefit both existing and new processing units. Financial support should help existing small, medium and large units to upgrade standards and technology in order to comply with EU regulations. Other measures should facilitate the establishment of medium and large processing capacities, equipped with new technologies and in compliance with EU standards. Any further state support must be bound to conditions such as firm registration and compliance with food safety and hygiene regulations, and other laws and obligations. Field research shows that there is a significant interest in these investments, especially by larger producers and existing processing capacities, and with small and medium rakija and prune producers.

7.3 Berry fruits

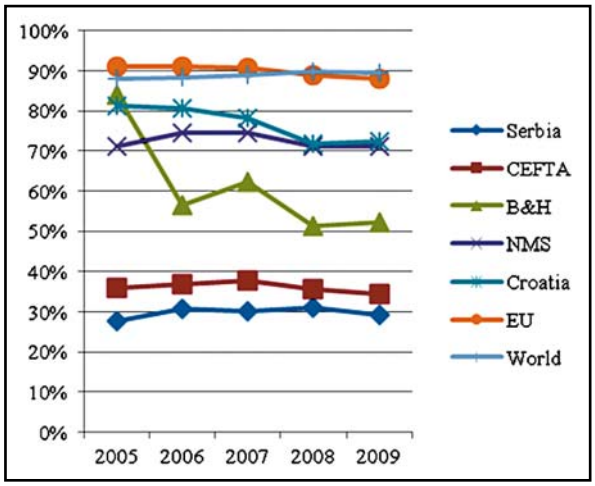
Bosnia and Herzegovina has a good geographical position and climate conditions for berry fruits production, but these fruits are grown on small surfaces, on 2.200 ha. Strawberry is the main small fruit cropped in Bosnia and Herzegovina with about 1.400 ha, followed by raspberry. Surfaces under raspberry production have shown a steady growth over the past years and reached 1,000 ha in 2009. Blueberry production is very marginal, but the first intensive plantations were recently planted. The ratio between strawberry and raspberry production in Bosnia and Herzegovina is almost half-half. This distribution is different from other countries, where strawberry usually is clearly the main berry fruit (see Graph 7.13).

The growth of surfaces under berry fruit in Bosnia and Herzegovina has a positive trend; 4 percent higher than the world production growth. In other countries, the surfaces under berry fruits have a negative growth. It is similar when looking at the berry fruit production trend. Unlike other countries (except for CEFTA countries), only Bosnia and Herzegovina has a positive growth trend of 25 percent compared to the world average (see Graph 7.14).

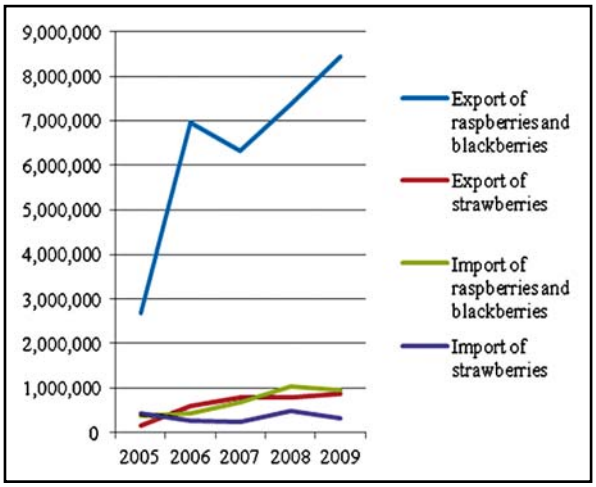
Due to large yield fluctuations, the amounts of berry fruit produced significantly differ from year to year. A production record was reached in 2007, when over 13,000 tonnes of strawberries and 8,000 tonnes of raspberries were produced.

International donor projects have highly contributed to developing the raspberry value chain. These projects with clear socio-economic objectives have also impacted

Graph 7.13: Share of strawberries in total strawberry and raspberry production



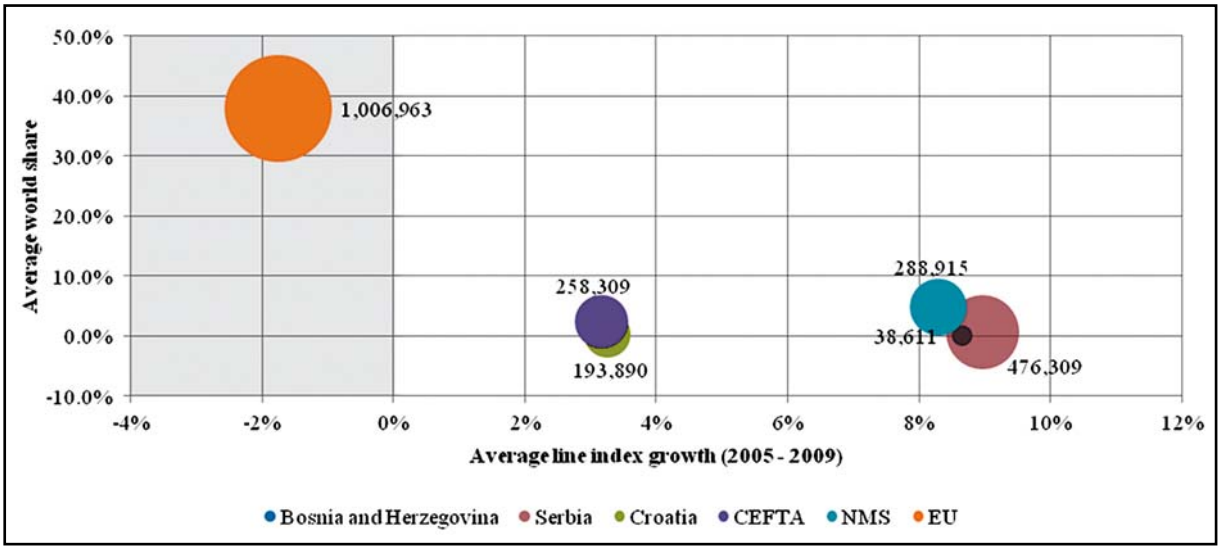
Graph 7.14: Import and export of different berry fruits



Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

the structure of farms engaged in the value chain and the profile of growers. New plantations are aimed at generating income for weak households and strengthening rural economies. However, this social approach has mostly focused on rural families without widening project scope over the whole chain. As a consequence, the producers, beneficiaries of these projects, have not developed enough linkages with market players. In the absence of market feedback and business partners, little was done to identify appropriate varieties, technologies and innovations. Common "wrong choices" have been systematic (e.g. use of market non-demanded varieties, plantations on inappropriate soils). Practices, often approximate, have not been able to prevent pests and disease outbreak. In years with adverse conditions, mass drying of raspberries has occurred due to diseases (in 2005 for example). Still, these projects resulted not only in income improvement but also in a significant increase in the national production and trade of fruits (see Graph 7.15). They also created interest in investments in storage and processing capacities.

Graph 7.15: Berry fruits production[27]



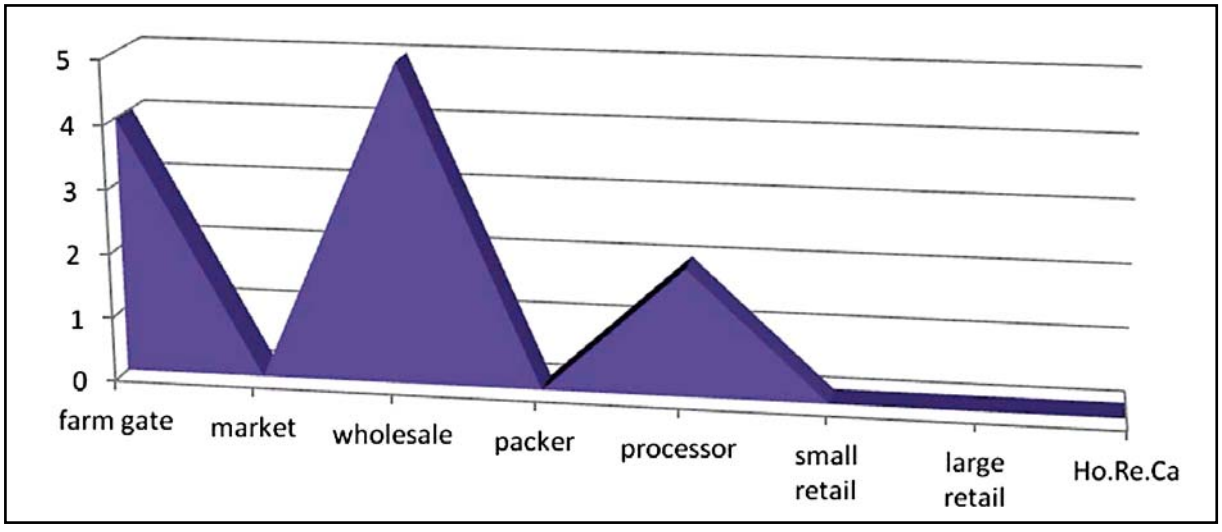
Source: FAO database and Bosnia and Herzegovina statistics

[27] *EU refers in the graph to EU 27*

Two main supply chains of berry fruit can be identified in Bosnia and Herzegovina. The major part of wild (blueberry, strawberry, blackberry) and cropped (predominantly raspberry and partially blackberry, strawberry and blueberry) berry fruits is supplied to the primary processing industry, mainly for frozen production. Frozen fruits are exported to the EU, directly or indirectly via Serbia. This supply chain requires cold storages and equipment for quick freezing. A significant increase in those types of investments has been observed over the last few years. It is estimated that Bosnia and Herzegovina has around 15 export-import processing firms, which have their own cold storage facilities and are engaged in frozen fruit trading. The largest ones are Bosnaplod Brčko, Klas Sarajevo, Bos Agro Fud Srebrenica, H&H Fruit Bugojno, Insieme Bratunac and Rolend Bosanska Krupa. Besides these export-orientated companies, which buy off most of the fruit, there are also smaller companies and traders who distribute to retailers or export exclusively berry fruit. The number of stakeholders in this chain is increasing both at production and trade level, causing a certain instability, including with regard to prices and that has deterrent effects on some growers who sometimes switch to other activities.

The second supply chain, the fresh berry fruit supply chain, mostly strawberries, is usually short. However, fresh berries are progressively entering supermarkets or being exported. Strawberry production in Bosnia and Herzegovina is in clear expansion. The main production regions are Tuzla, Čelići, Brčko, Banja Luka (Laktaši and Slatina), Bijeljina (Crnjelovo), Mostar, Trebinje (Popovo polje). The largest volumes are originating from the Čelići and Banja Luka areas. Although statistical data do not show major changes in surfaces or production, it is obvious that old plantations are being replaced with new intensive plantations, and with new varieties, mostly of Italian origin. Innovation – drop-by-drop, mulch film, new varieties, water-soluble fertilizers – play a huge role in the development of the chain. The most grown varieties are Clery, Arosa, Marmolada, Madeleine, Alba, Maya, Roxana (for the fresh market) and Senga Sengana and Arosa (for processing). Depending on the applied technology and the year, the yields fluctuate between 15 and 30 tonnes per hectare. Strawberries are replanted every 2–3 years. The majority of the producers use imported and certified frigo seedlings. These new varieties demanded by the fresh market are cropped on polyethylene mulch film with dripping irrigation. This technology has become the standard for strawberry production in Bosnia and Herzegovina. The technological progress of producers has allowed a significant productivity increase due in particular to the production during the first year. This makes it significantly more competitive on the market. The main competitors of Bosnia and

Graph 7.16: Declaration of used PoS for raspberries (Farm survey)



Herzegovina with regard to the production of strawberries are Turkish and Greek growers during the early season.

Although berry fruits only represent a marginal share of total fruit production in Bosnia and Herzegovina, they amount to almost 40 percent of total fruit exports. Yearly export value was EUR 5.7 million on average in the period from 2005 to 2009, and EUR 6.7 million in 2009 (see Graph 7.18). Strawberry production amounted to less than 10 percent of this export value. The main export products are raspberries and forest wild berries. Yearly export of fresh strawberries to Croatia, Germany and Holland are worth only EUR 150,000. Processed strawberry exports are several times higher, and the main export partners are the following EU countries: Sweden, Slovenia, Austria and Italy.

The value of fresh berry fruit export is less than EUR 75,000, and fresh berry fruit is exported mostly to Italy and Switzerland; processed fruit is mainly exported to the EU countries: Sweden (30 percent of total export), Germany, Belgium, France and Austria.

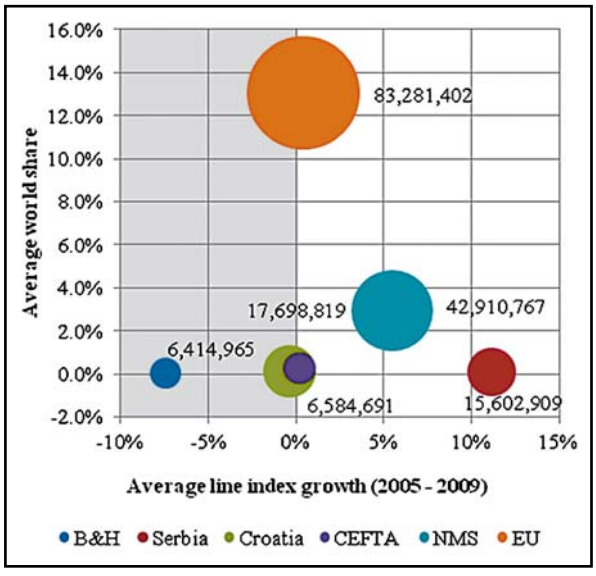
In berry fruit international trade, Bosnia and Herzegovina has a positive balance to the value of EUR 4.4 million yearly. Bosnia and Herzegovina's main competitors (NMS and CEFTA countries) have a positive berry fruit export growth trend compared to the world average, but with about 40 percent, the increase of Bosnia and Herzegovina's exports is the highest compared with other countries (see Graph 7.18).

Recommendations for berry fruit development

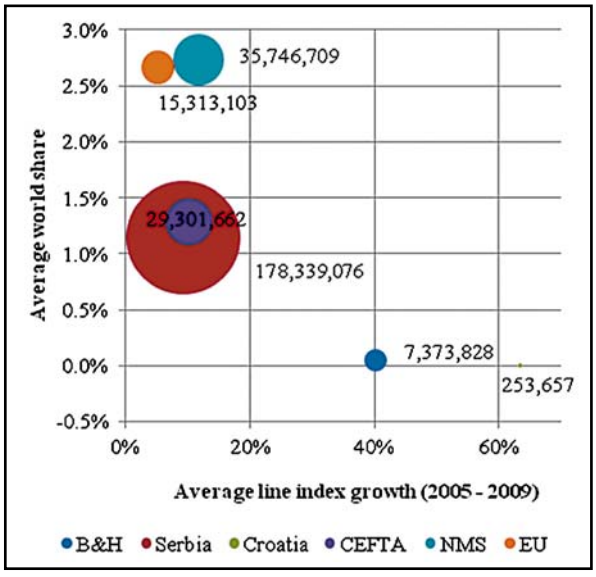
No matter how positive the trends in production, yield and sales of berry fruit in Bosnia and Herzegovina are, this production is still small and has great potential for growth. This sector was supported by subsidies from both entities, but it is essential to adopt a long-term strategy. Some of the specific recommendations include:

- Build on innovation effort in strawberry production. This entails:
  - Using more frigo seedlings
  - Production of strawberries under shelter, in low and in high tunnels where there is a possibility to control the production cycle
- Implementing GlobalGAP standard in raspberry and strawberry production, in order to:
  - Reduce the risk of norovirus which occurs due to bad practices during harvest
  - Seize opportunities for fresh products export

Graph 7.17: Import trends of berry fruits into Bosnia and Herzegovina (world = 0)



Graph 7.18: Export trends of berry fruits from Bosnia and Herzegovina (world = 0)



Source: United Nations Comtrade database and Bosnia and Herzegovina statistics. EU refers to EU 27 in the graph

Measures should favour group certifications to promote a locally organized supply chain around one buyer.

- Organizing a fresh raspberry export supply chain towards Adriatic and EU markets. Higher prices and reduced costs of freezing raspberries could result in higher margins. However, this implies a new assortment of varieties, in particular the adoption of early and late varieties, in order to be able to supply the fresh market over longer periods. Additional investments in post-harvest handling, including packaging and logistics would also be needed. Still, it is estimated that by organizing such a raspberry supply chain instead of the traditional freezing, added value of up to 30 percent can be reached.
- Support linkages of berry fruit production with rural development programmes. Experience shows that among the crops supported by international donors' programmes, the best results are achieved with berry fruit supply chains. Phasing out of donors programmes should be accompanied by the establishment of steady linkages between producers and financial institutions.
- Diversifying the production, processing and sales to achieve higher added value through:
  - Making new products from berry fruit (rakija, jams, juices)
  - Implementing standards such as organic and GI
  - Improving packing and product promotion
  - Creating an organization of berry fruit producers and processors at the Bosnia and Herzegovina level. Such an organization would defend the value chain interests and try to harmonize the Bosnia and Herzegovina offer on the EU market

Due to a fast sector growth, donor programmes driven rather than by the market, it is urgent to professionalize this value chain by improving producers' skills and knowledge in term of production, postharvest management and marketing of berry fruits. Training programmes should include:

- New technologies in growing and especially in feeding the plants
- Information on varieties assortment adapted to the area and demand by the market
- Post-harvest management, in both cold and fresh supply chains
- Role and functions of producer organizations

Investment needs for the development of the berry fruit subsector

Investments shall aim at (i) increasing yields and cropped areas, (ii) increasing the added value of exported product (fresh, organic, improved labelling and packaging), (iii) developing the processing sector in order to double the value of berry fruit production within a five year period.

Investments in new plantations of strawberry, raspberry and other berry fruits based on new technologies will contribute to a GVA increase of around 3,000 EUR/ha. Additionally, due to an intensive need for a workforce in the harvest period, a family of four can improve employment status and obtain substantial income.

In addition to expanding the surface under berries, investments shall aim at:

- Extending the harvest period, by increasing strawberry and raspberry cropping under cover and use of early and late varieties
- Adoption of equipment including mulch film, poles and wires for plantations (raspberry), anti-frost system and irrigation systems
- Improving harvest hygiene in plantations and help GlobalGAP standard implementation

Bosnia and Herzegovina must improve the system for certification of berry fruit seedling material. Establishing a **phytosanitary** system in Bosnia and Herzegovina is of primary importance for berry fruit development. Regarding this, it is important to invest

Table 7.3: Recommended investments specific to berry fruits

Investment	Specific	Conditions/ Limitations	Priority	Dead-weight	Eligibility
Axis 1					
Inv 1: Post harvest	Equipment for grading/ sorting/freezing/packaging of berries (colour or laser-sorters, individually quick frozen (IQF) systems)	Upgrading existing facilities and setting up new facilities	High	High	Existing owners and new investors as cooperatives and private entrepreneurs
Inv 2: Storage	Freezing storage facilities	More than 200 tonnes	Medium	Medium	All IPARD eligible producers
	On-farm cooling facility	Above 200 tonnes	Medium	Medium	Farmers with more than 2 ha of berries
	Pallets, containers and forklifts for collection and storage	Only for ULO cold storage	Medium	Medium	Existing and new ULO storage
Inv 3: New technology on field	Irrigation equipment/Hail net	Minimum 0.3 ha	High	High	
Inv 4: Quality inputs	Pre-basic material for new varieties for trading as fresh or early and late harvest	Existing nurseries	Medium	High	Existing nurseries and institutes
Inv 5: Quality orientation	Priority IPM and GlobalGAP	Existing nurseries	Low	High	All IPARD eligible producers
Inv 7: Processing	Different types of processing plants – juices, sweets, etc	Minimum capacity of 1,000 tonnes/yr	High	Medium	IPARD eligible cooperatives and farmers
	Refrigerated trucks for frozen and cooled products transport		High	High	Existing owners and new investors as cooperatives and private entrepreneurs
	Packaging material for fresh, frozen retail pack and packaging for processed products (glass containers, plastic material, multilayer packs, tins, etc.).		High	High	Existing owners and new investors in processing facilities
	Processing facilities: Equipment and complete lines for combined chemical and physical treatments including cooling, heating, extracting, drying, lyophilizing operations.		High	High	Existing owners and new investors in processing facilities. Presentation of business plan for each application for funding
Axis 2					
Inv 11: Organic and IPM	IPM and Organic	Minimum 0.3 ha	High	Medium	All IPARD eligible producers
Inv 12: Energy efficiency	Support to the energy efficient programme	Conversion to the existing or setting up new	High	Low	All IPARD eligible producers
Axis 3					
Inv: 16 Small processing	Small on-farm processing facilities for berry fruits	Existing own production	High	Medium	IPARD eligible cooperatives and farmers
Inv 17: Training	IP and IPM,				

in balms and in a system of institutions participating in a certification system.

The berry fruit supply chain is organized around storage and processing capacities. This is why investments in equipment for cooling the fruit before transportation, and/ or new cold storages which would also impact production, are necessary. Besides building new cold storages, it is necessary to invest in increasing the capacity and efficiency of existing cold storages, with special attention to energy efficiency.

Existing cold storages should be connected to investments in processing capacities, which should be established where production is sufficient. Currently only small amounts of berry fruit are processed. Investment in mini processing facilities for the production of raspberry jam, jelly, preserve or juice would result in manifold benefits, chiefly because it would contribute to income diversification. This could be especially relevant in the case of raspberry that is primarily grown in less favoured areas.

Potential profits achieved in fresh berry fruit export are complementary to the margins achieved in the frozen supply chains. The development of the fresh berry supply chain requires specific investments. In addition to the expansion of the harvest period, these investments should also include:

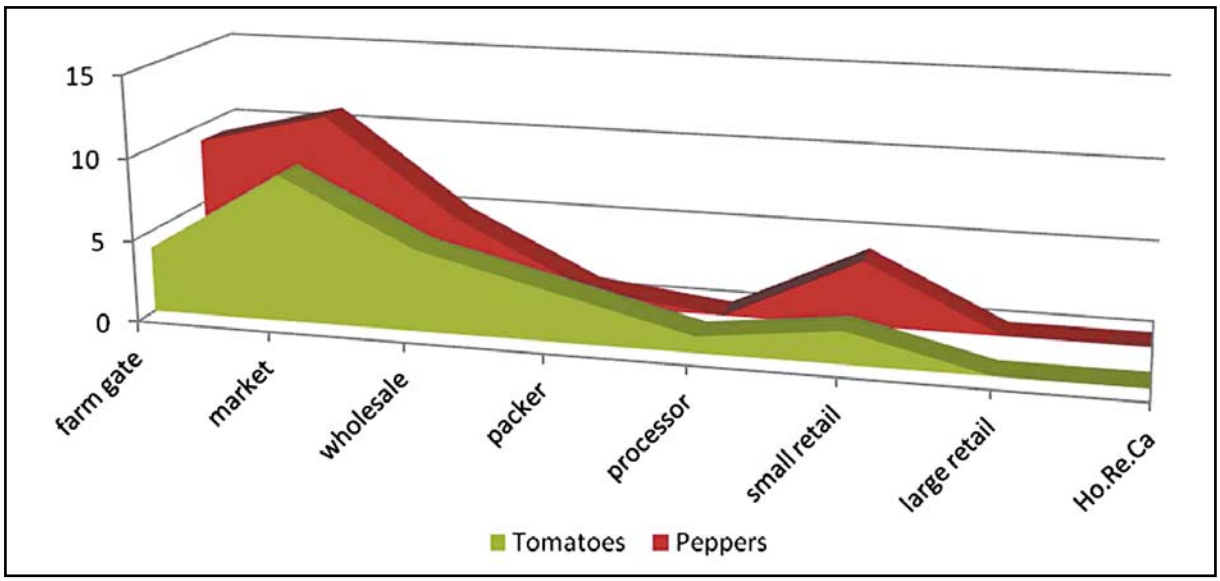
- On-farm storage facilities where raspberries would be graded and packed into small packaging
- Investments in cooling equipment, and refrigerator vehicles to transport the goods directly or very close to end markets
- Investments in standardization and certification

7.4 Perishable vegetables

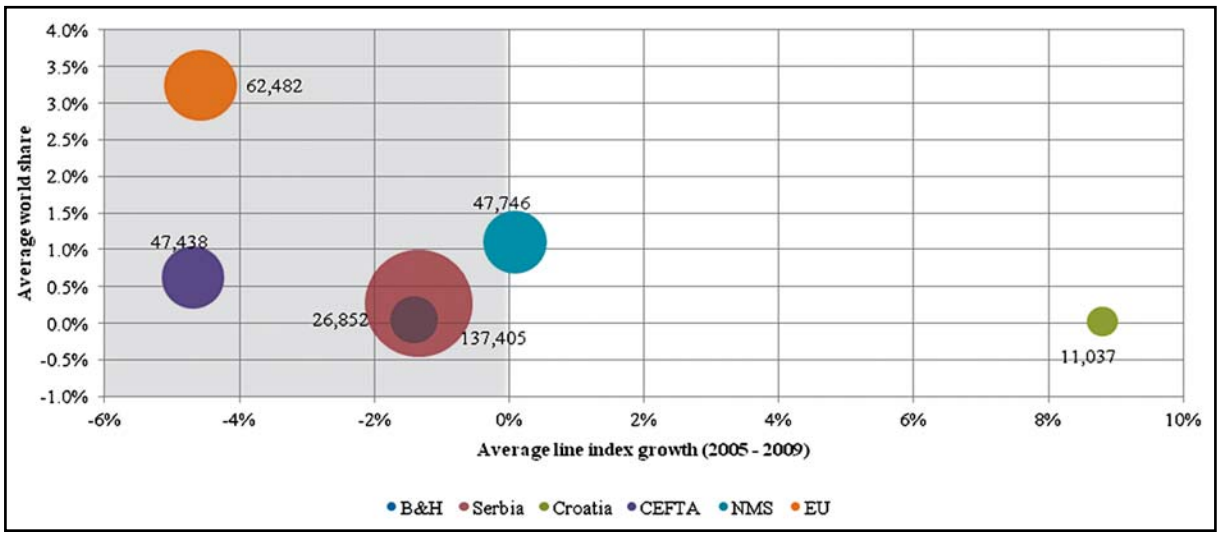
Worldwide, the area under perishable vegetables is larger than areas under non-perishable vegetables. Unlike the other CEFTA countries, where the areas under non-perishable and perishable are equal, the perishable vegetable area in Bosnia and Herzegovina is smaller. The 27,000 ha under perishable vegetables account for 40 percent of Bosnia and Herzegovina's area under vegetables and 15 percent of the total agricultural land. The main crops are peppers, tomatoes, cucumbers and watermelons. About 160,000 tonnes are produced yearly.

A large part of this quantity is produced in large kitchen gardens for self-consumption purposes. Any household who owns or crops agricultural land or a garden grows perishable vegetables for selfconsumption, and might complement incomes with sales of surpluses on local green markets and retail markets (see Graph 7.19). This group represents significant

Graph 7.19: Declaration of used PoS for tomatoes and peppers (Farm Survey)



Graph 7.20: Perishable vegetables area harvested



Source: FAO database and Bosnia and Herzegovina statistics

competition for the small market-oriented producers cropping a more or less wide assortment of vegetables on a few hectares and/or several hundred square metres under greenhouses.

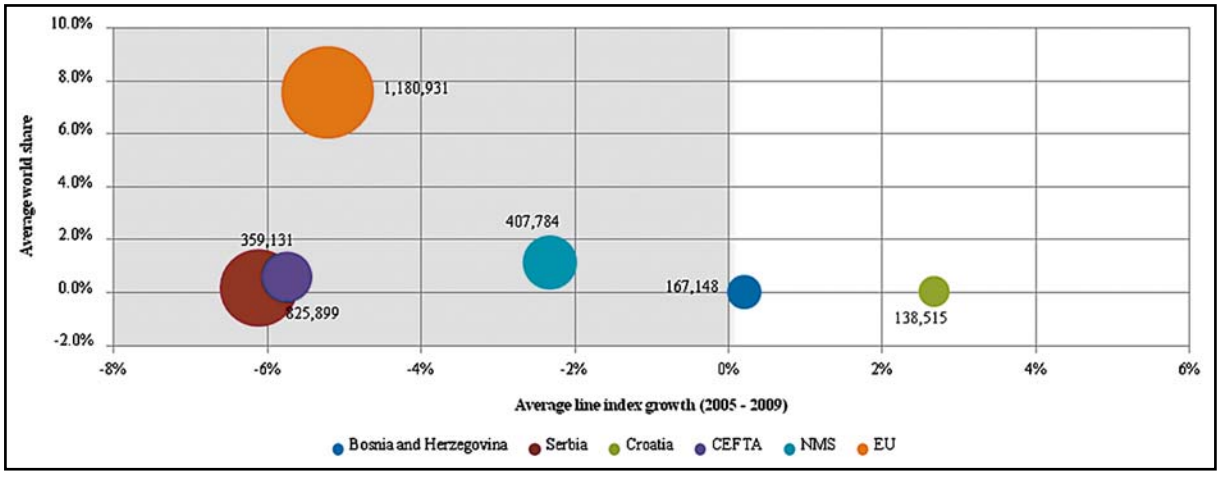
The producers engaged in perishable vegetable production on several hectares of open-field produce mainly for the processing sector, but sell as much as possible to the fresh market at the farm gate (through traders) or on wholesale markets. Large producers who have invested in multi-span greenhouses equipped with higher technology are not particularly interested in production during the high peak of production, because the low prices do not cover their costs. This is why they usually focus on early or late production, marketing their products mainly through wholesale markets.

Late production is specific for Herzegovina, especially for lettuce production, which supplies the markets of Bosnia and Herzegovina cities and the Dalmatian coast.

Like NMS and Serbia, the growth index of surfaces under perishable vegetables is almost equal to the world growth trend. Very negative growth trends can be observed in EU and CEFTA countries. Only Croatia has growth in surfaces under perishable vegetables (see Graph 7.21).

With regard to perishable vegetable production, Bosnia and Herzegovina still follows the world growth trend, while Serbia and NMS have a negative relative growth.

Graph 7.21: Perishable vegetable production



Source: FAO database and Bosnia and Herzegovina statistics

This indicates that productivity improved in Bosnia and Herzegovina during the 2005–2009 period.

The main production is in open-field, but it is estimated that there are several hundreds of hectares under greenhouses. There are no exact data, but estimates indicate that the surface under greenhouses has drastically increased. Significant subventions for building greenhouses, provided by both entities and Brčko district, also contribute to this development. The prevailing greenhouse type is the high tunnel that has replaced the self-made low tunnel. There are still only a few producers who have shifted to large, multi-span heated greenhouses, covering several hundreds of square meters or hectares. The main reasons for this slow development are (i) the lack of adequate credit terms for investments that pay off over a longer period of time; (ii) the relative small size of producers who are in the field of greenhouse production and their weak financial capacity; (iii) the relative low utility of these greenhouses in a region where the climate allows long growing periods even in high tunnel. This is particularly the case for Herzegovina, one of the regions, where the cultivation in greenhouse is the most developed.

Competition from other CEFTA countries where a significant number of producers have invested in hightech multi-span greenhouses and produce tomato, cucumber and pepper earlier and later than Bosnia and Herzegovina producers represents a real challenge for the latter. CEFTA producers commercialize the earliest products first on their own markets, and start to export massively when they begin harvesting large volumes. These products arrive on the domestic market when the earliest products from Bosnia and Herzegovina greenhouses are about to be marketed. It is essential for producers with several years of experience in greenhouse production to access new technologies and upscale their production to remain competitive.

Pepper is most the produced perishable vegetable. Around 60,000 tonnes are produced yearly on 6,000 ha. The surface area for pepper is dropping, but production itself is constant.

Surfaces planted with tomatoes are also dropping which affects the amount of tomato produced. The tomato is grown on somewhat less than 4,000 ha producing around 40,000 tonnes.

Surfaces planted with cucumber are also dropping, but cucumber production is stable and even growing slightly due to improved yields, taking advantage of increased demand. Cucumber is one of the crops that has benefited the most from modern growing techniques.

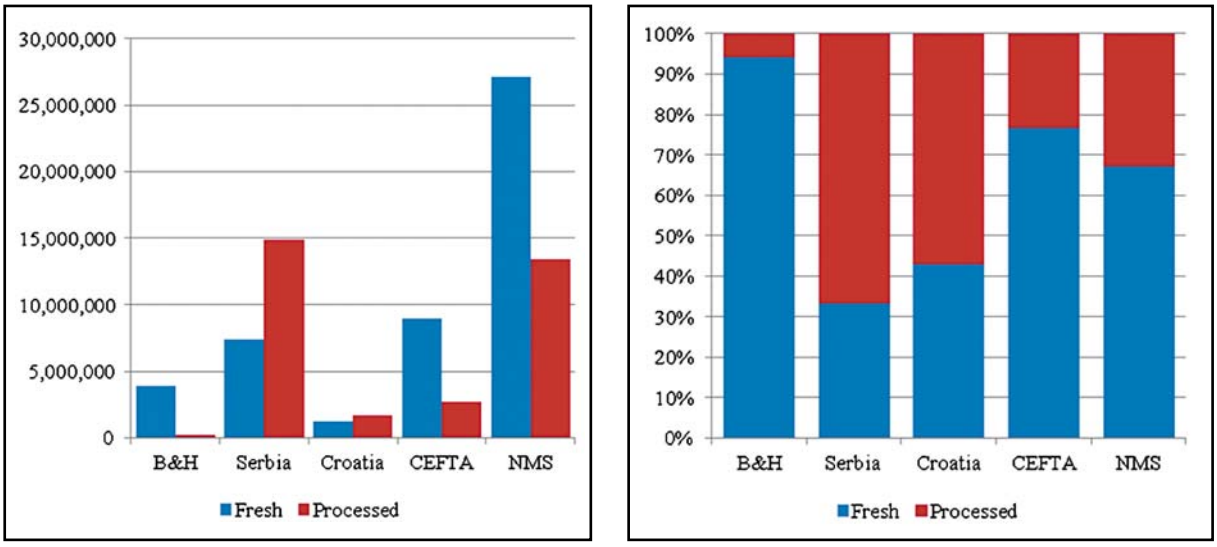
The surface planted with watermelon and melon is stable, even increasing slightly. These vegetables are grown on around 2,000 ha and are produced to the amount of 25,000 tonnes yearly.

Perishable vegetables exports from Bosnia and Herzegovina multiplied seven fold between 2005 and 2009 (see Graph 7.22). The export value reached EUR 2.9 million in 2009. Compared to the world growth trend, Bosnia and Herzegovina has a positive growth of almost 60 percent, which is far beyond countries of the region. Serbia and Croatia have a growth rate of around 15 percent, NMS somewhat less than 10 percent, and the EU almost follows the world growth trend.

Bosnia and Herzegovina exports mostly fresh products (97 percent of perishable vegetables export). The only exported processed perishable vegetables are tomatoes and peas. The ratio between fresh and processed perishable vegetables is far lower than for the other countries (see Graph 7.22). In Serbia, twothirds of perishable vegetables are exported after processing. Croatia exports slightly less than 60 percent as processed products.

Leading products exported among perishable vegetables are cucumber, followed by pepper and tomato. Bosnia and Herzegovina exported 12 percent of total cucumber production in

Graph 7.22: Exports of fresh and processed perishable vegetables (2005–2009)



Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

2009. The value of cucumber exports grew almost five times in the period from 2005 to 2009. The largest export partner is Croatia, which imports 75 percent of cucumber from Bosnia, followed by Slovenia (17 percent). The other main importers of cucumber from Bosnia and Herzegovina are Hungary and the Czech Republic.

The export growth rate for pepper is higher than the growth rate for cucumber. Pepper was exported to the value of EUR 21,000 in 2005 and to the value of EUR 537,000 in 2009. The third most exported product is tomato with EUR 370,000, processed tomato contributing to one quarter of this amount. The fluctuations of export volumes are important and a function of yearly production. The main tomato export markets are Croatia and Serbia.

Unlike fruits that are also exported to EU countries, vegetables are still mainly exported to the former Yugoslavian countries where quality standards, but also prices are lower.

Yearly, EUR 15.5 million of perishable vegetables is imported. This figure has been relatively stable over recent years. Bosnia and Herzegovina has a negative international trade balance in perishable vegetables, which is sharply decreasing as exports increase. Cucumber is the only vegetable with a positive balance of around EUR 700,000 in 2009.

Main recommendation for perishable vegetable development

While fruits have positive trends and non-perishable vegetables negative ones, the trade of perishable vegetables can be defined as stable. There are destabilizing and stabilizing factors that cause some variations from year to year and for individual crops, that are characteristic for all CEFTA countries. The variability of the number of producers involved and their crop planning are contributing to fluctuations of volumes and prices. The number of households and their engagement in vegetable growing can be influenced by the local economic situation and other sector job opportunities. Market-oriented producers often base their crop selection on the profitability or the price of the previous year(s) of production, which automatically creates price and volume cycles for single crops. The stabilizing factors ensuring long-term trends are the fact that production is a function of endogenous factors and merely that a large but quite constant number of rural households produce for their own needs. Only surpluses are placed on the local and city markets. Finally, traders level off the demand and define the price by transfers from wholesale markets (Bijeljina, Brčko, Čapljina) to local markets.

There are many factors that indicate that this subsector will continue to be rather stable:

- Dominance of production for self-consumption
- More trade in the local markets than in supermarkets
- Extremely cyclic consumption conditioned by habits and limited purchasing power. Unlike richer, EU countries, where the consumption peaks are less pronounced, in Bosnia and Herzegovina, the consumption (fresh and processing) is still very seasonal. Out of season, consumption remains limited because of purchasing power and habits.
- Consumer preferences for local varieties and locally produced products
- Producer price high elasticity
- Low transportability of perishable vegetables

However, this stability might be disturbed by the following changes:

- Liberalization of customs within the SAA
- Investments of producers from competitive countries, mostly in heated greenhouses
- Changes of consumer habits caused by the increase of supermarkets and decreased offer of fresh products in favour of processed ones, as well as an increase of out of season products
- Well organized import channels and competition among domestic importers

Still, the extent of these changes and how they will affect producers will depend primarily on the level of investments and the different crops. Thus we can differentiate between:

The main growing season in which domestic open-field production satisfies domestic demand. There will not be major changes; produced volumes and prices will not be affected. Indeed, the possibility for a more significant increase in import is small, first of all because: (i) there is already a complete liberalization within CEFTA countries and that is where the largest amounts of perishable vegetables originate from; (ii) potential exporters are far away and the transport costs for cheap perishable products are high, (iii) the price of domestic tomatoes would be easily adjusted to imported ones, because this is a product which cannot be kept and must be sold, so the potential importers would have to align their prices with domestic ones; and this would reduce trade profitability.

The early and late seasons during which local greenhouse producers compete with Turkey and CEFTA imports. With further expected liberalization, other countries, such as EU and North African countries will penetrate the Bosnia and Herzegovina market. As a result, consumption might increase and domestic producers' margins melt, as a consequence of pressure on prices.

The winter gap when Bosnia and Herzegovina growers might produce a few lettuces under greenhouse, but tomatoes and other fresh vegetables are imported from the EU and other WTO countries. The effect will be the lowering of prices by the amount of customs tariffs and hence increased competition for Bosnia and Herzegovina and CEFTA producers.

It is therefore crucial that Bosnia and Herzegovina producers adjust to these changes, by investing in perishable vegetables production and processing. These investments should aim at (i) an increase in competitiveness through applying new technologies and knowledge, for both open-field production and greenhouse production and (ii) extending the harvest period.

Other specific recommendations include:

- The main recommendation for perishable vegetable production is the extension of fresh products harvesting and marketing in the early and late season, through greenhouse production, varieties and cooling chambers.
- Most of the Bosnia and Herzegovina perishable vegetables producers are not competitive compared to world producers except during the main harvest season for tomatoes, peppers and cucumbers. This competitiveness is based mostly on quality attributes preferred by domestic consumers; a quality that is mainly characterized by traditional/indigenous varieties and product freshness due to short supply chains. This quality gives a clear advantage to Bosnia

and Herzegovina producers, who could be threatened only by significantly cheaper products. This quality competitiveness is an asset on which growers should base their strategy by: (i) opting for local varieties, (ii) short supply chains and (iii) promotion of the top quality products through labelling and marketing. This approach differs drastically from the one suggested in the previous point. However, there is no contradiction in having the same or different growers adopting both of them. It is just a question of market segmentation.

- Renewable energy is becoming a core element of vegetable production whether in heated greenhouses or for irrigation of the open-fields. This is why it should be made accessible and attractive to producers with: (i) financial incentives and (ii) energy efficiency programmes.
- Appropriate varieties and quality seeds are important for any production, but particularly key for perishable vegetables production. It is therefore of prime importance to provide producers and consumers with access: (i) to new varieties without any limitations, and (ii) to quality seeds of old local sorts.

Production and sales of perishable vegetables is one of the most complicated operations in agriculture, demanding a high level of knowledge. This is why there is a significant need for training, including:

- Standards development – organic, GI, IPM, GlobalGAP, ISO or HACCP
- In new technologies of production and marketing
- Energy efficiency and renewable energy in production and processing
- Market information with regard to the domestic and international market
- Common marketing of the products and producer organizations establishment

Investment needs for perishable vegetable development

Over the past ten years, producers engaged in intensive greenhouse and open-field production have more than doubled their yields, thanks to improved fertilization and protection of plants, varieties, husbandry techniques, equipment and mechanization. Other groups of producers' yields have stagnated as a result of lack of investment and skills improvement, but also because a large number of non-market-oriented producers are not even trying to optimize production and increase the benefit of their activity.

Investments in new greenhouses should be based on heated greenhouses to the highest extent possible, with multi-span systems and large surfaces, with the best energy efficiency possible providing optimal conditions for vegetable growing. This means usage of renewable energy sources such as geothermal water, heat from harvesting residues and other by-products. Information about these options should be circulated among farmers, to boost the shift from low and high tunnels to this model. IPARD programmes should support those investments, which will enable building modern greenhouses. Additionally, the investments should support all the equipment in the greenhouses such as irrigation systems, shading equipment, equipment for feeding plants with water-soluble fertilizers, enrichment of CO_2 and other equipment and technologies.

Open-field production is becoming more and more capital intensive because most operations are mechanized. Sowing machines for precise sowing, machines for handling seedlings, equipment for irrigation, fertilization, plant protection and specialized harvesters are only some of the machines and equipment essential for intensive vegetable production. Having in mind the difficulties in accessing land and small sized farms in Bosnia and Herzegovina, the recommendation is for producers to share this equipment. They should be organized in cooperatives, machinery rings or companies, which would then provide these services to other producers.

The production of quality seedlings is the key to successful perishable vegetables production. Producers can produce them alone for their own needs. They can also buy them on the market from specialized

Table 7.4: Type of measures to support perishable vegetables

Investment	Specific	Conditions/ Limitations	Priority	Dead-weight	Eligibility
Axis 1					
Inv 1: Post harvest	Calibration and packaging equipment for grading and classification of perishable vegetables	Existing farmers, cooperatives and companies	High	Low	Existing producers with more than 0.5 ha of indoor or 5 ha of outdoor perishable vegetable production
Inv 2: Storage	On farm cooling and storage facility	More than 30 tonnes	Low	Medium	Farmers with more than 0.5 ha of indoor or 5 ha of outdoor perishable vegetable production
	Cold storage facilities	Above 200 tonnes	High	Low	Existing storage, cooperatives and farmers with more than 0.5 ha of indoor or 5 ha of outdoor perishable vegetable production
Inv 3: New technology on field	Glasshouse with full equipment	Minimum 0.3 ha,	Medium	Medium	All IPARD eligible producers
	Plastic greenhouse with full equipment	Minimum 0.3 ha	High	Medium	
	Plastic tunnels	Minimum 0.4 ha	High	High	
	Irrigation (drip irrigation, rain cap sprinklers) and protection (shadow net, protection net)	Existing producers			All IPARD eligible producers
	Specialized machinery (sowing, harvesting, crop care, transport)				
Inv 4: Quality inputs	Equipment for nursery production	Minimum one hundred thousand vegetable seedlings per year with the protected root system	Medium	High	Existing nurseries and vegetable producers ready to enter into seedlings production
Inv 5: Quality orientation	Priority IPM and GlobalGAP		Low	High	All IPARD eligible producers
Inv 7: Processing	Processing facilities		Medium	Medium	Farmers, cooperatives and enterprises with reliable own production or locally purchased primary products
Axis 2					
Inv 11: Organic and IPM	IPM and Organic	Minimum 1 ha	High	Medium	All IPARD eligible producers
Inv 12: Energy efficiency	Equipment for alternative energy sources from hot water, biomass, solar	Proven energy efficiency			Minimum 0.3 ha of indoor production
Inv 13: food processing standards	Waste management of processing industry		High	Medium	All IPARD eligible processing industry
Axis 3					
Inv 16: Small processing	Small on-farm processing facilities for perishable vegetables (ajvar, tomato juice, etc.)		Medium	Medium	IPARD eligible cooperatives and farmers
Inv 17: Training	IP and IPM		High	Low	Private and State advisory services

producers who have the equipment, infrastructures and know-how for quality seedlings production required by the market. Seedling factories with larger or smaller capacities should be supported through investments because their commercial activity will have significant positive effects on a large number of producers within a short period of time.

Vegetables from this group are not to be kept long, but their sorting, grading and packing for sales can be key not only to increase added value but also to secure the sales. Therefore calibration – for sorting and grading – and packaging equipment, together with storage facilities used to pre-cool products before transport and improve sale management, should be the object of incentives.

Part of the production for the fresh market might be 2nd and 3rd class products, not complying with consumers' expectations. These products need to be processed. Investments in processing facilities would enable the valorization of this surplus of products, without disrupting the fresh market by decreasing overall quality and prices.

7.5 Non-Perishable vegetables

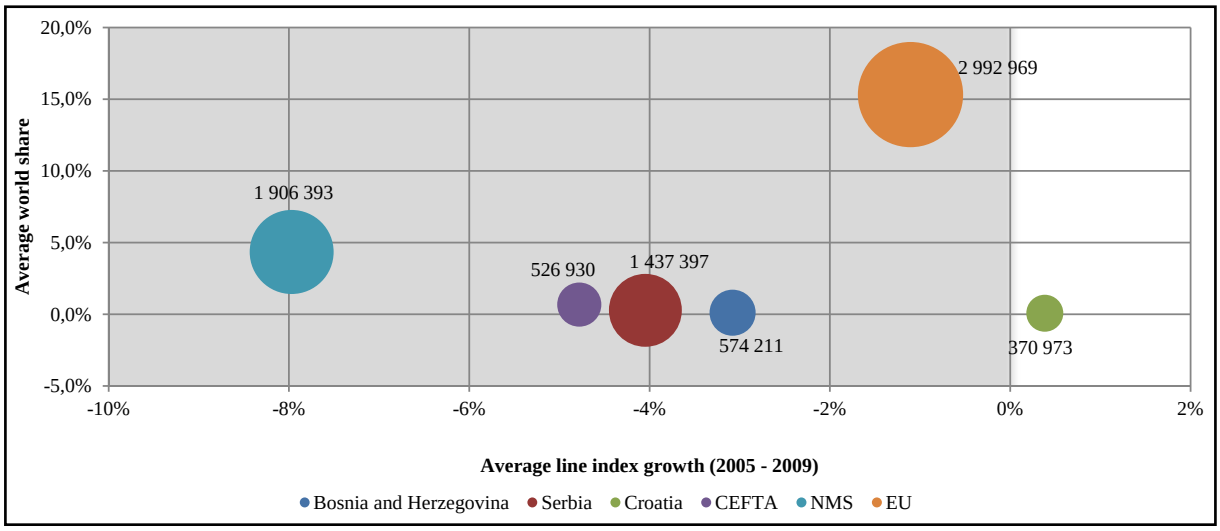
Non-perishable vegetables cover twice the area covered by perishable. This is mostly due to the potato crop. The surfaces under non-perishable vegetables come in second place, right after stone fruit and represent 30 percent of total arable land.

Still, the trends in total production, yield and trade of non-perishable vegetables are negative. Investments in and expectations from non-perishable vegetables are generally speaking limited. This group of crops is less labour intensive than fruit or perishable vegetables production. Greater volumes, large machinery and significant quantities of expensive seed material make it very capital intensive. It is extremely demanding in terms of soil and relatively easily transportable. These factors explain the gaps in yields and unit costs between professional producers and those producing for own needs. They also make clear why most of industrial non-perishable vegetable production is concentrated in a relatively small number of advanced countries – Holland, Germany, France. Additional Bosnia and Herzegovina specific conditions further play a part in reducing or limiting the development of this group of crops: (i) lack of large land parcels in Bosnia and Herzegovina, (ii) lack of storage capacities, (iii) weak credit offers, (iv) lack of research for development of domestic varieties or adjustment of foreign varieties to local growth conditions.

Over 50,000 ha are planted with non-perishable vegetables in Bosnia and Herzegovina. Potato is the main crop with over 70 percent of the total surface, followed by cabbage and onion. With constant yields and decreasing surface between 2005 and 2009, the amount of non-perishable vegetables produced equivalent to 570,000 tonnes has also dropped.

Compared to the neighbouring and EU countries, Bosnia and Herzegovina has the greatest area under nonperishable vegetables. It is also the country with the slowest reduction of the area. The surfaces growth index is 2 percent lower than the world growth index, but slightly higher than the EU index. The reason for this negative trend in Bosnia is in part due to the emergence of supermarkets who would rather import potatoes, carrots and beans, than to source products from a multitude of small-scale local producers with small volumes of uneven quality. Additionally, supermarkets in Bosnia and Herzegovina often change suppliers in order to reduce prices to the producers. The retailers' strategy is based on the observation that in the current context, consumers are rather price driven than quality driven. Hence, supermarkets frequently advertise promotional sales of mass-consumed products, such as non-perishable vegetables. This is why supermarkets in Bosnia and Herzegovina have prices that are not much higher than wholesale or green markets.

Graph 7.23: Production of non-perishable vegetables



Source: FAO database and Bosnia and Herzegovina statistics

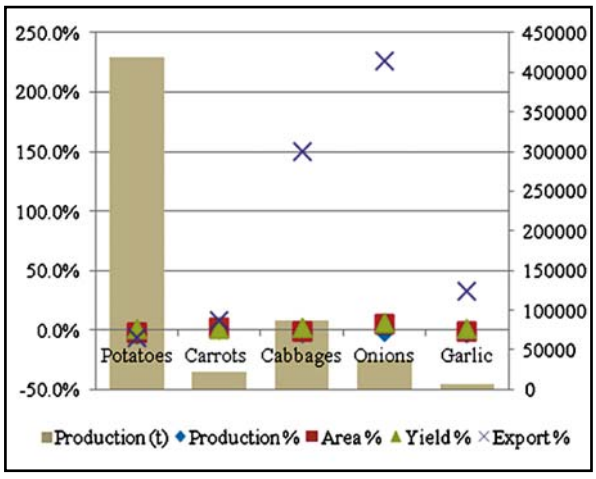
The volume of non-perishable vegetables produced in Bosnia and Herzegovina grows slower than worldwide production by 3 percent. The current growth is similar to the one registered by Serbia and CEFTA countries. Only, Croatia and the EU have a production growth trend equalling the world average (Graph 7.23).

Bosnia and Herzegovina yields are rather stable and similar to those observed in Serbia (see Graph 7.24). Yet, yields in Croatia and NMS are more than double that of Bosnia and Herzegovina, while EU growers have a productivity that is triple that of Bosnia and Herzegovina. Compared to the world average, Bosnia and Herzegovina and Serbia, as well as NMS have a slower yield growth. The average yield in the EU countries almost follows the world growth, while it is higher in Croatia and CEFTA countries.

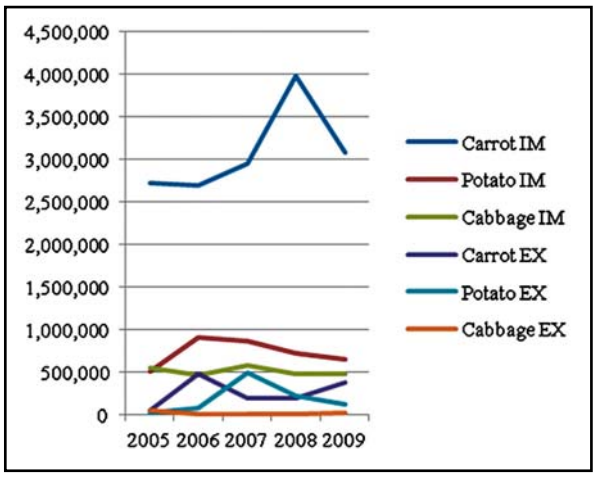
Production has decreased mostly due to the main crops, whose surface area decreased from 44,000 ha to 39,000 ha between 2005 and 2009. Within this period, the produced volumes declined by 10 percent to reach 420,000 tonnes.

The surfaces under cabbage (about 6,000 ha) are constantly decreasing. Around 85,000 tonnes are produced yearly, but unlike the total area, the production itself is not decreasing, but fluctuates on a yearly basis (see Graph 7.24). Cabbage production is far

Graph 7.24: Average production and growth in percentage in the period 2005–2009



Graph 7.25: Trade figures for main nonperishable products (USD)



Source: FAO, United Nations Comtrade database and Bosnia and Herzegovina statistics

more demanding than potato production, since it requires better soil and irrigation, thus larger investments are needed for a sound conduction of the crop.

Onion is planted on somewhat more than 5,000 ha, and the size of these surfaces is stable. Depending on the yield, the yearly production varies between 34,000 and 41,000 tonnes.

Over the period from 2005 to 2009, non-perishable vegetables exports have varied significantly. In 2006 and 2007, exports reached respectively EUR 1.9 million and 1.75 million, which compared to the EUR 1.13 million exported in 2005 represented more than a 60 percent increase. In 2008 and 2009, exports fell to the 2005 figure (see Graph 7.25).

A decrease in the value of potato exports is also noticeable in 2009 when it was 50 percent less than in 2005. The export of potatoes also increased in 2006 and 2007, but with a smaller percentage than was the case for other non-perishable vegetables. Bosnia and Herzegovina exported potatoes to a value of EUR 624,000 in 2009 (see Graph 7.25).

In percentages, cabbage and onion have the largest export growth. However, the variations in cabbage and onion export value are extremely high. The largest amount of cabbage was exported in 2007, with a value of EUR 360,000, and the smallest amount was exported in 2005, with a value of EUR 24,000. The same applies to onion. The export value in 2006 was EUR 375,000 and EUR 40,000 in 2005.

Compared to the world average, Bosnia and Herzegovina has a 5 percent lower export growth, a figure similar to that of Serbia. All other countries have growth in exports, particularly Croatia with an almost 25 percent higher index than the world average.

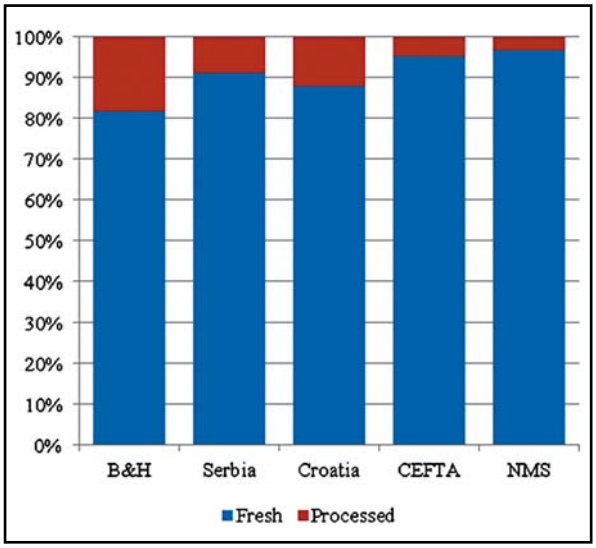
Most of the non-perishable vegetables are exported to Croatia (around 60 percent), Norway and Romania.

It is interesting that Bosnia and Herzegovina has a negative non-perishable vegetables import trend compared to the world average, unlike other comparing countries. The negative international trade balance of about EUR 7.5 million is primarily due to potato and onion imports.

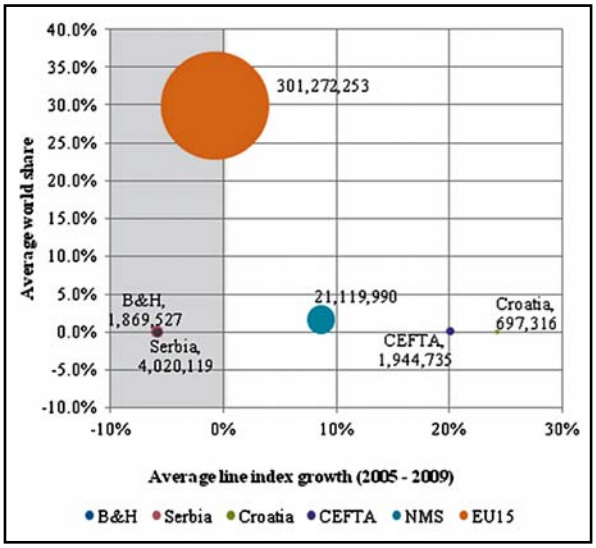
Main recommendations for non-perishable subsector development

One of the specific characteristics of the non-perishable vegetables market is the extremely

Graph 7.26: Exports of fresh and processed perishable vegetables



Graph 7.27: Exports of non-perishable vegetables from Bosnia and Herzegovina and selected countries (in USD)



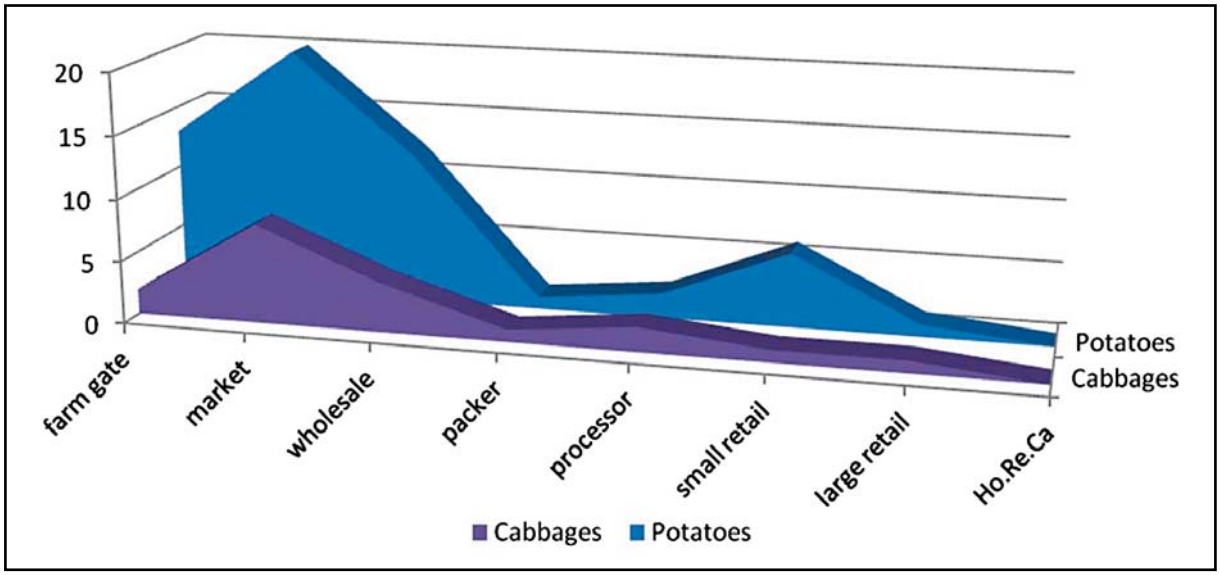
Source: United Nations Comtrade database and Bosnia and Herzegovina statistics

high price variation between both years and regions. Unlike the EU non-perishable vegetable highly stable market thanks to developed supply chains, the small number of stakeholders and strong professional organizations, the market in Bosnia and Herzegovina is very dynamic and diversified with all kinds of producer and trader profiles and marketing channels. This dynamism often synonymous of unpredictability allows space for speculation and gambling *"How large is the production? What are the prices in the surrounding countries? How large are the stocks? How favourable is a particular year for storing? How long can the product be kept in improvised storage spaces?"* This all eventually results in high unpredictability and uncertainty that often makes the producers position very fragile.

Highly competitive EU producers of non-perishable vegetables often generate surpluses. For all countries aspiring for EU membership, and in particular for producers, the pre-accession period is tricky. Indeed, liberalization of customs for products imported from the EU makes those more attractive than domestic products. Considering the yields in Bosnia and Herzegovina are small and unstable, and producers easily shift to other crops from one year to another, resulting in low production continuity and stability, it is reasonable to expect increased imports as the liberalization process progresses. Imports will prevent extremely high prices, but prices will drop in cases of overproduction. This evolution of the market will oblige the subsector stakeholders to better profile their products For this they will have to follow trends in packaging and processing and develop specific quality attributes (IP, IPM, Bio, regional products, "Made in Bosnia and Herzegovina" labels, GIs). Sector stakeholders will have to adapt to the new supply chain organization (traceability, contract production, grouping volumes), but also adopt new production techniques to achieve standardized quality. Indeed, production standards will become progressively a must to remain in or enter the market. This will require investment in new, modern storages, whether made by companies themselves or supported by the state.

Such a situation creates favourable circumstances for investments in processing, a segment that is very underdeveloped in Bosnia and Herzegovina. To what extent the subsector stakeholders will be able to exploit the favourable environmental (soil, climate, geographical position) and market conditions (favourable trade contracts, expectations in consumption growth) for non-perishable vegetables growth, will depend on many other factors related to agricultural (agricultural policy, domestic support, access to inputs) but also non agricultural conditions (tax,

Graph 7.28: Declaration of used PoS for cabbage and potato (Farm Survey)



monetary, credit availability, social policy, infrastructure development).

Still, the expectations are that such market changes will impact producers' behaviour and strategies:

- Large producers who produce in a modern way, will have to compete primarily in the case of sales to supermarkets and will have to invest additional means in storage capacities and packaging if they want to keep their position on the market
- Producers who sell mostly on local markets or to the buyers will not face new challenges as long as large retailers are not dominant
- Producers who have a speculative strategy, by producing certain crops or not, on the basis of price expectations will earn less in good years
- Traders and processors will have a more stable business environment with a significantly higher predictability

In order to cope with these changes as smoothly as possible, there are several specific recommendations that should be applied:

- The significant lack of storage and processing capacities as well as the low production technology level results in short and disorganized supply chains, which cause production surpluses at the local market level. Only small amounts of vegetables are packed and transported to supermarkets or exported. Experience shows that establishing a storage capacity very quickly results in supply chain extension. Hence, building storage capacities for non-perishable vegetables should be a priority.
- Access to quality planting material is of great importance in the production of non-perishable vegetables. That is why legislation and institutional mechanisms, that ensure faster registration of varieties adapted to specific geographical areas, market needs and producers' skills, are urgently needed.
- Of all the fruits and vegetables, the only product Bosnia and Herzegovina cannot export to the EU is potato.[28] The main gaps for approving potato export in the EU are primarily registries and border controls. This and other shortcomings should be corrected, because in years of overproduction, thus low prices, the export opportunity to the EU would be highly beneficial. Time and means are needed in order to fulfil all conditions, but any delay in solving this problem causes losses for Bosnia and Herzegovina, particularly for producers.
- There are areas under non-perishable vegetables in Bosnia and Herzegovina that are not irrigated. However, the years when crops suffer and losses are significant due to lack of irrigation are rare. On the other hand, irrigation would enable producers to ensure continuity in quantities and quality, a factor that is of high importance for their relations with traders and supermarkets for instance.

Specific needs for training

- Training of producers regarding new varieties, fertilization, irrigation and marketing
- Training of producers of seed potatoes (field isolation, monitoring of potato blights, timely crop desiccation, equipment for potato extraction in order to prevent self-sprouting plants)
- Phytosanitary management training as a support for the establishment of a control system sufficient for obtaining the EU export license

[28] *The COUNCIL DIRECTIVE 2000/29/EC of 8 May 2000, on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community forbids import of Tubers of species of Solanum L., and their hybrids, other than those specified in points 10 and 11 under the following conditions: Without prejudice to the special requirements applicable to the potato tubers listed in Annex IV, Part A Section I, third countries other than Algeria, Cyprus, Egypt, Israel, Libya, Malta, Morocco, Switzerland, Syria,Tunisia and Turkey, and other than European third countries which are either recognized as being free from Clavibacter michiganensis ssp. sepedonicus (Spieckermann and Kotthoff) Davis et al., in accordance with the procedure laid down in Article 18, or in which provisions recognized as equivalent to the Community provisions on combating Clavibacter michiganensis ssp. sepedonicus (Spieckermann and Kotthoff) Davis et al. in accordance with the procedure laid down in Article 18, have been complied with.*

Table 7.5: Type of measures in support of non-perishable vegetables

Investment	Specific	Conditions / Limitations	Priority	Dead-weight	Eligibility
Axis 1					
Inv 1: Post harvest	Washing, calibration and packaging equipment for non-perishable vegetables	Existing farmers, cooperatives and companies	High	Low	Existing producers with more than 5 ha of vegetable production
Inv 2: Storage	On-farm cooling and storage facility	More than 100 tonnes	Low	Medium	
	Cold storage facilities	Above 300 tonnes	High	Low	Existing storage, cooperatives and farmers with more than 10 ha of vegetable production
Inv 3: New technology on field	Irrigation (drip irrigation, rain cap sprinklers)	Existing producers	High	High	All IPARD producers
	Specialized machinery (sowing, harvesting, crop care, transport, etc.)				
	Plastic tunnels for early production	Cost around EUR 120,000	Medium	Medium	All IPARD producers
Inv 4: Quality inputs	Equipment for nursery production	Minimum one hundred thousand vegetable seedlings per year with the protected root system	Medium	High	Existing nurseries and vegetable producers ready to enter into seedlings production
Inv 5: Quality orientation	Priority IPM and GlobalGAP		Low	High	All IPARD eligible producers
Inv 7: Processing	Processing facilities		High	Medium	Farmers, cooperatives and enterprises with reliable own production or locally purchased primary products
Axis 2					
Inv 11: Organic and IPM	IPM and Organic	Minimum 3 ha	Low	Medium	All IPARD eligible producers
Inv 13: Food processing standards	Waste management of processing industry		High	Low	
Axis 3					
Inv 16: Small processing	Small on-farm processing facilities for non-perishable vegetables	Existing own production	Medium	Medium	IPARD eligible cooperatives and farmers

- Market information and supply chain development
- Post-harvest techniques and packaging
- Training related standards establishment, primarily IPM

Investment needs for non-perishable vegetable development

Specialized equipment and mechanization for growing non-perishable vegetables significantly contributes to profitability. For instance, quality onion sowing machines use 3.5–4 kg of seed per hectare while the older ones used around 8 kg/ha. Considering that one kilogram of quality hybrid seeds costs more than EUR 200, such investments allow savings per hectare of approximately EUR 800. In the same way specialized harvesting machinery (for cabbages, carrots, potatoes, and onions) are highly efficient. Manual work is substantially reduced, thus the effect on prices and competitiveness is substantial.

Irrigation systems in dry years double the yield, so the investments pay off over several dry years. This is why these investments whether in infrastructure making water accessible or in irrigation systems should be a priority.

Processing capacities are necessary in order to absorb surpluses as well as lower quality products. This includes both large industrial capacities and small on-farm processing.

Building new storage capacities would allow a better distribution of quantities throughout the year and better sales management. This would mitigate price fluctuation. Sales of these products usually take place immediately after the harvest. This is primarily due to an inability to preserve the product (lack of storage facilities or low quality products). Apart from increased storage facilities, improvement of post-harvest management must include washing, sorting, grading and packaging equipment for non-perishable vegetables that will be fully in line with EU standards and market demand.

8. Agricultural lending and the financial sector in Bosnia and Herzegovina

Options of agricultural development based on successful management of the available fixed funds is limited, so any serious and long-term development is inevitably associated with new investment for which the additional funds must be provided. Financing of agricultural production, especially on small family farms, has been and still is an issue in this region. In a survey of 1,390 rural households in 2008 conducted in 24 municipalities of the Republic of Srpska, 72.4 percent of respondents said that the main obstacle to addressing their own business was the shortage of funds.[29] Lending is certainly one of the major sources of financing agricultural development, but according to the previously mentioned survey, less than 55 percent of households had ever used a loan, and 38 percent had used some form of agricultural loan (10 percent for the purchase of cattle, 9.8 percent for raw materials, 8.8 percent for purchases of machinery, 7.5 percent for the renovation of buildings and 1.7 percent for planting perennial plantations). Legal entities from the category of SMEs and cooperatives are in a somewhat more favourable position in terms of investment funding because it is easier for them to obtain loans.

In the previous socio-economic system, agricultural development largely took place through the development of cooperation between producers of certain agricultural products and their buyers/collectors and processors.

Nowadays however, due to the transition from a planned economy to a market economy, the integrative role of cooperatives is significantly reduced. New or re-privatized enterprises organized the purchase of agricultural products but without any direct credit arrangements. Family farms have received certain investments thanks to donations by humanitarian, governmental and non-governmental organizations.

The first forms of lending to agriculture after the war began in the late 1990s, through micro-credit organizations, and later by commercial banks. There were also arrangements in which the state granted loans through the projects or the relevant ministry.[30]

Significant pre-contributions to the development of a rural credit market were made with the establishment of registries of borrowers that enable more efficient monitoring of the creditworthiness of borrowers and credit risk reduction. The Republika Srpska founded the Republika Srpska Guarantee Fund as an alternative at the very beginning of their work.

The economic crisis affected the stagnant level of lending (-3.91 percent in 2009 and +3.3 percent in 2010). The degree of delinquency in the repayment of loans in recent years has increased, and so has the provision to cover potential loan losses. During 2010, the assets of banks in the Republika Srpska were reduced by 2 percent and 1 percent for the Federation. Deposits, in the same year in the Republika Srpska were reduced by 9 percent, and in the Federation increased by 2 percent. To alleviate the crisis, the Central Bank of Bosnia and Herzegovina, as well as most other central banks, reduced reserve requirements in order to stimulate banks to lend more of their deposits. One of the measures taken was the facilitating of conditions to re-programme the earlier loan commitments.

The financial sector in Bosnia and Herzegovina consists of banks, microcredit organizations and societies, savings, credit organizations and leasing companies.

[29] *Data from the survey carried out for design plans of the Republic of Srpska Strategic Plan of Rural Development for the period 2009–15, Faculty of Agriculture of Republika Srpska MAFWM, Banja Luka, 2009.*

[30] *Vučenović A, Vaško Ž. – Finansiranje poljoprivrede, Agroznaje, Vol. 10 No. 4, 2009, pp 165–174.*

8.1 Financing through commercial banks

There are currently 29 banks in Bosnia and Herzegovina (licensed by the banking agencies). They include the successfully restructured and privatized former state-owned banks and the newly established banks, mainly as the "daughters of" larger and well-known banks from European and Islamic countries. Some banks have their headquarters in the Federation and some in Republika Srpska, but most banks, regardless of the location of their offices, operate on the territory of both entities and Brčko District. The situation in the banking sector in Bosnia and Herzegovina is summarized in the following table;

After several years of expansion, the global economic and financial crisis left its mark on the banking sector in Bosnia and Herzegovina. There was a stagnation of their capital and balance sheet assets, falling profitability, increasing non-performing assets and loans required provisioning on that basis, so that banks could become more cautious in terms of granting new loans. The number of organizational units and employees was reduced, although based on the number of a thousand branches and other organizational units of banks, it can be concluded that the availability of banking services to individuals and legal entities in Bosnia and Herzegovina is good (one organizational unit to about 4,000 inhabitants).

Companies in 2010 used about half of the total approved loans, and citizens (including farmers) used 40 percent (Republika Srpska),

Table 8.1: Banks in Bosnia and Herzegovina in 2010[31]

	Indicator	Unit	Federation of Bosnia and Herzegovina	Republika Srpska	Bosnia and Herzegovina
1.	Number of banks		19	10	29
2.	Number of branches and other org. units		623	384	1.007
3.	Number of employees		7.388	2.933	10.321
4.	Capital	million BAM	1.7	0.7	2.4
5.	Balance asset	billion BAM	15.1	5.4	20.5
6.	Deposits	billion BAM	11.2	3.8	15.0
7.	Loans	billion BAM	10.0	4.0	14.0
8.	Loan share in assets	%	66%	74%	68%
9.	Loans to enterprises	%	50%	50%	50%
10.	Loans to citizens	%	47%t	40%	45%t
11.	Loans to government and other institutions	%	*3%*	*10%*	*5%*
12.	Loans to agriculture	billion BAM	n.a.	110	-
13.	Bank loss	billion BAM	102.9	21.3	124.2
14.	Effective interest rates for short-term loans	%	8.0%	9,4%	-
15.	Effective interest rates for long-term loans	%	%	9,1%	-
16.	Effective interest rates for short-term deposits	%	1.3%	2,4%	-
17.	Effective interest rates for long-term deposits	%	%	4,7%	-

[31] *"Report on Banking System status in Republika Srpska", report on the situation in the banking system in Republika Srpska for the period 01.01.2010–31.12.2010, the Banking Agency of Republika Srpska, Banja Luka, 2011; and "Report on the status of the banking system in the Federation of Bosnia and Herzegovina" information about the micro-credit system of the Federation of Bosnia and Herzegovina, the Federal Banking Agency, Sarajevo, 2011.*

and 47 percent (in the Federation of Bosnia and Herzegovina). The loan structure is dominated by long-term loans (>1 year), which are largely used by physical rather than legal entities. Only the report of the Banking Agency of Republika Srpska gives information on the scope of the loans given to the agricultural sector, which accounted for only 2.8 percent (110 million) of the total loans in that entity, but the situation is similar in the whole of Bosnia and Herzegovina. Most of the granted loans are consumption credit, which are sometimes used by farmers.

As for the credit conditions of companies engaged in agricultural production and food industry, they have the same treatment as companies in other sectors. In some cases they either had slightly more favourable credit conditions or exclusive access to some of the dedicated lines of credit secured within projects funded by loans received from the World Bank (Small-Scale Commercial Agricultural Development Project (SSCADP), Enhancing Access to Finance for Small and Medium Enterprises Project (EAF SME)) and the International Fund for Agricultural Development (Livestock and Rural Finance Development Project (LRFDP), Rural Enterprise Enhancement Project (REEP), Livelihood and Rural Development Project (LRDP)).

Effective interest rates on short-term loans range from 8 percent (in the Federation of Bosnia and Herzegovina) to 9.5 percent (Republika Srpska) and they are higher for physical entities than for the economy. People pay effective interest rates on short-term loans from 12.6 to 13.7 percent on average, long-term loans from 9.5 to 10.5 percent.

The currently active World Bank project Enhancing SME Access to Finance (EAF SME) has a fund of EUR 52 Mn and offers loans for SMEs from agro-processing and other industrial sectors. The conditions of these loans allow amounts up to EUR 2.5 Mn (EUR 400,000 for working capital), the repayment period of 10 years, a grace period of up to 3 years and effective interest rate of LIBOR + EUR 4.5 to 5.5% (six month LIBOR + a spread, on the end 6-7%).

Although the available structure of deposits cannot allow their origins to be tracked back, the experience is that the rural population and farmers have very little scope for deposits (savings) in banks. Some buyers of agricultural products made payments for purchased products from bank accounts but farmers usually take this money in full immediately after payment. Agricultural producers are not "favoured" by banks in terms of lending because banks consider them to be high-risk borrowers. Therefore, interest rates on agricultural loans to farmers which they use as private individuals, are higher than for other users, and the required guarantees are the same, if not more rigorous. Properties in rural areas (agricultural land and buildings) are generally not accepted, and the alternatives are people as guarantees (guarantors) that agriculture producers have difficulty in finding. As a result, farmers are mostly focused on the use of loans that they receive from microcredit organizations. Exceptions include the already mentioned projects (World Bank (WB), International Fund for Agricultural Development (IFAD)) which provide funds allocated to the bank to grant farmers a 12 million EUR loans under favourable conditions. Below are some examples of typical bank loans that at the time of writing this chapter (June, 2010) were available to farmers and SMEs from the sector (based on data taken from websites designated to banks):

- Loans (including farmers) up to BAM 50,000 for a period of up to 7 years, with an effective interest rate of 12.29 percent; Short-term loans to individual farmers for procurement of raw materials, agricultural equipment and spare parts. Loans taken are up to BAM 10,000 with a repayment period of 12 months and an effective interest rate of 13.17 percent, provided they have guarantors;
- Loans for export-oriented programmes and the agro-processing industry in amounts from BAM 50,000 to one million, with a repayment period of eight years, grace period (for agriculture) up to three years and

an effective interest rate of 6.96 percent;

- Loans to farmers for buying tractors in cooperation with sellers, the repayment period is 36 months, the mandatory contribution of the beneficiaries is 40 percent and the effective interest rate is 12.7 percent.
- Long-term loans for agriculture for physical entities (for the purchase of land or agricultural machinery and construction or renovation of buildings for agricultural purposes) with a term loan of up to 10 years, in amounts that depend on the creditworthiness of the debtor and without specifying the interest rate.

Most of the banks do not provide differentiated offers of loans for agricultural production. They often do not have pre-defined conditions for loans, particularly in terms of the scale of the interest rates that often depend on whether the loan applicant is a client of the bank; whether the loan is taken out for the first time, what security guarantees the beneficiary can offer, etc. In general, a small number of farmers take out bank loans (which is confirmed by data on the total volume of loans for agriculture), as it can be difficult to meet the required conditions and banks are much more rigorous with this type of customer in the assessment of their creditworthiness. SMEs from the agribusiness sector generally share the fate and condition of all other SMEs in terms of credits without any special conditions, although there are occasional lines of loans exclusively available only for SMEs in the agriculture or food industries.

It has already been noted that significant funding is intended for loans in agriculture in Bosnia and Herzegovina within the special line of loans under the project funded by loans from international financial institutions (mainly the World Bank and IFAD), or donations from governments of some developed countries. One of the most active organizations in this regard is the International Fund for Agricultural Development (IFAD) whose two projects approved about BAM 38 million of cash (see Annex 4) so far, and during the implementation of another project (Livelihood and Rural Development Project (LRDP)), which also has a line of loans for agriculture.

8.2 Lending through microcredit organizations (MCOs) and companies

Microcredit organizations (foundations or companies) in Bosnia and Herzegovina are relatively young. All MCOs were established in the post-war period, largely thanks to the help of international financial and humanitarian organizations. One example is that, within the Local Initiative Project I financed by the World Bank, 50,261 loans were approved for approximately 20,000 customers. According to the assessment of international microfinance sector professionals, the MCO sector in Bosnia and Herzegovina has become one of the largest of its kind in Eastern Europe. It is financially sustainable, although it operates in a competitive environment.[32] The activity that dominates the MCO is providing loans. A summary of the status and operations of the microfinance sector in Bosnia and Herzegovina at the end of 2010 is given in Table 8.2.

In 2010, the microcredit sector in Bosnia and Herzegovina made a loss, although in comparison with late 2009 the loss was smaller, and in 2010 the microfinance sector in Bosnia and Herzegovina noted some improvements of key indicators as a result of enforcement of its restructuring and consolidation. The results of these measures are the downsizing and closure of a number of organizational units and field offices of the MCOs, so that they are now in some areas less physically accessible to users, especially those in underdeveloped and rural areas. There was a decrease in MCO loans of 27 percent in the Federation of Bosnia and Herzegovina and 15 percent in Republika Srpska during 2010,

[32] *Welle-Strand, Anne; Kjollesdal, K. and Sitter N. – Accessing Microfinance: The Bosnia and Herzegovina Case, Managing Global Transition 8 (2), pp. 145–166.*

Table 8.2: Review of MCOs in Bosnia and Herzegovina in 2010[33]

	Indicator	Unit	Federation of Bosnia and Herzegovina	Republika Srpska	Bosnia and Herzegovina
1.	Number of MCOs		18	7	25
	Microcredit societies		1	3	4
	Microcredit funds		17	4	21
2.	Number of branches and other organizational units		362	61	423
3.	Number of employees		1,522	380	1,902
4.	Capital/assets	Million BAM	142	60	202
5.	Balance assets	Million BAM	576	280	856
7.	Reserves for credit and other losses	Million BAM	36	7,4	43,4
9.	Credit share in assets	%	71.2%	81.8%	
10.	Approved Credits	Million BAM	460	229	689
11.	Credits to enterprises	%	1.7%	6.8%	
12.	Credits to citizens	%	98.3%	93.2%	
14.	Credits to agriculture		33.1%	32.9%	
15.	Profit/loss of MCO	Million BAM	-10.86	+1.47	-9.39
16.	Weight. Effective interest rate for short-term credit		32.56%	23.85%	
	for agriculture		33.04%		
17.	Weight. Effective interest rate for long-term credit		29.00%	20.14%	
	for agriculture		25.02%		

which is largely a result of the economic crisis and tighter lending policies due to the significant increase in the number and value of risky loans in the previous period. Although the relative share of agriculture in total credit available to the MCO is at about the same level of one third, the absolute amount of loans for agriculture is considerably smaller (55 million fewer loans in 2010, of which 49 million in the Federation of Bosnia and Herzegovina and 6 million in Republika Srpska).

Interest rates for agriculture in the MCOs are relatively high and they have increased in recent times. In the Republika Srpska, no data are available on the interest rates for the sector, but generally for all sectors, and in the Federation of Bosnia and Herzegovina, weighted average effective interest rates for agriculture in 2010 for long-term loans were 33 percent and 25 percent for short-term loans.

Often due to the many barriers that farmers have in order to access bank loans, the only loan source that they have are the loans given by MCOs. The scope of agriculture sector loans by MCOs in Bosnia and Herzegovina is between 200 and 300 million per year. However, in the context of permanent or temporary provision of funds for the implementation of projects to be co-financed from IPARD funds it should be stated that the MCOs cannot be a major partner of the applicants for such projects because of their legal registration status and the legal limitation of the size of the loans up

[33] *"Report on Banking System status in Republika Srpska", report on the situation in the banking system in Republika Srpska for the period 01.01.2010–31.12.2010, the Banking Agency of Republika Srpska, Banja Luka, 2011; and "Report on the status of the banking system in the Federation of Bosnia and Herzegovina" information about the microcredit system of the Federation of Bosnia and Herzegovina, the Federal Banking Agency, Sarajevo, 2011.*

to a maximum of BAM 50,000 (for microcredit companies) or BAM 10,000 (for microcredit foundations).[34]

8.3 Lending through savings and credit organizations

Only three savings and credit organizations exist in the Republic of Srpska and they have almost no effect in financial terms (Republika Srpska has the Law and the savings and credit organizations (SCOs), and the Federation of Bosnia and Herzegovina does not have them). These organizations were founded as a result of the pilot activities under IFAD's Livestock and Rural Finance Development Project. All three SCOs were founded in 2008. Their balance sheet is constantly decreasing, and at the end of 2010 it amounted to BAM 430,000. These organizations are local and operate mainly in the municipalities of Derventa, Srbac and Berkovici. These organizations have established their capital on the basis of donations and from the membership of their members, but never managed to attract significant savings. They extend loans with more favourable terms than banks and MCOs (lower interest rates and flexible guarantee terms), but their credit potential is limited and therefore they only approve loans of smaller amounts and shorter terms. Most of their lending is for agricultural activities, but due to the aforementioned limitations they have almost no effect on the credit market in Bosnia and Herzegovina.

8.4 The Investment Development Bank of the Republika Srpska and the Development Bank of the Federation of Bosnia and Herzegovina

The Development Bank of the Federation lends directly or through commercial banks soft loans for all types of entrepreneurs (legal or physical persons), including farmers. The Development Bank provides long-term loans to finance agricultural production for legal and physical persons, with a repayment period of 2–10 years, effective interest rate (EIR) 4.25 to 4.31 percent, that provided new employment by credited investment. This bank has a credit line to encourage new employment and within that approves loans for up to 7 years with a grace period of up to 2 years and 3.28 to 3.36 percent effective interest rate. The maximum loan amount is BAM 10,000 per newly employed worker in agriculture production.

The Investment Development Bank (IDB) of the Republic of Srpska practically operates as a fund because they do not distribute loans to customers directly, i.e. they do it through banks and MCOs with which they have signed agreements (nearly all banks and MCOs that are based in the Republika Srpska). The IDB has nine loan lines of which two are exclusively intended for agriculture – a loan line for microbusiness in agriculture and a loan line for agriculture. The unique conditions of lending (which must be accepted by all intermediaries who use the funds of IDB) for microbusiness in agriculture are:

- Beneficiaries: persons registered in the Farm Registry;
- Purpose: procurement of fixed and current assets;
- The amount of loan: BAM 5,000–50,000;
- Repayment period: up to 10 years;
- Grace period: up to 36 months;
- Interest rate: the basic interest rate is 5.9 percent (for underdeveloped municipalities: 5.4 percent, and for members of clusters 5.6 percent).

The unique conditions of lending (which must be accepted by all intermediaries who use the funds of the IDB) for agriculture are:

- **Beneficiaries**. Legal entities and entrepreneurs engaged in the production or processing of agriculture or aquaculture,
- **Purpose.** Procurement of fixed and current assets, re-financing of existing obligations,

[34] *Article 4. of the Law on MCOs of Republika Srpska, Sl. Official Gazzete Republika Srpska 64/06 and article 4. the Law on MCOs of the Federation of Bosnia and Herzegovina, Sl. FBosnia and Herzegovina 59/06.*

- **Loan amount.** BAM 30,000–5,000,000 for fixed assets and BAM 10,000–2,000,000 for current assets for legal entities and 5,000–500,000 BAM for fixed assets and 5,000–100,000 BAM for current assets for entrepreneurs (physical persons),
- **The repayment period**. Up to 15 years for fixed assets and up to 5 years for current assets,
- **Grace period**. Up to 36 months for fixed assets and 12 months for current assets,
- **Interest rates**. The basic interest rate is 5.1 percent (for underdeveloped municipalities 4.6 percent, and for members of clusters 4.8 percent).

Although the disbursement of credits for agriculture were planned below the anticipated total amount, they were still quite significant in the past three years (BAM 66 million for three years). The scope of loans is shown in the following table:

The annual scope of agricultural loans from the Investment Development Bank was from 15–30 million. Due to the limited margin for intermediary financial institutions, most of these funds were disbursed through banks, a small part through the MCOs who have aspirations for a higher margin than the ones that are limited by the IDB.

Besides the two described loan lines to enterprises in primary agricultural production and the food industry in the Republika Srpska, there are still available lines of loans for: the initial business activities of entrepreneurs and companies; to purchase receivables and for SMEs from the EAF project (Enhancing Access to Finance for SME project).

The Republika Srpska Ministry of Agriculture, Forestry and Water Management, based on the collection of commodity loans by donations from the Japanese Government (project 2KR), established a loan "Partner" fund from which they disburse loans through several banks in the Republika Srpska. Loan terms from this fund are very favourable: the amount of loans BAM 50,000–500,000, repayment period 8 years with a grace period of 12 months, (nominal) interest rate of 6–8 percent (+1 percent fee for loan processing). The only restriction is that this fund has relatively modest resources available (in 2011: 2.5 million BAM).

8.5 Guarantee Funds

There are several guarantee funds in Bosnia and Herzegovina, which generally provide their services to entrepreneurs and companies involved in agricultural production or the processing of agricultural products. These are: the Guarantee Fund Brčko District (GFBD), the USAID Guarantee Fund, the Credit Guarantee Fund of the Association for business and enterprise LINK Mostar, the Guarantee Fund of the Republic of Srpska, etc. Most of these funds operate as loan-guarantee funds and their activities do not differ much from the conditions offered by other financial institutions (banks or MCOs). Basically, all these funds, except for the Guarantee Fund of Republika Srpska, have modest capital and their achievements are limited to one municipality or to a specific (small) target group (start-ups, women, entrepreneurs, etc.).

The Republika Srpska Guarantee Fund was established with a capital of BAM 30 million, but

Table 8.3: Disbursement of loans for microbusiness in agriculture and for agriculture

Year	Loan line for Microbusiness in agriculture		Loan line for Agriculture		Total	
	Applications	BAM	Applications	BAM	Applications	BAM
2008	187	3,465,809	21	16,402,860	208	19,868,669
2009	370	6,317,264	38	24,291,000	408	30,608,264
2010	251	4,733,068	21	10,957,500	272	15,690,568
2008–10	808	14,516,141	80	51,651,360	888	66,167,501

has not yet started to work and no evaluation can be given of its role and importance. In its promotional material, this guarantee fund has emphasized lending to support agriculture as one of its objectives and priorities. Although some experts have suggested the establishment of a dedicated (only) agrarian guarantee fund, the initial idea is to move towards establishing a universal credit-guarantee fund for all activities, so that at the beginning it is reasonable to be concerned that agriculture in the overall portfolio of the Fund will have a marginal role and significance.

8.6 Leasing[35]

In Bosnia and Herzegovina, leasing services are provided in accordance with the laws on lease of the Federation of Bosnia and Herzegovina and the Republika Srpska. Of all the companies providing these services, eight were registered in the territory of the Federation, which has 28 branches in the territory of the Federation of Bosnia and Herzegovina and 7 subsidiaries in the territory of the Republika Srpska (an established leasing company based in the Republika Srpska has been liquidated). The negative effects of the global economic and financial crisis halted the growth of leasing companies that experienced the peak of their activities in the period 2006–08. During 2009 there was a significant drop in claims for lease, and during 2010 there was a slight recovery.

In 2009, the leasing sector in Bosnia and Herzegovina encountered a loss of 102 million BAM, which was more than their capital (largely influenced by the negative performance of the largest leasing company). Total write-offs based on lease were BAM 158 million only in that year. The total assets of leasing companies in Bosnia and Herzegovina in 2010 in the Federation was BAM 1.1 billion, and in Republika Srpska 80 million. The number of active contracts was 5,566, and the volume of leasing receivables approved in 2010, was BAM 245 million. The leasing market is dominated by cars and terrain vehicles (52 percent) and machinery and equipment (33 percent). Real estate accounts for about 15 percent. The percentage of physical persons use leasing services is 10 percent, and legal entities about 90 percent. The average weighted interest rates, depending on the type of leasing, have usually ranged from 1012 percent in 2010.

Services and financial and operating leases are much more important for companies from the sectors of primary agricultural production and food industries, and minor for farmers and entrepreneurs with the status of physical entities.

8.7 Specific issues related to the fruit and vegetable sector

Fruit and vegetables, with the exception to a certain extent of berries, require considerable investments. Technology and infrastructure for storage and processing are important assets that are in many cases not transferable to other sectors.

Though the Return of Investment is one of the highest compared to other areas of the agricultural sector, the payback periods are long and require a high financial discipline from the investors (e.g. for apple orchards you need a much higher investment to get a return compared to annual crops).

On the other hand there is a need for higher investments to mitigate risks such as hail and frost in order to protect the interests of the lender and the lending party (e.g. anti-hail nets or anti-frost systems)

A considerable risk factor in this context is also the deficit of technical know-how and the lack of experience in farm and companies management that can put an enterprise at risk. Examples of medium holdings and large enterprises that have failed because of disproportionate investments are not uncommon (see case studies).

[35] *Information on the leasing sector in the Federation of Bosnia and Herzegovina. Federal Banking Agency, Sarajevo, 2011*

9. Identification of the potentials and needs of the sector

9.1 Strengths, weaknesses, opportunities and threats (SWOT) analysis

Separate SWOT analyses for fruit and vegetables have been prepared for the Federation of Bosnia and Herzegovina and the Republika Srpska together with sector stakeholders during the workshops held at the beginning of the project. These SWOT analyses are available in Annex 1 of this document.

For the purposes of our analysis, we have reviewed the SWOT on the basis of the stakeholders SWOT and the information collected during the key informant interviews, case studies and other sources.

The objective is to have a more comprehensive SWOT that contains what is really specific to the Bosnia and Herzegovina fruit and vegetable sector. In order to improve the SWOT analysis and the information readability, strengths, weaknesses, opportunities and threats have sometimes been reformulated and clustered by topic.

Strengths and weaknesses are associated with elements internal to the analysed subject, in our case the fruit and vegetable sector. For the sector analysis, this includes factors related to performance drivers such as technologies, inputs or farm management. On the other hand, opportunities and threats are factors external to the analysed subject. This is the case for issues primarily associated with the enabling environment (policies, trade agreements, etc.).

Table 9.1: Strengths and Weaknesses of the fruit and vegetable sector

Internal STRENGTHS	Internal WEAKNESSES
Common to Fruit and Vegetables	
<u>Natural resources</u> - Different agro-climatic zones allowing high fruit and vegetable crop variety and longer harvest periods - Sufficient water resources for fruit and vegetable production - High altitude fruits crops that ease crop protection and IPM implementation - Availability of extensive forest and non-cultivated areas rich in wild fruits and aromatic and medical herbs <u>Genetic resources and planting material</u> - Increased use of new varieties <u>Human resources</u> *Labour force* - Low-cost labour force - Labour force of family members *Producers' know-how* - Traditional know-how including on-farm processing (spirit and jams) - Number of leading producers who have good knowledge and implement good agriculture practices <u>Technology</u> - Modern inputs and equipment on the market - New technology orchards introduced by larger producers and corporate farms <u>Production structure</u> - Positive trends in cropped areas, yields and volumes - Emergence of larger fruit producers in Republika Srpska - Suitability of small producers to market needs	<u>Natural resources</u> - High recurrence of hazards such as frost and other natural disasters (flood, drought, hail) - Shortage of land in comparison with the number of agriculture households <u>Genetic resources and planting material</u> - Weak guarantee of planting material quality - Erosion of biodiversity through replacement of indigenous varieties by high-yield imported varieties <u>Human resources</u> *Labour force* - Low productivity of labour force - Emigration of the most capable young rural people to other sectors, to urban centres or abroad due to low attractiveness of agriculture (image and income security) and poor rural life quality - Lack of labour forces in certain regions *Producers' know-how* - Technical shortcomings, especially when it comes to IPM, organic - Weak management and marketing knowledge <u>Technology</u> - Obsolete equipment; primarily agricultural machinery and in particular implements - Obsolete technology of lines for heat treatment of bottled and canned products. - Lack of information dissemination about new technologies among producers <u>Production structure</u> - High land fragmentation - Very limited number of medium-scale professional producers; potentially the ones who can ensure sector competitiveness and balanced rural development - Large number of smallholdings unable to comply with requirements of modern value chains and make their living from fruit and vegetable production

Internal STRENGTHS	Internal WEAKNESSES
Common to Fruit and Vegetables (continued)	
Storage and processing capacity - Existence of ULO capacity - Existence of fruit processing facilities, including for high value-added products Producers' financing capacity - Resources generated by non-agriculture activities and remittances Management - Direct sales - Good awareness and partial implementation of standards (HACCP, HALAL) and EU regulations among and by processors Value chain efficiency - Entrepreneurial producers able to cluster other producers, providing them technology, credit, services and guarantee for production outlets - Good business relationship between processors and producers - System of formal contracts, or more often informal commitment of producers to supply and processors to purchase raw material - Processing production planning agreed during pre-season planning meetings with producers	Storage and processing capacity - Low mechanization level for raw material handling - Uneven distribution of storage capacities and processing facilities Firm management *Market response capacity* - Volumes of single producers insufficient for export markets - Discontinuity in production *Quality management* - Low level of certification of products, including integrated production and integrated pest management, but also GlobalGAP and organic - Low percentage of first class fruits - Insufficient quality for export market Value chain efficiency - Lack of horizontal organization - Lack of organized purchasing for fresh fruit and vegetable market - Breach of contract in regard to payment of collected products, resulting in delays and non payment of the full delivered goods, especially from large retail companies - Expensive modern inputs and equipment compared to European prices due to internal market size and importers policy - High price fluctuations due to production oscillation, caused by non-coordinated action of the sector stakeholders
Fruits specific	
Genetic resources and planting material - Increased use of club varieties[36] Technology - New technology orchards introduced by larger producers and corporate farms Production structure - Concentration of berries in the east part of the country that eases product collection for fresh markets and buy-out for the processing industry	Genetic resources - Illegal use of club varieties by the majority of the users - Weak guarantee regarding the quality seedlings produced in Bosnia and Herzegovina, including about variety type - Use of non-certified seedlings, resulting in low yields Technology - Insufficient risk mitigation, in particular anti-hail measures (nets) Firm management - High investments in fruit production in non-economically sustainable operations - Processing industry high dependence on manual labour, due to lack of automatic filling equipment Producers' financing capacity - Difficulties in accessing sizeable credits, needed for perennial crops, under favourable conditions, due to a lack of own funds or absence of collateral
Vegetables specific	
Natural resources - In the south part of the country, Mediterranean climate conditions that allow a quasi continuous production over the year and increase the production cycles Technology - Increased area under greenhouses Producers' financing capacity - Reduced financing need (especially compared to perennial fruit crops) Production structure - Concentration of non-perishable vegetables in the north east part of the country, Bijeljina area, that eases product collection for the fresh market and buy-out for the processing industry - Concentration of perishable vegetables in the Mostar/Metkovic area that eases product collection for the fresh market and buy-out for the processing industry Firm management - Diversified production structure at the farm level	Genetic resources - Poor quality seeds available on the market - Use of self-produced seeds and seedlings, resulting in low yields Production structure - Insufficient use of potential new crops such as asparagus, artichoke, and aromatic herbs for export and domestic (longer term) markets Value chain efficiency - Expensive seedlings

[36] Club varieties are varieties that are registered, patented and managed by corporations who receive royalties from users and their distribution is limited to protect the price for the product.

Table 9.2: Opportunities and Threats of the fruit and vegetable sector

External STRENGTHS	External WEAKNESSES
Common to Fruit and Vegetables	
Government support for investment - Investment support by cantons (in Federation of Bosnia and Herzegovina) and entities Other government support measures - Single area payment in Brčko district Other financial resources - Donor funding resources for investment, capacity development, supply chain efficiency and institutional reforms - IPARD investment, capacity development, supply chain efficiency and institutional reforms Market - Positive global trends in fruit and vegetable demand, including the regional and domestic market - Worldwide increase in food intake, implying increased demand for food - Growth of demand for raw materials by processors - Regional market eased by CEFTA - Proximity of EU markets - Free access to EU markets - Strong linkages to the Dalmatian market - Market opportunities – access to the Russian Federation market either directly or indirectly through Serbia, Turkish market thanks to bilateral agreement - Growing demand of consumer for products with indication of origin - Growing demand for organic fruit and vegetable production, for health concerns on the domestic and regional markets, and for health and environment concerns in western Europe - Domestic consumer preference for domestic processed products	**Policy** Lack of reliable data on demography, production structure, processing, etc. Natural resources - Climate change - Mismanagement of water resources by hydro-electric companies driven by their own interests and resulting in drought and floods Genetic resources and planting material - Union for the Protection of New Varieties (UPOV) application for variety licensing - No law on seed certification Government support for investment - Non-harmonized support policies - Non-transparent support policies including complicated application procedures - Discontinued measures - Improper monitoring of use of funds Other financial resources - Reduction of donor funds - Negative effects of improperly designed donor projects causing aid dependency Rural finance - Private financial institutions financing agriculture mainly originate from microfinance institutions and only on the basis of very high interest rates. Support services (Research and Development (R&D)) *Research* - Low level of applied research in the fruit and vegetable sector addressing the needs of the private sector, due to the weak relations between researchers and sector stakeholders - Insufficient resources to fund research activities and staff in institutes and universities *Extension and advisory services* - Lack of adequate advisory services for fruit production, especially in the field of IPM and organic - Agro-economics and farm management insufficiently developed in research institutions - Limited advisory capacity for voluntary standards compliance (BRC, GlobalGAP, PDO, PGI) Quality management and compliance with standards - Increased pressure to comply with EU standards - Weak inspection service - Limited offer by domestic Certification Bodies, resulting in high certification costs, that are justified only for certain export markets (especially organic production) - Non-consistent border control resulting in imports of products without quality and origin control - Weak capacity of inspectorate Land tenure - Cumbersome administrative procedure for land transactions and registration - Very apathetic land rental market - Non-functioning land registry Other governmental regulations - Complicated and long process of obtaining permits (zoning, environmental and otherwise) Infrastructure - Poor transport infrastructure (road, rail) - Poor communications infrastructure (IT) - Frequent power cuts in rural areas penalizing the processing industry - Improperly equipped and organized wholesale markets Lack of planning and coordination in designing the national wholesale markets network Market - Negative image of the country due to wars and instability - Limited purchasing power of domestic customers whose purchase decisions are mostly price-driven

External STRENGTHS	External WEAKNESSES
Common to Fruit and Vegetables (continued)	
	- No efficient market information system on which to base production planning and marketing - High competition on the domestic market from CEFTA countries and Turkey - Unfair competition of highly subsidized products from the EU and Croatia Others threats - Absence of crop insurance - Diseases (Erwinia, phytophtora)
Fruit-specific	
Natural resources - High altitude fruits crops that ease crop protection and IPM implementation Genetic resources and planting material - Increased use of club varieties State support for investment - Significant subsidies for small producers of the fruit subsector	Genetic resources - Illegal propagation of club varieties sanctioned by the UPOV in the future in conformity with the International Convention for the Protection of New Varieties of Plants. - Weak guarantee on the quality seedlings produced in Bosnia and Herzegovina, including about variety type Market - Increasing competition on the domestic market from Italy (peaches, nectarines)
Vegetable-specific	
Special governmental support measures - Market support for delivery of raw material to the processing industry	

9.2 SWOT recommendations

On the basis of the above SWOT, we have identified the following intervention priorities.

Development of a coherent framework for financing the fruit and vegetable sector

1. Harmonize investment support and other measures countrywide on the basis of best practices and effectiveness of measures of entities and cantons.
2. Adopt objective and transparent eligibility criteria for all support measures based on economic sustainability.
3. Adopt measures to attract the private banking sector in increasing their agricultural loans portfolio (subsidized loans, guarantee fund).
4. Adopt the single area payment scheme, based on the example of Brčko district.
5. Develop a monitoring system of the use of public resources.
6. Split agriculture policy and social policy measures to avoid market distortion.

Genetic resources management

7. Improve inspection and certification of seeds and seedlings.
8. Enforcement of intellectual property rights related to new plant varieties and in particular the illegal use of club varieties, through controls and sanctions.
9. Characterization and conservation of indigenous fruit and vegetable varieties, as well as assessment of the potential demand on domestic and export markets for these varieties.

Human resources and firm management

10. In association with the fruit and vegetable sector stakeholders, develop applied research programmes addressing the needs of the sector.
11. Develop the offer of training and advisory services to producers, field of IPM and organic farming.
12. Train advisors in agro-economics and the farm management field.
13. Provide advisory services to producers in farm management and marketing.
14. Information dissemination about new technologies among producers, for both primary producers and processors.

Investment support for technology upgrade

15. Investment support for agricultural

machinery, in particular implements and specialized equipment for fruit and vegetables.

16. Subsidies for technological upgrade of processing lines regarding preservation e.g. heat treatment of bottled and canned products.
17. Increase mechanization level for raw material handling.
18. Improve distribution of storage capacities and processing facilities.
19. Streamline application procedures for obtaining building permits for processing units (zoning, environmental, etc.).

Upscale fruit and vegetable growing holdings

20. Long-term loans for land acquisition.
21. Simplification of the procedures for land transaction and registration, in order to better use land resources.
22. Land consolidation strategy including public funds to cover the costs of administrative procedures and subsidies for agricultural engineering works.

Quality management and compliance with standards

23. Continuous information on EU standards compliance.
24. Full membership of the Accreditation Institute by the European Cooperation for Accreditation (ECA) and subsequent accreditation by the ECA for certification bodies and inspection accreditation in relation to inspection (ISO 17020/EN 45004) and product certification (EN 45011).
25. Increase domestic Certification Bodies able to certify voluntary standards (BRC, GlobalGAP, PDO, PGI) through training coupled with subsidies to reduce certification costs.
26. Increase the advisory capacity for voluntary standards compliance through training coupled with subsidies for consultancies to prepare agricultural holdings for certification.
27. Support to producer groups who intend to protect Geographic Indications.
28. Improve inspection services to monitor IPM implementation, in relation to SPS agreement.
29. Improve border control of product quality and origin control.

Improvement of value chain horizontal and vertical organization

30. Legal reform to introduce new forms of legal entities reflecting the actual way cooperatives function (entrepreneurs lead clusters of producers).
31. Prioritize subsidies for investments and joint activities that can be instrumental for the strengthening and operation capacity of producer groups (common storage and processing facilities, or joint standards certification).
32. Enhance competition.
33. Effective contract enforcement by courts, including protection of judges.
34. Alternative dispute settlement processes by an agency to be created.

Upgrade of rural infrastructures

35. Improve transport infrastructure (road, rail).
36. Improve communications infrastructure (IT).
37. Improve electricity supply in rural areas to ensure continuous power supply to processing industry.
38. Planning and designing the national wholesale markets network in a coordinated manner to avoid duplication and gaps.

Holdings economic security and risk mitigation

39. Adopt science-based measures to adapt agricultural practices to climate change, such as introduction of varieties requiring less winter chilling, and minimum tillage.
40. Finance risk prevention measures such as anti-hail nets and irrigation systems.
41. Disaster risk reduction schemes based on severity and frequency of disasters such as floods, landslides, avalanches and forest fires.

Market oriented fruit and vegetable production

42. Further increase produced volumes of fruit and vegetables to respond to increased demand at global, regional and domestic levels, for fresh and domestic market.
43. Establish a Market Information System (MIS) and use data to analyse price competitiveness of Bosnia and Herzegovina single crops or groups of crops, throughout the year, with CEFTA and EU countries, as well as Turkey and planning and marketing production.
44. Develop traceability and indication of origin for products entering formal and long supply chains.
45. Promotion of the country image based on its natural resources and landscape and its product specificities at fairs, on international TV channels, in newspapers.
46. Increase the offer of organic fruit and vegetable products.

9.3 The weak points of the fruit and vegetable supply chain

Unbalanced fruit and vegetable holdings structure

The fruit and vegetable sector in Bosnia and Herzegovina is characterized by a clear duality of its structure. Namely, most of the land is owned and cropped by a large number of small-scale farms and some large corporate farms that crop several hundreds of hectares. The medium segment, usually the most represented in many developed European countries, is almost non-existent.

This represents a clear handicap for the development of the supply chain for the following reasons:

- Limited capacity of small producers having less than one hectare of land, to comply with modern supply chain requirements;
- Larger holdings are very few and a sector policy mainly focused on this group of producers will by definition have limited impacts, in particular in rural development terms.
- Another negative effect of the few medium-scale market-oriented producers is the reduced needs of producer group formation. Indeed, for the time being the production of large estates is able to cover the current needs of the large retail sector without grouping input and services procurement, or developing joint marketing approaches.

A status quo or a slow expansion of the medium-scale growers' group, only made possible by the termination of activity of producers migrating to other sectors or the death of elderly farmers, will delay sector improvement with regard to competitiveness, standards compliance and supply chain organization.

Lack of assets and technology

With few exceptions, usually the large holdings that are using state of the art technology, the level of assets and technology of fruit and vegetable growers can still be improved. This is particularly the case for:

- Post- harvest operations (sorting, grading, packaging), which are mostly carried out manually.
- On-farm storage facilities which are also underdeveloped, causing losses of significant volumes of product.

The farm survey shows that less than 3 percent of interviewed farmers have proper equipment for the handling and storage of fruit and vegetables.

In the fruit and vegetable processing sector, the low capacity and the concentration in few regions indicate a relatively poorly developed sector. This situation is harmful for the primary producers who do not have an outlet for low class fruit and vegetables and for the Bosnia and Herzegovina economy since the value of finished products is added out of the country.

Lack of standards adoption

With the exception of the processing sector, which is aware of the requirement for standards and has been engaged in the

processes of certification, the degree of certified standards is marginal. Only a few primary producers have certified production. GlobalGAP or organic certified producers have usually been supported by international projects. There is no comprehensive system of, regulations for, information about, support and certification from public institutions. Only fragmented support, such as subsidies for organic and GlobalGAP certification exists in Republika Srpska for instance. This situation represents a real weakness for the producers in a market that increasingly requires not only the guarantees with respect to minimum standards – traceability, phytosanitary and food safety measures – but also specific quality differentiation that includes environmentally friendly agricultural practices, guaranteed origin, fair trade, etc.

Weak horizontal and vertical organization of the fresh supply chain

The supply chain still operates in an inefficient way that prevents traceability, quality strategy, supply of volumes required by large retailers and exporters, standards certification required by certain markets and logistics enabling fresh fruit and vegetable exports. The main causes are the weak linkages among stakeholders of the sector. Horizontally only a few producer groups operate properly and are able to add value in product marketing. Vertically, business practices prevent building of trust between partners and long-term strategies. Supply chains of fresh fruits and vegetables are rather short, and when not, traders collecting and transporting the goods play the key commercialization role.

Upstream, the high costs of inputs and equipment, in comparison with other countries reveal a dysfunctional market that must be upgraded to improve Bosnia and Herzegovina's agriculture competitiveness. The low quality of seeds and seedlings indicates the absence of control over planting materials for domestic production. Seeds and seedlings are bought abroad, if producers are able to afford them to secure production quality.

9.4 Main recommendations for the sector

9.4.1 Link with other strategies and national programmes

The above recommendations and their implications on the proposed measures on IPARD must be in line with various strategies and programmes developed at state and entity levels. This implies that the main goals of the strategies of the State and Entities must be harmonized. In that sense the six Priority Areas of the AFRD Harmonization Strategic Plan shall constitute the coherent basis among the different levels, in which IPARD measures can be rooted:

1. Priority Area: Establish the required functional institutional capacity, coordination and implementation mechanisms at all levels
2. Priority Area: Enhance the quality and safety of domestic products with a competitive advantage in production, processing and trade
3. Priority Area: Support primary production with direct farm support measures to gradually align between entities and with EU mechanisms
4. Priority Area: Increase competitiveness of the agro-food sector of Bosnia and Herzegovina through indirect support measures for production, processing and trade
5. Priority Area: Protect the rural environment of Bosnia and Herzegovina through support for agroenvironmental programmes
6. Priority Area: Diversify rural activities and improve the quality of life in rural areas

These priorities areas have obviously been defined by taking into account IPARD and cover axis 1, 2 and 3 of IPARD.

At Federation of Bosnia and Herzegovina level, the Mid-term Strategy for Agriculture Sector Development (2006–2010) was adopted in 2007 together with its Action Plan. Eleven specific goals and priorities are

identified in the Strategy. All of them can potentially impact the fruit and vegetable sector.

In addition to the Republika Srpska Agriculture, Food and Rural Development Operational Programme (2008–2010) that has its equivalent in the Federation of Bosnia and Herzegovina and Brčko District, the pre-accession assistance to agriculture and rural development is currently implementing the Rural Development Strategic Plan (2009–2015) adopted in 2009. The Plan outlines three strategic objectives:

1. Improvement of competitiveness in agriculture and forestry
2. Preservation of nature and rational management of natural resources
3. Improvement of life conditions and introduction of diversification in income earning in the rural economy

These objectives are in a way a reformulation of the 3 IPARD axes:

1. Improving Market Efficiency and Implementation of Community Standards
2. Preparatory Actions for Implementation of the Agro-environmental Measures and Leader
3. Development of the Rural Economy

Similarly to Republika Srpska, **Brčko District** has developed the Strategy for Development of Agriculture, Food and Rural Development (2009–2013) and Action Plan, which are currently being adopted.

As far as the programmes are concerned, differences among entities are more important with different levels of support. However, overall the objectives and type of measures are similar and in line with the above strategies. Some specific measures might however create specific problems, such as the importance of the Social Plan of Action (SPA) in Brčko District.

In conclusion, State and entities' strategies are convergent and offer a good base for the adoption of harmonized Pre-accession Assistance to Agriculture and Rural Development measures in line with these strategies.

9.4.2 Preconditions for a sound use of Pre-accession Assistance to Agriculture and Rural Development

Increase policy measures' predictability and product security

Fruit and vegetable supply chain stakeholders need to know what are the framework conditions regarding the terms of support but also relevant obligations and standards compliance, with respect to investment needs and production planning. Although this is true for many other sectors of agriculture, it is very relevant for fruit and vegetables as this sector requires heavy investments and assets that are linked to land (e.g. orchards, large greenhouses or irrigation system) most of the time. Hence, framework conditions need to have a long-term perspective to provide safety and security to the stakeholders for their investment and investment decisions. It is therefore strongly recommended to adopt long-term and predictable policies and measures. As a rule, the modification measures should be announced two to three years in advance (except for measures of an emergency nature). Such consistency can only be guaranteed by increased institutionalization limiting politicians' latitude to act in their own interests or the interests of groups or individuals they are linked to.

The policy framework must provide clear directions in the sector it operates. This implies:

- Adopting multi-annual programmes including measures that are constant
- Securing financial resources to fund the planned measures

This applies to support measures, but also market regulations and quality and environment requirements. This cooperation between producers and processors through

clear and transparent business relationships is defined by long-term contracts. Crop insurance market development also significantly secures farm economics and their sustainability.

Business environment and investment increase

Investing is key for improving competitiveness. Although new technologies are available and a certain number of producers and processors apply them, the Bosnia and Herzegovina fruit and vegetable sector is far behind its competitors, especially the ones in the EU. Therefore Bosnia and Herzegovina should primarily develop a policy and legal framework to improve the business environment and secure investment. The state should foster private investment through subsidies, but decision on investment must be made by the potential beneficiaries and always through co-financing.

To be able to access EU pre–accession funds, it is very important to have well-developed rural credit possibilities and skilful people can help farmers in application preparation. Measures to involve business services and the private banking sector in the agriculture sector must be initiated by governments at state and entity levels.

One of the important preconditions for the use of Pre-accession Assistance to Agriculture and Rural Development funds is a well-developed banking network that has:

- Capacity – available capital, sufficient agro lending officers, well-developed branch networks, experience in working with farmers and agro landing, methodology for evaluation of agro business loans
- Trusted clients who have sufficient credit history
- The will and interest of the banks to provide loans to agriculture and to farmers

Due to the fact that MCO and the state development bank have developed in Bosnia and Herzegovina, the banking portfolio of agriculture loans (2.8 percent in 2010) is less developed when compared with the EU and neighbouring countries. In Serbia (7.2 percent in 2008 and 4.2 percent in 2009) for instance where there are no MCOs nor a state development bank yet, the entire portfolio of agriculture lending is left to commercial banks.

This is why Bosnia and Herzegovina must prepare its banking sector for the forthcoming challenges and the funds waiting for the producers, in order to be able to provide funds to the agricultural sector in a more efficient way and to a greater extent.

The best way that that could be done is if banks have:

- The interest to work with farmers that can be stimulated by: (i) directing the existing investment agricultural funds towards more banks instead towards one development bank or MCO; (ii) developing a farmers' registry, where one of the conditions is to open a bank account; (iii) the subventions payment through the accounts opened in banks; (iv) subsidizing the interest rates or by other similar non-market support measures.
- Specific knowledge in agricultural funding which can be obtained through educational programmes that can be supported by the Pre-accession Assistance to Agriculture and Rural Development, donor programmes or local funds.
- Information that is made available to the banking sector and that can be basically divided into three groups: (i) on the functioning of the Pre-accession Assistance to Agriculture and Rural Development programme, experiences of other countries; (ii) on market information that should help the banking sector in the evaluation of business plans; (iii) on trends, experiences, analysis of the agricultural sector and farmers, so that banks could define their work strategies in a more accurate way.

The overall objective of these programmes is to have a credit market characterized by competition among the banks.

Land market development

Farm size increase is a precondition for producers to upscale their production. Land tenure policy shall benefit particularly the fruit and vegetable sector that often requires continuous use of the same parcels. It is extremely hard to develop fruit and vegetable production with the current low dynamism of the land market. In this field, measures should aim at:

- Putting uncultivated land on the lease market
- Having a transparent lease market
- Having clear ownership supported by an updated land registry
- Consolidating land

To achieve this, land lease or transfer must be facilitated though simplified procedures, and transactions can be accelerated by incentives or deterrent measures. On a longer term, a drastic change will not be possible without a serious land tenure reform and important land consolidation.

9.4.3 Strategic action priorities of particular importance to the fruit and vegetable sector

In order to increase producer competiveness, a number of actions are necessary. Some of these actions might require sizeable funding and others do not. We suggest that Bosnia and Herzegovina authorities at all levels do not wait to engage in very concrete reform in support to the sector. The four main priorities are alignment (or approximation) with EU standards, strengthening producer organizations, market transparency and efficiency, and increased productivity of the sector.

Alignment with EU Standards

To prepare the sector for EU accession and for moving closer to the EU market, it is crucial to start adapting rules and enforcing them on the basis of EU standards. These efforts will also impact positively the product quality and sustainability of fruit and vegetable production.

Prepare the ground for a Common Market Organization for fruits and vegetables

- Adopt marketing standards regulation on the basis of the Commission Regulation (EC) No 1221/2008 and establish a system of control of compliance.
- Foster the creation and consolidation of producer organizations by adapting the legislative framework to the good functioning of certain producer groups, by creating a new form of legal entity (e.g. similar to the French SICA, *Société d'Intérêt Collectif Agricole* (Agriculture Company of Mutual Interest)), in which farmers have a share in the capital or by reform of the law on cooperatives to separate the investment capital and commercial activity of the members.

Adopt a National Scheme for Agri-environmental Measures

- Develop a Code for Good Agricultural Practices (GAP) for the fruit and vegetable sector
- Adopt and follow the roadmap to develop and adopt a National Plan for IPM
- Adopt the law on organic agriculture and strengthen control measures

Food Safety and Plant Protection system coordination

Food safety is high in the priority of the acquis. In Bosnia and Herzegovina, the main problem seems to be the multiple agencies at different levels acting in a non-coordinated manner. Hence recommendations are directed at more concerted and efficient action:

- Establishing a unified chain of command for the entire chain of food safety and separation of strategic and control mechanisms in the implementation of the law.
- Perform an *Audit of the existing diagnostic and inspection system*
- Highly relevant for the fruit and vegetable sector is the design and implementation of a system that allows the implementation of food safety and other standards required for the marketing of fruit and vegetable. This primarily refers to control of quarantine

Roadmap for adoption and enforcement of the National Plan for IPM

In accordance with the framework of activities set by Directive 2009/128/EC (see Table 6.1, in section 6.3.2), recommendations for Bosnia and Herzegovina are as follow:

To adopt the National action plan for sustainable use of pesticides. The National plan should include a plan of implementation of integrated protection principles, defined in Annex III of Directive 2009/128/EC. Principles of integrated protection refer to possibilities of prevention of pest appearance, such as: crop rotation, appropriate tillage techniques, use of tolerant varieties and certified seeds and planting materials, use of balanced fertilization and irrigation, sanitary measures, protection of beneficial organisms in the orchard.

To provide all necessary prerequisites in the phytosanitary system in order to smoothly implement the IPM certification. To ensure certification of seeds and planting material, as well as protection of breeders' rights so that the latest varieties, quality seeds and planting material would be available to producers. To establish a transparent registration of pesticides in accordance with EU rules in order to make the high quality products for parasites suppression accessible to producers. To train producers in pesticide usage and to develop the system of certificates of education.

To define and implement the system of monitoring for equipment use. In most cases, distributors of spraying equipment are authorized service providers who control the accuracy of nozzles. Producers themselves are required (and it is in their best interest because of savings and quality pesticide usage) to have proper equipment and to keep a log on nozzles control. The purpose of this control is ''drift'' prevention, i.e. prevention of possibility that, by spraying, pesticide can be found on neighbouring plots or on crops where not intended. Phytosanitary inspectors can carry out monitoring.

To establish all the conditions needed for IPM, advisory services, equipment and quality information for pests monitoring. Integrated protection requires a full knowledge of the biology and physiology of plants as well as detailed knowledge on the development cycle of each disease and pest. In addition, integrated protection requires a high level of communication and coordination among all stakeholders in the sector for every single variety and for every single disease and/or pest. All the existing knowledge, both scientific and practical, should be consolidated and secured through an advisory service, which must develop monitoring and warning systems for each specific disease/pest. The implementation of IPM requires equipment comprising everything from weather stations to traps, pheromones, magnifiers, binoculars, etc.

To develop guidelines for the fruit and vegetable sector for IPM implementation, in cooperation with producers, research institutes and extension services. To prepare, in accordance with the latest scientific findings, guidelines for each type of fruit and vegetable; this will encourage producers to apply and certify integrated production.

diseases and pests, pesticides import, certification of seed and seedling material and registration of pesticides.

Create the conditions for increased adoption of voluntary standards

- European Co-operation for Accreditation (ECA) accreditation of the Institute for Accreditation of Bosnia and Herzegovina (BATA) for the norms ISO 17020/EN 45004 (inspection) and EN 45011 (product certification)
- Enhance sector experts' knowledge about certification principles, mechanisms and procedures in order to be able to prepare producers for product certification or to play the role of assessors during the CBs' accreditation.
- Increase capacity of CBs in relation to inspection (ISO 17020/EN 45004) and product certification (EN 45011) and the different standards, such as organic, PDO/PGI, GlobalGAP, Halal, etc.
- Investment support for the upgrade of equipment and facilities needed for attaining standards
- Inform consumers, producers, processors, traders and consumers about the importance of standards.

Producer organizations

Legislative reforms will not be sufficient to significantly boost the strengthening of existing and the emergence of new Producer Organizations (POs). In the Bosnia and

Herzegovina situation, it is obvious that the only way to survive for many small and medium-scale farmers is to join forces in order to be able to respond to future market requirements in terms of quality standards and the needed volumes of retailers and exporters.

It is therefore recommended to financially support PO services such as agro-technical advice, farm management advice, including bookkeeping, marketing consultancy, input joint procurement and fruit and vegetable marketing.

In addition to development of the private sector, representative organizations will also be created in order for producers to establish dialogue with different forces and to channel relevant information to their members.

Market transparency and efficiency

It is urgent to develop a Marketing Information System (MIS) that allows a clear monitoring of prices that have a greater variability in the fruit and vegetable sector. The MIS should also make available all requirements for export markets in terms of quality standards, documentation and tariffs. The project planned under IPA 2009 shall address these issues.

Research on the domestic market should be oriented towards consumer behaviour and preferences in order to provide scientifically based information to the processing industry and primary producers on issues such as the main purchase drivers, preferred varieties, packaging and other quality attributes.

In Bosnia and Herzegovina, where small-scale producers are numerous, wholesale markets play an important role in the supply chain. Indeed, it is the third selling point for producers after the farm-gate and the green market. Improving the efficiency of the wholesale markets network is crucial to further development of the supply chain. This implies modernization of wholesale markets in areas of production and near urban consumption centres.

The promotion of Bosnia and Herzegovina fruit and vegetable products on international markets will also be an objective in the longer term.

Productivity

As shown in the analysis above, most crops in Bosnia and Herzegovina show a relative weakness in term of yields and overall produced volumes compared with countries of the region, but trends are positive and yield increases are among the highest in the region. The Bosnia and Herzegovina fruit and vegetable sector needs to continue increasing produced volumes in the primary and processing sector. This will allow import substitution, in particular for early and late production, and improvement of the livelihoods of the rural population. Productivity improvement implies:

- Augmented production capacity of the primary and processing sector (investments)
- Primary production intensification through investment and high quality input (investments)
- Upgrading of the technical skills of growers and support services

9.4.4 Accompanying measures to optimizes the impact of Pre-accession Assistance to Agriculture and Rural Development measures

In the opinion of many key informants, very few producers would currently be able to access Pre-accession Assistance to Agriculture and Rural Development funds. Only the ones owning the largest holdings would be able to benefit from the assistance. In this scenario, Pre-accession Assistance to Agriculture and Rural Development measures deadweight losses would be significant and impacts on the supply chain organization and on rural development would be rather low.

Hence it is crucial to:

- Include measures of support to non Pre-accession Assistance to Agriculture and

Rural Development users in national schemes, but overlapping of the measures should be avoided.

- Make sure that enough support services will be available to supply the stakeholders of the sector at affordable prices. Information and training will be provided to consultants and other business services that will support producers.
- Inform producers about the criteria of eligibility and in particular about the obligation of the producers to be registered, to be VAT payers and to comply with existing regulations.
- Prepare municipalities, veterinary and phytosanitary departments as well as all other public institutions that have to issue any type of authorization for Pre-accession Assistance to Agriculture and Rural Development and ensure they become more efficient.

9.4.5 Investment needs

This section lists the various investments needed to increase productivity and competitiveness of the fruit and vegetable sectors. It also includes the investments needed at primary and processing levels for compliance with the standards regulated by existing and expected laws, as well as those of modern value chains.

Primary production

- Intensification in vegetable production
  - Different types of greenhouses, heated or not and single- or multi-spans
  - Equipment for alternative energy sources from hot water, biomass, solar for glass- and greenhouses
- Intensification in fruit production
  - High-intensity orchards
  - Greenhouse production for strawberries
- Secure production volume and quality
  - Anti-hail nets
  - Anti-frost system
  - Irrigation systems
- Quality planting material
  - Pre-basic material for fruit in pre-multiplication centres
  - Certified quality seedlings
  - Subsidies for declared club varieties seedlings
  - Glasshouses and equipment for nurseries
- Production equipment
  - Fruit and vegetable specialized machinery
  - Subsidy investment to upgrade farms in order to comply with GlobalGAP and IFS requirements (storage of pesticides, fertilizers, waste management, etc.)

Post-harvest management

- Increased mechanization of handling of products (conveyor belts, packing and labelling machines)
- Sorting and grading equipment, including calibrators
- On-farm storage, including cooling facilities for berries
- Storing facilities for packers and distributors (including ULO) avoiding regional over capacity
- Pallets, containers and forklifts for collection and storage (only for ULO facilities)

Processing

- Improved raw material handling, sorting, grading and cleaning.
- Replacement of old or out-of-date processing equipment, such as filling machines, continuous sterilizers, evaporators
- Introduction of freezing facilities to level out the seasonal peaks of fruit and vegetables, where applicable
- Introduction of computerized stock and inventory controls as a prime means of reducing cash tied up by overstocking
- Improvement of finished product storage by the introduction of a live system of pallet racking, allowing easy access when picking orders. This will also require modern forklift trucks for order picking and loading of vehicles and redesigned

loading bays to avoid multiple handling of each pallet

- Packaging material for fresh products, frozen retail packs and packaging for processed products
- Refrigerated trucks for frozen and cooled products transport
- On-farm processing facilities for berry processing (jam)
- Upgrading of on-farm high quality products processing workshops to comply with food safety and hygiene regulations
- Waste management

Infrastructure

- Development of a network of modern wholesale markets
- Improvement of electricity supply in rural areas
- Equipment for IPM implementation, IT equipment, weather-stations, traps, pheromones, magnifiers, binoculars, etc.

9.4.6 Geographic scope of Pre-accession Assistance to Agriculture and Rural Development measures for fruits and vegetables

Pre-accession Assistance to Agriculture and Rural Development 2007–13 for the fruits and vegetables sector should be applied throughout all rural areas of Bosnia and Herzegovina. An exception is provided for agro-processors (directly or indirectly related to the development of rural areas) located in urban areas. Less Favoured Areas (LFAs) defined by the Ministry of Agriculture, however, need to have more favourable conditions for utilization of Pre-accession Assistance to Agriculture and Rural Development resources.

9.4.7 Criteria for Support to the Sector

Experience and track records criteria

Case studies and key informants' interviews clearly showed that newcomers in the sector were usually not likely to succeed. The complexity of the fruit and vegetable production process, the difficult market and logistic challenges require experience to stay in business sustainably. Successful producers have been in the business at least since the mid-1990s. It is therefore recommended to orient financial resources towards the experienced producers, engaged in market-oriented agriculture for at least three years.

Pre-accession Assistance to Agriculture and Rural Development contributions should be allocated only to producers who are able to co-finance the planned investments.

The producers applying for Pre-accession Assistance to Agriculture and Rural Development funds will have to demonstrate that they comply with compulsory standards and be registered as being in compliance with compulsory standards.

Measures must be instrumental to improving the whole supply chain

Actions that would benefit a larger number of stakeholders (rural infrastructure, such as the electricity network and water access) and could have a higher impact on the supply chain and its organization (storage, processing) have to be a priority for investment.

For this reason, support to producer organizations should be favoured in order to encourage their development and to reach the highest number of entrepreneurs possible. Specific conditions should be adopted such as a lower co-funding level that could be compensated through a solidarity group guarantee.

10. Identification of training needs in the sector

The supply chain stakeholders and their supporters need to improve their capacity and knowledge to perform vegetable production and processing, channel information and provide advice as well as define a sound policy framework.

Beneficiaries of the training and information are:

- Growers and processors
- Cooperatives
- Support services providers
- Governmental institutions
- Consumers

As for the training of, and provision of information to, growers and processors, this assistance will have to be provided by support services including state extension services and private advisory services that might include consultancy companies or individual consultants, advisory services or NGOs and associations. These institutions and organizations should provide the majority of the training. Once staff of these support services are trained for this task, these services will be fully or partly subsidized depending on the type of advice and information provided to the end users. The financing level should take into account two inter-related factors: the estimated deadweight loss and the relation between the advice or information given and public goods. Certification bodies will also need assistance and information about a certain number of standards such as GIs, Organic or IPM.

The packages of services should be the object of a tender available to all possible agents. Specific support shall be provided to the cooperative for organizational empowerment and development of services. Selected support organizations would assist these cooperatives on demand, applying methods closer to coaching than formal training.

Capacity development is also needed for other stakeholders of the sector, particularly for state agents intended to enforce laws and regulations. Inspectors from inspectorates of the Republika Srpska, Federation of Bosnia and Herzegovina and the Government of Brčko District shall be trained or informed on the acquis or for specific standards (e.g. Marketing Standards, Good Agricultural Practices or agroenvironmental measures).

Eventually, for a better functioning of the market and for producers who engage in quality strategies, it is important to raise the awareness of consumers.

10.1 Training and Information to Support Services (State and Private)

Training of, and the provision of information to, primary producers must improve their competence to increase their productivity and competitiveness in order to comply with the *acquis communautaires*. These training and information measures should be provided by different support services.

Priority issues to be covered for producers are: integrated production and IPM, post-harvest management, farm management including risk management, bookkeeping supported by IT, marketing and on-farm processing. Information about the importance of compulsory and voluntary standards and means should be circulated among producers, processors, traders and consumers

The support services should be trained in the following fields:

- On standards market requirements (GlobalGAP, BRC, IFS, International Organization for Standardization (ISO), Russian standards GOST, GIs, organic, IPM), including conditions, benchmarking and buyers' preferences;
- IPM implementation, in cooperation with producers, research institutes and extension services, including use of pesticides, varieties selection, crop rotation. The

guidelines for IPM in the fruit and vegetable sector;

- Training on the use of tools and information for a pest monitoring system;
- The Common Agricultural Policy of the European Union (CAP) and the Common Market Organization (CMO). Including training and information on marketing standards;
- Health and hygiene and safe working practices for the processing sector. Processors are competent and experienced in applying their own training programmes, evidenced by the quality of management seen during site visits;
- Training to certification bodies and private inspection bodies on the different standards;
- Training to wholesale management staff to improve the wholesale market by including all needed functions.

10.2 Training and information to Cooperatives

Promote the establishment of voluntary associations or groups of local farmers or producers undertaking joint marketing and quality improvement of their products in ways that are compatible with CMO EU mechanisms for provision of financial support and marketing disciplines in the fruit and vegetable sector.

Cooperatives should be advised and trained in the following fields

- Cooperative management, including cooperative principles, preparation of a development strategy, management and leadership, human resources, financial management; basics of accounting for cooperatives; use of software for the financial management of cooperatives
- Communications and marketing strategy and partner/customer relations
- Quality control of agricultural products as well as better preparation of the implementation of Common Market Organizations (CMOs) in the beneficiary sectors through the setting up of producer groups
- Consultancies to prepare group certification for GlobalGAP, GI or other quality standards
- The role and functioning of private sector representative organizations by regions or specific value chain
- There is a significant need for training of processing sectors in marketing, whereby an industry database should be introduced and monitored by members of the processing industry. This would lead to improved cooperation and working relationships between processors, and probably avoid excessive duplication of activities.

10.3 Training and information to Governmental Organizations

Technical assistance will be needed to help national authorities improve legislation and regulations, and to train staff in charge of enforcement of the latter.

Experts should assist State level government and bodies in charge of the new regulatory acts by:

- Supporting working groups comparing national and EU legislation to identify gaps and prepare draft legal measures enabling selected CMO measures to be introduced
- Reviewing the current and planned organization and management of government bodies with a view to identifying changes that can be made to improve the capabilities and efficiency with which selected CMO arrangements can be operated and enforced
- Defining multi-annual programmes and budgets
- Reviewing the law on cooperatives
- Design of a Management and Information System (MIS)

Different government agencies in charge of enforcement should benefit from training programmes in their field of competencies. The below institutions should be trained in the following fields of competence:

- Training to inspection bodies responsible for conformity control of marketing standards
- Training of the institution selected to manage the MIS
- Support for design and planning of a wholesale markets network
- Support to BATA in obtaining international recognition for product certification (EN 45011), including for instance simulated peer evaluation, joint accreditation of a domestic certification body.
- Training staff of BATA or external experts who are potential assessors for product certification and for Certification Body (CB) accreditation, on accreditation and certification procedures and principles, as well as the different standards with priority on IPM, GlobalGAP and organic agriculture.

11. Conclusions

11.1 Sector analysis

The fruit and vegetable sector is the most significant sector for agricultural production in Bosnia and Herzegovina. In 2005, the fruit and vegetable sector contributed EUR 233 million to the Gross Agriculture Output (GAO). Besides the overall growth of the sector between 2005 and 2007, the following figures also show that vegetable production is significantly more important economically with more than EUR 180 million against EUR 70 million for fruit production (2007). Fruit and vegetables are important for food security and nutrition for a broad swath of the population, as a vast majority of rural households have vegetable plots and fruit trees in their gardens for self consumption.

Production indicators reveal on the one side a certain weakness compared to neighbouring countries, but on the other very encouraging growth of yields and volumes. This is especially true for fruits, while growth of vegetables is in line with countries in the region but lower than NMS.

One of the main handicaps of the fruit and vegetable sector in Bosnia and Herzegovina is the duality of the production structure; the vast majority of producers growing less than 4 ha, a smaller portion cropping up to 10 ha and a few big corporate or large family farms. The medium segment is missing. Medium-scale producers, who would be the main drivers of a development of the sector that would also impact positively on the supply chain, are missing or very much under-represented. Most of the small-scale producers are subsistence or semi-subsistence agriculture households. Smaller holdings are usually using obsolete equipment and limit their expenditure in inputs by using own produced seed and lower quality seedlings.

The unpredictability of a support policy, lack of institutional support and the absence of real competitiveness caused by high tariff protection against products originating from competitive countries, such as the EU and similar, are other reasons for this lack of competitiveness. This has a clear negative impact on fruit and vegetable retail prices, which are still lower than in the EU 27, Croatia and Montenegro, but higher than Serbia, TFYR of Macedonia and NMS of the region.

Fruit and vegetable processing in Bosnia and Herzegovina is largely underdeveloped. One reason for this lack of development is due to privatization of state assets in food processing, even as recently as 2009, some fifteen years after the end of the Balkan conflict. The estimated annual output of the fruit and vegetable processing industry in Bosnia and Herzegovina is about 15,000 tonnes, of which almost 90 percent originates in Republika Srpska.

The sector is characterized by farmers selling their products at the farm-gate and on green and wholesale markets. Independent traders play a major role in transport and distribution. Supermarkets, that have a market share below 10 percent source their products from the largest producers and alternatively from imports.

The 2007 Household Budget Survey (HBS) indicates that fruit and vegetables represent 7.4 percent and 9.5 percent of average household expenditure on foodstuffs respectively. Fruit and vegetables can be considered relatively expensive, particularly for the poorer population groups. If we assume that this does not threaten the rural poor, who are likely to have easier access to fruit and vegetable products, some concerns can be raised for the diet of the urban population.

According to the 2007 HBS, the main place of purchase for fruit and vegetables is the traditional “next-to-home shop”. One of the possible reasons is the convenience and proximity of this type of outlet. Compared to other food items (bread, meat, fish), consumers still purchase their fruit and vegetables on the open market. This is

particularly the case in urban areas, where fruit and vegetables are more often purchased in open markets (38.9 percent and 39.6 percent) as compared to households which live in rural/semi-urban areas (17.5 percent and 18.3 percent). Large retailers have still a reduced market share, though this might have slightly increased over the past four years.

Marketing standards are not regulated by the State, but subject to agreement between primary producers and processors. A very limited number of producers have started to adopt voluntary standards, mostly for GlobalGAP and organic. However, with little demand from the domestic market for standards and absence of the services needed for the certification process (consultants and CBs), only a few growers have engaged in voluntary standards certification.

Horizontal and vertical organization is still weak though a significant number of small-scale growers are members of cooperatives or associations. These are not always operational or face management and cash-flow difficulties. In the perspective of the creation of the CMO for fruit and vegetables and for a better functioning of the supply chain, it is crucial to strengthen these operators.

Financing of agricultural production, especially on small family farms, has been and still is an issue in the whole region and Bosnia and Herzegovina is no better off in that respect. That is a real burden for development of the sector as fruit and vegetables, with the exception to a certain extent of berries is very much capital based. Technology and infrastructure for storage and, processing are important assets that are not in many cases transferable to other sectors.

11.2 Recommendations

11.2.1 Priority actions for the sector

Overall objective of the sector

The current holding structure is the main bottleneck for a significant professionalization of the sector hindering competitiveness and the ability of stakeholders to comply with EU standards. The main objective for the next five years should be the adoption of measures that would increase the number of medium-scale fruit and vegetable growers able to comply with market requirements in term of volumes and quality standards; and to increase their capital in terms of assets and knowledge.

Legal framework

The current land market is a great obstacle for the development of the Bosnia and Herzegovina agriculture sector and particularly for the fruits and vegetable sector. To boost the market-oriented small-scale and medium producers, it is crucial to increase the **land market** to allow the area under production per holding to be increased. Short-term measures such as enforcement of the existing law on utilization of non-cultivated land will already improve the situation. In the longer-term, the level of land fragmentation is such in Bosnia and Herzegovina, that land reform and land consolidation measures cannot be avoided.

The need to have a clear policy in the field of IPM has been extensively discussed above. National authorities must put in place the working group in charge of developing the **National Plan for IPM**, following the proposed roadmap.

This should be developed in parallel with the formulation of a Code for Good Agriculture Practices (GAP) for the fruit and vegetables sector. Such code must be adopted by all Member States in order to integrate at national level requirements of the Nitrate Directive of the EU, as well as other directives. It must also encompass the agri-environment commitment of farmers and voluntary codes (see an example at www.agric.gov.mt/file.aspx?f=8).

Standards compliance

Producers have to satisfy market requirements and regulations that will become more and more strict. Measures should accompany producers to better understand and meet market required quality including not only fruit and vegetable properties, but also all attributes link to the marketed product related

to environment, tradition, biodiversity, health or religion, and guaranteed by voluntary standards certification. Measures have to support producers in certifying their products under different schemes such as IPM, organic, GI, Halal, GlobalGAP. For the processing industry HACCP should be complemented by BRC or IFS standards by those processors contemplating the export market. To increase the adoption of these different standards, measures should:

- develop a domestic accreditation and certification system affordable to interested supply chain operators;
- disseminate information on standards demanded by the different markets and on certification mechanisms and their implication on the production process;
- financially assist producers to upgrade their production assets if required by the standards.

Upgrading assets for increased productivity and competitiveness

Taking into account the still weak productivity per hectare and the perspective of increased cropped surface per holding, the needs of investment for production intensification are significant, and it is very unlikely that Pre-accession Assistance to Agriculture and Rural Development funds will meet all the needs.

To maintain a certain level of competitiveness against imported products in the non-perishable vegetable supply that relies on appropriate logistics implying heavy investments, **storage facilities** at farm and collection points level (companies or cooperatives) are a clear priority.

In the field of fresh vegetables and strawberries, **modern multi-span greenhouses or polyhouses** should be multiplied to extend early and late season growing, and even winter cropping in the mildest climatic regions. Heated greenhouses should be supported in the case the source of energy is non-fossil.

High-density orchards shall be extended in order to enhance productivity and the growing of market demanded varieties.

In the fruit and vegetable processing industry, the capacity is again very low compared to other countries in the region. Investment in new processing units is needed. Additionally, **upgrading of existing processing lines and storage facilities** are needed to increase productivity and improve standards compliance. The Pre-accession Assistance to Agriculture and Rural Development programme might prioritize the second type of measures, as establishing new processing units requires too high an investment.

Considering the important investment needs compared to the anticipated size of Pre-accession Assistance to Agriculture and Rural Development funds, even the most optimistic, access to other sources of funding is key for the overall development of the sector. Strategies to involve private banking institutions present in Bosnia and Herzegovina should be pursued through professionalization of growers, including farm management skills, contracts with buyers and crop insurance. Existing insurance support schemes need to be improved in directions to be more affordable for fruit and vegetable farmers. Consideration should be given to the establishment of a special scheme for fruit and vegetable farmers due to the high investment and risk.

Improving services and access to services

Information and human resources development are key factors of development. In a fast-changing environment, stakeholders must on the one hand access information on markets, new technologies, legislation affecting their activities and possible partnerships; and on the other upgrade skills and knowledge. Private operators will also better develop their business if administrative procedures are simple and bureaucracy reduced to a minimum.

It is therefore recommended developing:

- A market information system associating the different parties involved (producers, green and wholesale markets, exporters and importers)
- Support advisory services that are demand driven

- Support to the development of services provided by Producer Organizations (POs)
- Simplified producer and land registration procedures
- Guidelines on regulations for the sector
- Dissemination through conventional and electronic media and dissemination networks

Financing of these actions should be based on the principle of co-financing for the services where the Return on Investment (RoI) is not immediate or where producers and public interests are combined; and full grants for services that are exclusively of public interest. For instance, awareness and basic training on the best practices of pesticides and IPM that might result in a reduced impact on the environment that is a public good, could benefit from full public funding. On the other hand, consultancy services to prepare a grant or a loan application should be covered by the applicant. In between, consultancy services for a pest management plan according to IPM, prepared for a single holding, could be partly co-financed, as this would impact positively on the environment and on the farm economic performance.

11.2.2 Pre-accession Assistance to Agriculture and Rural Development interventions

Following the Axes defined in the Pre-accession Assistance to Agriculture and Rural Development programme regulation, the various measures shall focus on the investments outlined below. These investments shall be funded by Pre-accession Assistance to Agriculture and Rural Development but also by national schemes and other instruments.

AXIS 1 – Improving market efficiency and implementation of Community standards

Investments in agricultural holdings to restructure and to upgrade to Community standards

Investments in agriculture holdings

– Investment 1: Co-financing machinery for post-harvest management (washing, packaging, grading)
– Investment 2: Co-financing establishment of modern storage facilities for fruits and vegetables
– Investment 3: Co-financing introduction of on-farm new technology, which will increase competitiveness (irrigation equipment, greenhouses, anti-hail nets, anti frost systems, etc.)
– Investment 4: Investment in the upgrade of quality and community standards
– Investment 5: Co-financing for production of pre-basic and basic material (seedlings, seed) for fruit in pre-multiplication centres including autochthonous varieties (introducing those into the certification scheme), as well as planting material producers having a consortium and mutual mother plantations
– Investment 6: Support for the certified quality-oriented producers and processors by subsidizing certification and for the compliance costs for quality standard certification schemes such as organic, Geographic Indications, IPM, GlobalGAP, ISO or HACCP

Support for the setting-up of producer groups

– Investment 7: Supporting the setting-up of producer groups (flat-rate aid for the first five years following recognition calculated based on annual marketed production) for the purpose of adapting to the production and output of the members of producer groups, in order to meet market requirements; jointly placing goods on the market, including preparation for sale, centralization of sale, and supply to bulk buyers; establishing common rules on production information, with particular regard to harvesting and availability.

Investments in the processing and marketing of agriculture to restructure those activities and to upgrade them to Community standards

– Investment 8: Modernization of existing lines for heat treatment of bottled and canned products
– Investment 9: Co-financing the establishment of new processing facilities and investment

in the existing processing facilities, for all processing types (pasteurized, sterilized, dried, frozen, liquid, sweets) of fruits and vegetables

- Investment 10: Increase the implementation of freezing processes in order to level out the very strong seasonality of prime production, in addition to more widespread freezing of soft fruit
- Investment 11: Update methods of finished processed product storage and inventory control
- Investment 12: Support for the establishment of modern wholesale markets based in the main production areas and near the main urban centres. Planning is crucial and needs should be clearly studied to avoid redundant wholesale markets (e.g. creation of the wholesale market in Brčko that could duplicate Bijeljina wholesale market, at a distance of 40 kilometres
- Investment 13: Product promotion through awareness campaigns, about organic farming, PDO and PGI products, Integrated Pest Management, nutritional benefits of fruits and vegetables

AXIS 2 – Preparatory actions for implementation of the agro-environmental measures and local rural development strategies

Actions to improve the environment and the countryside

- Investment 14: Increase the entities capacity to establish a system of IPM certification and control, regulated by a law on IPM, and support measures (training and advice) enabling all professional producers to implement IPM, including disease and pest control and alert systems
- Investment 15: Direct payments to producers that introduced IPM and who have converted to organic fruit and vegetable production
- Investment 16: Subsidize on a co-finance basis on-farm energy efficiency measures such as biogas for wood boilers
- Investment 17: Finance with regard to waste disposal for pesticides and fertilizer containers to comply with EU standards.
- Investment 18: Improve or install adequate means of effluent treatment and disposal for each of the six processors operating currently on the territory

Preparation and implementation of local rural development strategies

- Investment 19: Support for the development and proper management of Geographic Indications and regional labels, including an inventory of potential geographic indications and information to producers on the benefits and challenges of PDO and PGI. Processed products, jams, preserves, dry fruit and vegetables could be included, or fresh fruits and vegetables with specificities linked to the area of production.

AXIS 3 – Development of the rural economy

Improvement and development of rural infrastructure

- Investment 20: Energy supply (to guarantee continuous electrical power to the processing industry)
- Investment 21: Local access to information and communication technologies (hi-speed internet in rural areas)

Diversification and development of rural economic activities

- Investment 22: Supporting the introduction and development of new crops such as aromatic herbs (basil, coriander, sage, thyme, estragon), artichokes or asparagus
- Investment 23: Support for small fruit and vegetable processing units of high quality processed products such as fruit spirits, pickles or preserves, in order to increase the added value generated in rural areas

Quantification of the measures

The sound quantification of the financial resources is rather difficult due to the absence of reliable data on farm structure and crops. It is also difficult to define a global figure for the sector that would be the result of the figures

of the proposed single measures for the fruit and vegetable sector due to the diversity of crops and types of measure for each crop.

A possible approach could consist in allocating a reasonable share of the total Pre-accession Assistance to Agriculture and Rural Development budget to the fruit and vegetable sector, based on the importance of the sector. On that basis, it seems justified to provide a substantial part of the available resources. The next steps would be to tentatively distribute the resources made available to the fruit and vegetable sector to the groups of measures foreseen under the main headings of the three axes of Pre-accession Assistance to Agriculture and Rural Development, namely for:

- Investments in agricultural holdings to restructure and to upgrade to Community standards
  - Investments in agriculture holdings
  - Investment in the upgrade of quality and community standards
- Support for the setting-up of producer groups
- Investments in the processing and marketing of agriculture to restructure those activities and to upgrade them to Community standards
- Actions to improve the environment and the countryside
- Preparation and implementation of local rural development strategies
- Diversification and development of rural economic activities

Table 11.1: Quantification of resources needed to finance support measures

MEASURES	No of beneficia-ries	Average cost per beneficiary (BAM)	Total investment (BAM)
Axis 1 – Improving market efficiency and implementation of Community standards			**380,200,000**
Investments in agricultural holdings to restructure and to upgrade to Community standards			
Investments in agriculture holdings			
- Investment 1: Co-financing machinery for post-harvest management (washing, packaging, grading)	20	1,000,000	20,000,000
- Investment 2: Co-financing the establishment of modern storage facilities for fruits and vegetables			-
Medium-scale units	30	1,500,000	45,000,000
Large-scale units	10	4,000,000	40,000,000
- Investment 3: Co-financing introduction of on-farm new technology, which will increase competitiveness (irrigation equipment, greenhouses, anti-hail nets, anti-frost systems, etc.)	300	70,000	21,000,000
- Investment 4: Investment in the upgrade of quality and community standards	300	50,000	15,000,000
- Investment 5: Co-financing for production of pre-basic and basic material (seedlings, seed) for fruit in pre-multiplication centres including autochthonous varieties (introducing those into certification schemes), as well as planting material producers having a consortium and mutual mother plantations	20	100,000	2,000,000
- Investment 6: Support for the certified quality-oriented producers and processors by subsidizing certification and for the compliance costs for quality standard certification schemes such as organic, Geographic Indications, IPM, GlobalGAP, ISO or HACCP			
Individual farm certification (3 years)	500	29,000	14,500,000
Grouped certification (3 years)	20	130,000	2,600,000
Processing firms certification (3 years)	100	45,000	4,500,000
Support for the setting up of producer groups			
- Investment 7: Supporting the setting up of producer groups, in order to meet market requirements; jointly placing goods on the market, including preparation for sale, centralization of sale, and supply to bulk buyers; establishing common rules on production information	20	100,000	2,000,000
Investments in the processing and marketing of agriculture to restructure those activities and to upgrade them to Community standards			

MEASURES	No of beneficia-ries	Average cost per beneficia-ry (BAM)	Total investment (BAM)
Axis 1 – Improving market efficiency and implementation of Community standards (continued)			
- Investment 8: Modernize existing lines for heat treatment of bottled and canned products	8	700,000	5,600,000
- Investment 9: Co-financing the establishment of new processing facilities and invest-ment in the existing processing facilities, for all processing types (pasteurized, sterilized, dried, frozen, liquid, sweets) of fruits and vegetables			
Investment in new artisan processing facilities for traditional products such as spirit (on-farm or not but complying with food safety standards)	40	300,000	12,000,000
Investment in new industrial processing facilities	20	4,000,000	80,000,000
Investment in existing industrial processing facilities upgrade	5	2,000,000	10,000,000
- Investment 10: Increase in freezing processes in order to level out to some extent the very strong seasonality of prime production, in addition to more widespread freezing of soft fruit	20	3,000,000	60,000,000
- Investment 11: Update methods of finished processed product storage and inventory control	10	400,000	4,000,000
- Investment 12: Support for the establishment of modern wholesale markets (adding infrastructures needed for all services) based in the main production areas and near the main urban centres.	4	10,000,000	40,000,000
- Investment 13: Product promotion through awareness campaigns, about organic farm-ing, PDO and PGI products, Integrated Pest Management, nutritional benefits of fruits and vegetables	1	2,000,000	2,000,000
Axis 2 – Preparatory actions for implementation of the agro-environmental measures and local rural development strategies			**125,200,000**
Actions to improve the environment and the countryside			
- Investment 14: Increase MAWMF capacity to establish a system of IPM certification and control, regulated by a law on IPM, and support measures (training and advice) en-abling all professional producers to implement IPM, including disease and pest control and alert systems	1	6,000,000	6,000,000
- Investment 15: Direct payments to producers that introduced IPM and who have con-verted to organic fruit and vegetable production (3 years)	700	36,000	25,200,000
- Investment 16: Subsidize on a co-finance basis on-farm energy efficiency measures such as biogas for wood boilers			
Large facilities	10	5,000,000	50,000,000
Small facilities	100	100,000	10,000,000
- Investment 17: Finance in waste disposal for pesticides and fertilizer containers to comply with EU standards.	400	20,000	8,000,000
- Investment 18: Improve or install adequate means of effluent treatment and disposal for each of the six processors (EUR 2 million by processor)	6	4,000,000	24,000,000
Preparation and implementation of local rural development strategies			
- Investment 18: Support for the development and proper management of Geographic Indications and regional labels, including an inventory of potential geographic indica-tions, information to producers on the benefits and challenges of PDO and PGI.	10	200,000	2,000,000
Axis 3 – Development of the rural economy			**75,000,000**
Improvement and development of rural infrastructure			
- Investment 19: Energy supply (to guarantee continuous electrical power to the pro-cessing industry)	40	200,000	8,000,000
- Investment 20: Local access to information and communication technologies (hi-speed internet in rural areas)	1	50,000,000	50,000,000
Diversification and development of rural economic activities			
- Investment 21: Supporting the introduction and development of new crops such as aromatic herbs (basil, coriander, sage, thyme, estragon), artichokes or asparagus	200	20,000	4,000,000
- Investment 22: Support for small fruit and vegetable processing units of high quality processed products such as fruit spirits, pickles or preserves, in order to increase the added value generated in rural area.	200	65,000	13,000,000
Total investment for the sector in BAM			**580,400,000**

Experience of SAPARD and IPARD in Croatia have shown that, once the institutional capacity to manage pre-accession funds is overcome by single states, the ability of users to access these funds are the main bottleneck for their absorption.

Considering that the timing of Pre-accession Assistance to Agriculture and Rural Development fund availability is uncertain, the above assessment needs might be reviewed in due time taking into account the capacity of the users of the single proposed investment lines.

Currently, the information collected during this study indicates that only a few growers would comply with the requirements and be in a position to access Pre-accession Assistance to Agriculture and Rural Development. In the entire Caplina and Mostar region, between 5 and 10 growers and processors would be financially and technically able to apply for funds. On that basis, one could assume that hundreds of users nationwide could benefit from Pre-accession Assistance to Agriculture and Rural Development.

11.2.3 State level interventions

Regulatory interventions and framework build up.

- Harmonize the market support policy among entities while RD support could be part where entities could compete who would increase and improve their support to farmers and rural areas
- Consider the establishment of LFAs and define conditions for accessing investment and rural development support in those regions
- Define the appropriate timeframe for strategy revision
- Define an overall framework for registering land and farms to harmonize the approach at national level

11.2.4 Entity level interventions

Institutional interventions and build up

- Improvement of the inspectors control or adjust the measures to the capabilities of the control system, especially in the Federation of Bosnia and Herzegovina
- Further develop a system of registers for land and farm registration, coordinated by MoFTER in order to have a unified farm register, one of the cornerstones of the Integrated Administration and Control System (IACS), which is defined in CR 1782/2003 and EC Regulation 795/2004.

Regulatory interventions and framework build up.

- Either align measures with defined strategic priorities or change strategic priorities
- Improve the system of policy development, beneficiaries' eligibility criteria, payment and control of subsidies and constantly monitor the effects of measures, and adjust them to the new situation based on objective information.
- Increase RD support in relation to the markets support
- Develop a multi-year financing scheme for RD projects
- Farm registration is a basic precondition for any good support
- Certain measures of lower value where the focus is on investment (irrigation, hail-nets, machinery in fruit and vegetable production) need to be simplified in the way that refund is carried out automatically on a part of the cost after the submission of accounts, similar to the investment in setting up new orchards.

11.3 Prioritization of proposed measures based on the SWOT outcome

Policy-makers will have to set priorities among the long list of measures proposed above in Section 9.2 "SWOT recommendations". A sound balance will have to be found in the allocation of funds to enable the sector to comply with EU and international standards while boosting the competitiveness of the leading firms and still support rural development. Which should come first, the weight of resources per measure will have to be decided on an objective criteria in order to reach strategic goals. We have proposed below a priority ranking based on EU standards compliance, competitiveness

and rural development, considering the last two criteria of equal importance. Regarding EU standards compliance criteria, we considered that a high priority in that respect meant the measure to be of high priority and therefore a "MUST". For the rest, the measures are clustered in MUST, RECOMMENDED and NICE TO HAVE.

It is clear that this should be considered as indicative and could be reviewed by giving for instance more weight to one or the other criteria.

Table 11.2: Prioritization of measures

		EU compliance	Competitiveness	Rural Development	Priority
MUST	Prioritize subsidies for investments and joint activities that can be instrumental for the strengthening and operation capacity of producer groups (common storage and processing facilities, or joint standards certification)	1	2	2	5
	Improve inspection and certification of seeds and seedlings	2	2		4
	Enforcement of intellectual property rights related to new plant varieties and in particular the illegal use of club varieties, through controls and sanctions	2	2		4
	Continuous information on EU standards compliance	2	1	1	4
	Improve inspection services to monitor IPM implementation, in relation to the SAS agreement	2	2		4
	Develop traceability and indication of origin for the products entering into formal and long supply chains	2	1	1	4
	Effective contract enforcement by courts, including protection of judges	2	1	1	4
	Support to producer groups who intend to protect Geographic Indications	1	1	2	4
	Develop a monitoring system of the use of public resources	2	1		3
	Provide advisory services to producers in farm management and marketing	1	2	1	4
	Improve distribution of storage capacities and processing facilities	1	2	1	4
	Land consolidation strategy including public funds to cover the costs of administrative procedures and subsidies for agricultural engineering works	1	1	2	4
	Split agriculture policy and social policy measures to avoid market distortion		2	2	4
	Simplification of the procedures for land transaction and registration, in order to better use land resources		2	2	4
	Improve transport infrastructure (road, rail)		2	2	4
	Improve communication infrastructure (IT)		2	2	4
	Improve electricity supply in rural areas to ensure a continuous power supply to the processing industry		2	2	4
	Further increase produced volumes of fruits and vegetables to respond to increased demand at global, regional and domestic levels, for fresh and domestic market		2		4
	Improve or install adequate means of effluent treatment and disposal for each of the six processors (EUR 2 million by processor)	2		1	3

		EU compliance	Competitiveness	Rural Development	Priority
RECOMMENDED	Develop the offer of training and advisory services to producers, field of IPM and organic farming	1	1	1	3
	Train advisors in agro-economics and the farm management field		2	1	3
	Investment support for agricultural machinery, in particular implements and specialized equipment for fruits and vegetables		2	1	3
	Long-term loans for land acquisition		2	1	3
	Increase domestic Certification Bodies able to certify voluntary standards (BRC, GlobalGAP, PDO, PGI) through training coupled with subsidies to reduce certification costs		2	1	3
	Increase the advisory capacity for voluntary standards compliance through trainings coupled with subsidies for consultancies to prepare agricultural holdings for certification		2	1	3
	Legal reform to introduce new forms of legal entities reflecting the actual way cooperatives function (entrepreneurs lead clusters of producers)		2	1	3
	Planning and designing the national wholesale markets network in a coordinated manner to avoid duplication and gaps		2	1	3
	Finance risk prevention measures such as anti-hail nets and irrigation systems		2	1	3
	Establish a Market Information System (MIS) and use data to analyse price competitiveness of Bosnia and Herzegovina single crops or groups of crops, throughout the year, with CEFTA and EU countries, as well as Turkey and planning and marketing production		2	1	3
	Increase offer of organic fruit and vegetable products		1	2	3
	Harmonize investment support and other measures countrywide on the basis of best practices and effectiveness of measures of entities and cantons.	1	1		2
	Adopt objective and transparent eligibility criteria for measures based on economic sustainability		2		2
	Adopt measures to attract the private banking sector in increasing their agricultural loans portfolio (subsidized loans, guarantee fund)		2		2
	In association with the fruit and vegetable sector stakeholders, develop applied research programmes addressing the needs of the sector		2		2
	Information dissemination about new technologies among producers, for both primary producers and processors		2		2
	Subsidies for the technological upgrade of lines for heat treatment of bottled and canned products		2		2
	Full membership of the Accreditation Institute by the European Cooperation for Accreditation and subsequent accreditation by the ECA for certification bodies and inspection accreditation in relation to inspection (ISO 17020/EN 45004) and product certification (EN 45011)		2		2
	Adopt science-based measures to adapt agricultural practices to climate change, such as introduction of varieties requiring less winter chilling, and minimum tillage.		1	1	2
	Promotion of the country image based on its natural resources and landscape and its products specificities at fairs, on international television channels, newspapers			2	2

		EU compliance	Competitiveness	Rural Development	Priority
NICE TO HAVE	Adopt the single area payment scheme, based on the example of Brčko district	1			1
	Disaster risk reduction schemes based on severity and frequency of disasters such as floods, landslides, avalanches and forest fires			1	1
	Characterization and conservation of indigenous fruit and vegetable varieties, as well as assessment of the potential demand on domestic and export markets for these varieties			1	1
	Increase the mechanization level for raw material handling		1		1
	Streamline application procedures for obtaining building permits for processing units (zoning, environmental and etc.)		1		1
	Improve border control of products quality and origin		1		1
	Alternative dispute settlement processes by an agency to be created		1		1

The above prioritization matrix has been made bearing in mind that the set of measures that will form the sector policy should be defined taking into account:

- The compulsory nature of the acquis communautaire and the need for compliance with the different EU standards
- The fact that fruit and vegetable crops are highly profitable and can play a significant role in enhancing incomes of rural communities including in less favoured areas (especially in the case of fruits and potatoes)
- The contribution of the fruit and vegetable sector to the GAO
- The imperative need to cut production costs in order to make Bosnia and Herzegovina production more competitive in the perspective of market liberalization
- The need to professionalize the most dynamic small-scale producers and achieve a restructuration of agriculture holdings
- The need to support the development of the processing capacity in order to increase added value of the sector
- The need to adopt measure that will be instrumental for the organization and coordination of the different supply chains

The right balance between these different objectives will be a key issue. For instance the competitiveness objective can be in contradiction with a comprehensive rural development strategy including less-favoured areas, at least in the short term. However, Bosnia and Herzegovina policy shall be inspired by the CAP of the EU that puts family farms and rural development at the centre of European policy.

ANNEX 1

SWOTS of the Stakeholder Workshops

Table A.1: SWOT for fruit production and processing in Republika Srpska

STRENGTHS	WEAKNESSES
– Large producers of fruit in the Republika Srpska – – Modern structure of varieties – Tradition in fruit production – Production of berry fruits – raspberries – Unlimited use of water resources for fruit production – Significant subsidies for small producers of fruit – Suitability of small producers to market needs – Good quality domestic apples – Available environmental conditions for fruit production – Full implementation of integrated fruit production – Existence of ULO capacity – Existence of processing facilities for processing fruits – Low producer price of fruit – Adequate planting material – Close to the EU market – Growth of demand for raw materials by processors	– Insufficient number of well-trained engineers – Work habits of producers – Insufficient quality and sufficient quantity for export (discontinuity in production) – Low level of certification of products – Low in first-class products – Lack of certification for integral production – Low productivity of pickers in the industry – Low purchase price of the product – Lack of adequate advisory services for fruit production – Poor quality land enclosure – Incentive for large producers – Breach of contract in regard to payment of collected products
OPPORTUNITIES	**THREATS**
– Establish a network for irrigation of orchards – Planting new fruit plantations – Improvement of production technology – Needs of domestic market – Commercial production of plum/stone + other types of processing – Low consumer demand – Reformulation of the law on cooperatives – Exports to the EU and the Russian Federation – Establishment of distribution centres – Increasing degree of self-sufficiency of fruit – apple	– Non-motivated young people working in production – Ice and other natural disasters – High investments in fruit production – Loss of skilled workforce – Inadequate planting material (for raspberries) – Small producers, who are decreasing prices – Global trends – Unregulated ownership issues in the sphere of land policy – The underdeveloped market mechanisms and the disorganization of the market

Table A.2: SWOT for vegetable production and processing in Republika Srpska

STRENGTHS	WEAKNESSES
– Direct sales – Known customers – Cash sale – Expertise – Experience in production – Equipment (partial) – Possession of land – Available own labour (family) – Wide product range – Relatively easy modification of structure of production – Continuity of production throughout the year – Possibility of producing two cultures during the same year – Good quality product – Good image, – Close to major consumer centres – Low initial investment – Cash incentives for the production of vegetables (Ministry of Agriculture, municipality) – Opportunity for irrigation – Modernization of work processes, replacing manual work with machines	– Insufficient knowledge about the production – Poor quality seeds – Expensive seedlings – Uncertain sales – Weak payments (long periods) – Lack of packaging – Limited production space (greenhouses) – Small amount and discontinuity of supply – Lack of seasonal work power – Expensive labour – Fragmentation of land holdings – Poor soil structure – Lack of knowledge – Obsolete equipment (primarily agricultural machinery) – Poor road and other infrastructure – Not having and difficulty in meeting standards (HACCP, GlobalGAP) – Lack of financial resources – No plans – Lack of information on market trends.
OPPORTUNITIES	**THREATS**
– A growing trend in the demand for vegetables – Organic vegetable production – Integrated vegetable production – Higher degree of processing – Possibility of using advice from advisory services, institutes, universities and others – Contracting production with processors – Favourable climatic conditions – Low labour force increased opportunities for irrigation – Free Trade Agreement (CEFTA) – Replace the manual with machine work – More production planning – Finding new export markets (Russian Federation) – Additional support for export by the state – Increasing the amount of financial incentives – More substantial and better control of imports of vegetables – Standardization of production – Pre-accession Assistance to Agriculture and Rural Development funds – Increased interest of young people for vegetable production – Achieving the status of products with protected geographical origin – Branding of products (producers) – Formation of clusters of producers of vegetables – Vegetables import substitution – Good credit funds (Internal Ratings-Based (IRB)) – Introduction of new technologies in production and processing of vegetables	– Imports of vegetables from the region without checking the origin and quality – Unfair competition (greater incentives for production and export incentives) – Less stimulating agents in the country in relation to the environment – Set of loan funds – Expensive raw materials – Absence of protective mechanisms in the form of guaranteed prices, etc. – Unorganized purchase – Natural disasters (ice, flooding, drought) – Climate change – Low purchasing power of consumers – Large fluctuations in prices – Complicated and long process of obtaining permits (zoning, environmental, etc.) – High costs of distribution (of the market fees) – Higher prices of imported vegetables – Non-consistent national agricultural policy – High standards of the EU – General lack of liquidity in the economy – Bad image of the country

Table A.3: SWOT for Fruit and Vegetable sector in the Federation of Bosnia and Herzegovina

STRENGTHS	WEAKNESSES
– Existence of institutions – Existing support by the canton – Blueberry at higher altitudes and easy care (IPM) – Cheap labour force for the production of gherkins – Existence of donor organizations – Berries (positive trends) strategy of the Government, demand) – Sufficient capacities for freezing – Producers who are apprised of good protection and protection practices (better than the experts) – 43,000 tonnes of storage capacity – Decent seedlings – Tradition – Access to inputs	– Lack of advisory services in different parts of Bosnia and Herzegovina – Manufacturer is alone when needs to go before the institution – Lack of organized purchasing – Lack of information for start up – Lack of insurance in agriculture – Non-transparent and complicated procedures for obtaining subsidies + non-harmonized (Canton – Ministry) – Small number of researchers in institutes and universities – Poor application of science by the manufacturers (bad connection science – manufacturing) – Poor monitoring of incentive funds and donor funds – Absence of warehouses – Lack of processing capacities for vegetables – Different regulations in the Republika Srpska and the Federation – Poor inspection which is not on the move but in the office – Bad effects of donor funds – A small real economy (juice, jam) – Poor institutions – Lack of skilled people in the field (agro-economists) – Incentives aimed at the social sector and not development (inadequate agricultural policy) – Problems with collection and difficulties in negotiations with buyers – Faculties offer little practice for Pomology – Poor agricultural statistics – Law enforcement (especially in nursery production) – Lack of loans and expensive interest – Lack of guarantees and rights of ownership – Complicated procedure to prove maturity – Lack of regulation on IPM – Difficulties in establishing standards (GlobalGAP) – Compacted holdings – Lack of land rental markets – Poor land registries and a large untreated area – ownership – Registration of farms proceeds very slowly (fear, lack of information)
OPPORTUNITIES	**THREATS**
– Education in the field of fruit growing – to include institutes – Funding projects that would “lower science to producers” – Regionalization of production – Improve agricultural statistics – Will of coordination (Ministry/cantons) – Increasing development projects at the expense of emergency – Stimulating cooperatives by Government programmes – Market of Turkey (when there is ‘out of season’) – Inputs from Turkey – the application of technology – Improving certification of planting materials – The existing genetic resources and their characterization	– Reduction of donor funds – Small number of people that will survive and deal with agriculture – There will not be cooperatives because the large manufacturers will dominate – Competition for government sector professionals (everyone wants to work for the government) – Departure of people – Diseases (Ervinia, phytophtora) – UPOV application for variety licencing – GI and PDO that will already be protected (Croatia)

ANNEX 2

Comparative analysis between different operational plans and strategies

Republika Srpska Agriculture, Food and Rural Development Operational Programme (2008–2010)	Republika Srpska Rural Development Strategy 2009–2015
Investment support (competitiveness)	
Plantation or renovation of permanent orchards and vineyards	Supporting investment in establishing new orchards and vineyards Supporting renovation and reconstruction of existing and construction of new fruit and vegetable processing facilities
Construction or renovation of protected production facilities (permanent and temporary plastic tunnels, greenhouses, etc.),	Supporting construction of greenhouses/plastic greenhouses and procurement of equipment for plastic greenhouse/greenhouse production, including use of thermal waters
Equipment for fruit and vegetable protection (e.g. Hail protection)	Supporting anti-hail protection programmes and other natural disaster prevention programmes (building dykes, protection belts, weather stations, etc.)
Harvesting and post-harvest equipment, storage rooms	Included in other measures
New constructions and renovations of sorting, grading and packing rooms compliant with domestic standards	Investments in processing and marketing of agricultural (and forestry) products to restructure those activities and upgrade to Community Standards
Purchase of agricultural machinery	Supporting procurement of agricultural machinery on farms
Irrigation systems and equipment	Supporting farmland regulation activities (draining, irrigation, calcification)
Purchase of specialized technological equipment including IT and software	No measures
Investment support and other measures for alignment with EU standards	
Purchase of harvesting and other machinery, storage facilities, packaging equipment, processing facilities with equipment or shared stables, etc. for servicing more users and improving market efficiency (for Producer Groups)	Supporting joint procurement of specialized agricultural machinery housing and servicing Supporting work and functioning of machinery rings
	Supporting construction of eaves for agricultural machinery
Laboratories and equipment to improve control of product quality and hygiene	Inventorying agricultural machinery in existing machinery rings
Equipment and facilities for storage of raw and processed product	
Costs related to the administrative operations of producer groups Marketing costs, training costs, consulting and advisory costs and other operational costs.	Supporting establishment of business activities between producers, processors and distributors Supporting organization and work of agricultural production and processing clusters

Purchase of machinery and equipment for the upgrading of existing processing lines or the development of new processing lines (for Producer Groups) Establishment of food safety systems (HACCP, GMP and GHP) Construction or renovation of buildings and installations Construction or renovation of installations to attain the prescribed hygiene and veterinary standards	Supporting introduction of food quality and safety systems in processing facilities
Certification for production of Halal and Kosher food, registering PDO, PGI or TSG, organic, etc. Specialized technological equipment including IT and software	Supporting certification of food production technology in line with food quality and safety system standards
Conversion Payments for Organic Farming (per head and per ha) Costs related to certification Costs related to pre-qualification training	Financing activities on raising producers' and consumers' awareness of agricultural product quality Supporting introduction of Good Agricultural Practice on Republika Srpska farms Certifying farms according to Good Agricultural Practice principles
No measure	Introducing compulsory trainings for farmers in controlled and proper use of pesticides, manure and artificial fertilizers Co-financing the process of transition to organic and wholegrain production, including certification process
Purchase of harvesting and other machinery, storage facilities, packaging equipment, processing facilities with equipment or shared stables, etc. for servicing more users and improving market efficiency	Supporting construction of facilities and procurement of equipment required for collection of agricultural products
No measure	Promoting direct sale of traditional agricultural products on farms
No measure	Organizing local fairs and exhibitions of agricultural and home processed products
Business environment measures	
Land consolidation transaction costs including fees for legal, surveying, registration, land agency, arbitration and related services	Supporting amalgamation of farms by co-financing purchase of additional farmland
	Implementing land regulation measures by land consolidation and regrouping
	Supporting development of digital Geographic Information System (GIS)
	Co-financing costs of assessing quality of farmland (soil composition, etc.)
	Introducing more restrictive requirements and sanctions for converting arable into construction land
	Amending the Inheritance Act to prevent further farm fragmentation

Training and extension	
Contracting certified extension adviser(s) to deliver approved packages of advice to individual or groups of farmers (through voucher system) for individual farmers or groups of farmers	Supporting growth of network of advisory service offices and greater coverage of rural areas by advisory services
	Organizing and co-financing specialized trainings for advisors
	Co-financing specific advisory programmes for enhancement of Republika Srpska agricultural productivity and competitiveness and for agricultural and rural development management
	Involving end-users in planning of advisory programmes and services
	Training in collection of medicinal herbs and wild fruit and vegetables
Diversification measures	
No measure	Supporting investment in on-farm processing of herbal and livestock products (including medicinal herbs, wild fruit and vegetables, mushrooms, etc.)
No measure	Supporting projects that promote and protect geographical origin of agricultural products produced and processed on farms
No measure	Supporting activities on promotion of regional marketing projects for products processed on farms
No measure	Institutionally regulating process of identifying and protecting products with geographic origin

ANNEX 3

University education in agriculture and related subjects: Institutions in Bosnia and Herzegovina

Institutions	Scope of work	Size
Faculty of Agriculture and Food sciences	Education – undergraduate, master and PhD	Middle (between 50 to 100 full-time employees)
University of Sarajevo	Land and land management, food and fodder production (all main areas), food processing (all main areas), agro-economics, agriculture and food policies, food safety issues, agricultural mechanization, rural development, environmental issues Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above: food and fodder control laboratories, laboratories of plant health control, laboratories for technology improvement, soil quality control laboratory	
Faculty of Forestry, University of Sarajevo	Education – undergraduate, master and PhD Forest disease control, Forest management, Biodiversity, Wild animals, Economics of forestry, Forestry policies Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)
Faculty of Economics, University of Sarajevo	Education – undergraduate, master and PhD Rural development, environmental economics, public policies, marketing, international markets Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Large (above 100 full-time employees)
Faculty of Science, University of Sarajevo	Education – undergraduate, master and PhD Biodiversity, Gene science, geo-diversity, metrology, fish science, environmental management Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Middle (50–100 full-time employees)
Faculty of Agriculture, University of Banja Luka	Education – undergraduate, master and PhD Land and land management, food and fodder production (all main areas), agro economics, Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)
Faculty of Technology, University of Banja Luka	Education – undergraduate, master and PhD Food processing (all main areas), food quality control, food safety issues Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)
Faculty of Economics, University of Banja Luka	Education – undergraduate, master and PhD Macro and micro economics, marketing, international trade Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)

Faculty of Technology, University of Tuzla	Education – undergraduate, master and PhD Department for food processing (focus on meat), food quality control, food safety issues, Research – small capacity bilateral and EU projects Consultancy and extension – in the food safety area	Small (up to 50 full-time employees)
Faculty of Economics, University of Tuzla	Education – undergraduate, master and PhD Macro and micro economics, marketing, international trade Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Middle (50–100 full-time employees)
Faculty of Agriculture, University of East Sarajevo	Education – undergraduate, master and PhD Land and land management, food and fodder production, agro economics Research – small capacities Consultancy and extension – small capacities	Small (up to 50 full-time employees)
Faculty of Economy, University of East Sarajevo	Education – undergraduate, master and PhD Macro and micro economics, marketing, international trade Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)
Faculty of Agronomy, University of West Mostar	Education – undergraduate Land and land management, food and fodder production, agro economics Research – small capacities Consultancy and extension – oriented towards wine production	Small (up to 50 full-time employees)
Faculty of Economy, University of West Mostar	Education – undergraduate, master and PhD Macro and micro economics, marketing, international trade, international agreement and institutional framework Research – bilateral and EU projects Consultancy and extension – in all areas mentioned above	Small (up to 50 full-time employees)
Faculty of Mediterranean Plants, University Džemal Bijedić Mostar	Education – undergraduate Land and land management, food and fodder production, agro economics Research – small capacities Consultancy and extension – small capacities	Small (up to 50 full-time employees)
Faculty of Biotechnology, University of Bosnia and Herzegovina	Education – undergraduate, master and PhD Land and land management, food and fodder production, agro economics Research – small capacities Consultancy and extension – small capacities	Small (up to 50 full-time employees)

Source: MoFTER compilations

ANNEX 4

IFAD credit lines for Agriculture in Bosnia and Herzegovina

IFAD Credit lines for Agriculture in Bosnia and Herzegovina

The International Fund for Agricultural Development (IFAD) in Bosnia has implemented five projects since 1996. Beginning from 2001, the mandatory component of IFAD's projects was the line of credit intended for farmers and SMEs that are engaged in agriculture. These projects are equally used, as financial intermediaries, banks and MCOs. Credit terms of the two most important lines of credit under Livestock and Rural Finance Development Projects (LRFDPs) and the Rural Enterprise Enhancement Project (REEP) are summarized in the following table:

	LRFDP (2002–08)	REEP (2006–12)
Farmers credits - through banks		
Number of banks	9	6
Size of approved credits (million KM)	10.26	1.04
Number of approved credits	1,748	163
Credit period	up to 5 years	up to 5 years
Grace period	6–12 months	12–18 months
Interest rate	5.75%-9.95%	8.39%-8.70%
Farmers credits - through MCO		
Number of MCO	2	5
Size of approved credits (MnMn KM)	7.36	10.55
Number of approved credits	186	900
Credit period	3–5 years	5 years
Grace period	Up to 12 months	Up to 18 months
Interest rate	13%–18%	8%–18%
Agricultural SME credits – through banks		
Number of banks	8	6
Size of approved credits (million KM)	5.07	2.21
Number of approved credits	107	26

ANNEX 5

Survey questionnaire

Identity

Name: _____

Address: _____

Contact coordinate: _____

VAT ☐ *Registered Farmer* ☐

Fruit ☐ *Vegetable* ☐

Semi-subsistence producer ☐ Commercial holding ☐ Large-scale corporate producer ☐

Packer ☐

Member of: Cooperative ☐ Association ☐

Information about production

Hectares of land: total _____ owned _____ leased _____

Hectares of Utilized Agricultural Area (UAA): total _____ owned _____ leased _____

Irrigated UAA: total _____ owned _____ leased _____

Hectares under fruits: total _____ open-field _____ covered _____

Hectares under vegetable: total _____ open-field _____ covered _____

Animal production

Type	Number of head
Dairy cows	
Other cattle	
Pigs	
Sheep and Goats	
Poultry	
Others:_____	

Main fruit and vegetable surface in hectares

Fruit or Vegetable Crop	2010	2009	2008

1. Human resources

Permanent employees:

	Number of employees	Employment percentage
Male ☐ Female ☐ Owner	1	percent
Family members		percent
Employees		percent

Seasonal labour:

Number of employees	Average number of worked days for all seasonal employees

Technology level

2. Production standards

Conventional farming ☐ IPM ☐ Organic farming ☐ Certified standard _____

3. Irrigation

Type:
By gravity ☐ Drip irrigation ☐ Sprinkler ☐ Centre-pivot ☐

Water sources:
Surface water ☐ Ground water ☐ Municipal ☐

4. Area of under-cover vegetable growing in m²

Mini-tunnel	Tunnel	PGH	Glasshouses

5. Orchards

Certified seedlings proportion	percent
Low-density orchard proportion	percent
High-density orchard proportion	percent

6. Post-harvest management

No grading ☐ Manual grading ☐ Automated grading ☐

Storage capacity in tonnes

Basic storage facility _____ Cold storage facility _____ ULO storage _____

7. Packing and transport

Manual ☐ Semi-automated ☐ Automated ☐

Bulk ☐ Boxes-tray ☐ Nets ☐ Plastic film ☐ Other:_____

Bags ☐ Wooden ☐ Wooden boxes ☐ Plastic boxes ☐ Palox ☐

Markets

8. Selling points for fruits

	Farm-gate	**Green market**	**Wholesale market**	**Packer**	**Processor**	**Small retail**	**Large retail**	**Ho.Re.Ca**
Distance in km	0							
Percentage of total sales for each crop								
Crop 1:								
Crop 2:								
Crop 3:								
Crop 4:								
Total sales in tonnes								
Total sales in BAM								

9. Selling points for vegetables

	Farm-gate	Green market	Wholesale market	Packer	Processor	Small retail	Large retail	Ho.Re.Ca
Distance in km	0							
	Percentage of total sales for each crop							
Crop 1:								
Crop 2:								
Crop 3:								
Crop 4:								
Total sales in tonnes								
Total sales in BAM								

10. Terms of trade

	Farm-gate	Packer	Processor	Small retail	Large retail	Ho.Re.Ca
Contract (yes: x)						
N° of days between delivery and payment						

11. Enterprise economics (main Vegetable crops)

	Crop 1		**Crop 2**		**Crop 3**		**Crop 4**	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)								
Production volume in tonnes								
Output value								
Covered C / Open field O								
Own produced seeds								
Purchased varieties								
Purchased hybrid								

12. Enterprise economics (main fruit crops)

	Crop 1		Crop 2		Crop 3		Crop 4	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)								
Production volume in tonns								
Output value								
Certified seedling								
Rootstock seedling								
ULO stored								

13. Do you have any extra income activity apart from farming? Yes ☐ No ☐

If No go to question 20

14. If yes – could you please describe which kind of extra income activity?

- ☐ Tourism
- ☐ Small shop
- ☐ Handicrafts
- ☐ Bed & Breakfast
- ☐ Micro enterprise
- ☐ Beekeeping
- ☐ Goats
- ☐ Horses
- ☐ Beverage
- ☐ Cheese production
- ☐ Another job in e.g. the village
- ☐ Construction
- ☐ Gardening
- ☐ On-farm processing
- ☐ Machinery servicing
- ☐ Other :

15. For how long did you have this extra income activity?

- ☐ Less than 1 year
- ☐ 1–2 year
- ☐ 3–4 years
- ☐ More than 5 years

16. How big a share of your total income does this amount to?

- ☐ 0–5%
- ☐ 6–10%
- ☐ 11–20%
- ☐ 21–30%
- ☐ More than 30%

17. Who is responsible for this extra income activity?

- ☐ Myself
- ☐ My wife/husband
- ☐ My children
- ☐ All of us
- ☐ Other

18. Did you receive any support in terms of advice or information?

Yes ☐ No ☐

19. If yes, from whom?

- ☐ Municipality
- ☐ Advisory service
- ☐ Friends
- ☐ NGO
- ☐ Local development agency
- ☐ Schoolteacher
- ☐ Other

If No in question 13

20. Have you considered gaining an extra income source?

Yes ☐ No ☐

If yes in question 20

21. Which kind of extra income activity are you thinking about?

If No in question 20

22. Why not?

23. What is the main obstacle for you to start some other business?

- ☐ Lack of information
- ☐ Lack of knowledge
- ☐ Lack of access to financing
- ☐ Lack of access to loan
- ☐ Lack of technology
- ☐ Other

24. What is in your opinion the most important thing that either decreases or increases quality of life?

Investment needs

25. Investment priority if resources available

Access to credit

26. Accessed credits in the past 5 years

Yes ☐ No ☐

27. If yes – from whom?

- ☐ National funding
- ☐ Micro-credit organization
- ☐ NGOs
- ☐ EU funding
- ☐ Donor funding
- ☐ Bank loan
- ☐ Other

28. If yes to question 26, under which conditions

Amount: _____BAM Yearly interest rate: _____

Credit duration: _____months Grace period: _____months

29. Is bank loan linked to the State fund for agriculture development:

Yes ☐ No ☐

30. If yes to question 26, specify purpose of the credit, including non-farm activities

31. Obstacle to access credit:

Lack of co-finance capacity ☐ Inability to file applications ☐ No collaterals ☐

Other ☐ _____

Public support

32. Subsidies and direct payments

Yes ☐ No ☐

33. Use of extension and advisory services

Yes ☐ No ☐

If yes

State extension service ☐ Private advisory service ☐

34. Comments

Guidelines for interviewers

Identity
Communicate at the beginning of the interview that the case study will be anonymous and data on identity will not be disclosed to governmental institutions and absent in the final report
Tick both boxes if the farmer produces fruit and vegetables
Tick the box packers if the farmers buy and pack other producers fruit and vegetables

Information about production
Fill in all fields

Main fruit and vegetable surface in hectares
Use only hectares units (10 m^2 = 0.01 ha)

Human resources
Employment percentage
A full time employment correspond to 100 percent
If one family member has another job, assess how much time this person works on average on the farm.
Example: if a few hours in winter and full time during the summer period, this could represent 40–50 percent

Technology level
Conventional farming applies to any farm that is not clearly engaged in integrated or organic production
Organic farming applies only to certified organic production
Certified standards: indicate if the enterprise is certified for primary production (GlobalGAP. IFS) or post-harvest handling (GlobalGAP, BRC, IFS)

Area under cover for vegetable growing in m^2
Indicate for each type of production the surface in m^2 (1m^2 = 0.001 ha)

Orchards
Indicate the percentage of the surface for the different production methods (low density% + high density% = 100 percent)

Storage capacity
Estimate capacity in tonnes, not in m^2
Basically refer to storage capacity without refrigeration

Post-harvest management
Grading
Grading consists in sorting out different qualities of fruit and vegetables to exclude disease affected products, and cluster them by quality, size and level of ripeness. Separated produce is packed into different containers to facilitate marketing to consumers with differing quality requirements.

Packaging and transport
Box-trays refer to Holandesa

Markets
Selling points
We need here gross estimations for each crop. If the producer is reluctant, insist to give orientations
The totals in sales and tonnes refer to the point of sales for all but only fruit and vegetable products

Terms of trade
Put a cross where a contract binds the producer and the buyer
Indicate the typical number of days between delivery and payment

Enterprise economics (vegetables)
Surface (ha)
Production volume: indicate the production in tonnes
Output value in BAM
Covered C / Open field O: put a C for covered crop and O for open-field
Seeds, Own produced, Purchased varieties, Purchased hybrid: put a cross where appropriate.

Enterprise economics (fruit)
Production volume: indicate the production in tonnes
Output value: indicate the value in BAM
Certified seedlings: ask if the producer saw the certificate
Rootstock seedlings: this refers to seedlings that are grafted on rootsocks for high-density orchards
ULO stored: put a cross if the producer has paid ULO storing service

Other source of income
Question 13
This applies to all other sources, not only steady employment

Question 14:
Do not read the boxes for the respondent, just mark off in one or more categories
Other: Note down if the income activity is something other than the categories listed

Question 20:
This is a rough assessment. If the producer is reluctant to give a percentage range, insist.

Question 20:
Do not read the boxes below for the respondent, just mark of in one or more categories, if 'other' note down the answer

Question 21:
Write short explanation, keywords

Question 22:
Write short explanation, keywords

Question 24:
Write short explanation, keywords

Investments needs:
Be clear with the farmer, we are speaking about realistic investment (amounts in line with turnover of the farm and really needed), and not a wish list

Question 27:
Do not read the boxes below for the respondent, just mark of in one or more categories, if 'other' note down the answer

Investment
Indicate if investment would be needed mainly in production or post-harvest management
Indicate specific investment needs and amount needed

Credit
If the producer got a loan, indicate the use and the amount of the loan under question 30

Comments
Comments to be addressed to the people who will enter data

ANNEX 6

Calculation of Gross Margin (GM) and Gross Value Added (GVA)

Definition of GVA for the purpose of this study
Gross Value Added (GVA) is one of the fundamental concepts in the United Nations System of National Accounts and the Eurostat system, and measures return to the factors of production: land, labour and capital. It is calculated as:

- **GVA = Gross Output – Intermediate Consumption**

GVA may be calculated on one of two bases:

- **GVA at producer prices** considers the price that a producer invoices to a customer, excluding VAT.
- **GVA at basic prices** reflects the price that the producer takes into account when making production decisions, i.e. the price they invoice, plus any product-related subsidies they receive, minus any product-related taxes they pay.

It is proposed for this study to estimate ***GVA at producer prices***, i.e. to exclude direct subsidies and taxes from the estimate of Gross Output.

Intermediate Consumption represents all the costs of products and services incurred by the producer in making the product, but specifically excluding:

- Rent
- Wages
- Capital expenditures and depreciation

Within the United Nations System of National Accounts, capital depreciation is shown under "Consumption of Fixed Capital" (CFC), and subtracted to calculate Net Value Added (NVA):

- **NVA = GVA – CFC**

NVA is not to be calculated by this study.

Relationship between GVA and Gross Margin
At the farm level, good and recent data is available on the Gross Margin (GM) of enterprises and on the Variable Costs (VCs) of forage production. The relation between these and GVA is as follows:

Item	In GM?	In GVA?
Output		
Fruit and Vegetable sales, at sale price	✓	✓
State subsidies	✓	-
Fruit and vegetables consumed on farm, at market price	✓	✓
Variable costs		
Purchased inputs (seeds, fertilizers, plant protection), at purchase price	✓	✓
Home produced manure, at market price	✓	✓
Variable costs of irrigation (water and energy)	✓	✓
Advisory services	✓	✓
Fixed costs		
Electricity	-	✓
Water	-	✓
Irrigation system	-	✓
Fixed costs of home-produced forage (see next table)	-	✓
Rent	-	-
Wages	-	-
Interest	-	-
Depreciation	-	-

In summary, to convert from GM to GVA, the following must be subtracted:

- Subsidies and direct payment per hectares
- Electricity, fuel and water consumed for irrigation
- Maintenance irrigation system

GVA may be calculated per hectare, by type of crop, and then weighted up to give an industry wide estimate.

ANNEX 7

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United Nations Comtrade database: http://comtrade.un.org/db/

ANNEX 8

List of Key Informants and Key Points

Name	
Institution	Ministry of Agriculture of Republika Srspka
Key point 1	60,000 farms are in the Farm Registry of the Republika Srpska. Out of those 400 are corporate
Key point 2	The Ministry only supports fruits and vegetables that are of interest to the processing and food industry
Key point 3	Organic: New law on organic production established in 2004 (harmonized with EU framework) Certification mostly made by foreign CBs Certification costs partly covered by state subsidies (EUR 125/ha)
Key point 4	List of active material handled by central level List of registered pesticides and fertilizers handled at entity level
Key point 5	No recognition of IP in Republika Srpska and most likely in Bosnia and Herzegovina, but international projects promote the adoption of IP (e.g. German Agency for International Cooperation (GTZ))
Any other info	Recommendation to speak with Sasa Lalic (Assistant Minister)

Name	
Institution	Statistical Office of Republika Srspka
Key point 1	No sampling possible due to the absence of census. Maybe census in 2012. Maybe agriculture census might come first.
Key point 2	No figure on the total number of people living in Republika Srpska, and about rural and urban population. No indicative figure about agriculture households.

Name	Radenko Radovic (Director)
Institution	Administration Bosnia and Herzegovina for Plant Health Protection
Key point 1	Important issue with human resources for laboratories. Specialized expertise is missing.

Name	Ismar Ceremida and Thuy Ha Bui
Institution	United Nations Development Programme (UNDP)
Key point 1	UNDP support to producers focuses on standards, post-harvest management and marketing
Key point 2	Processors import important quantities of raw material.
Key point 3	UNDP is currently carrying out a study on storage facilities, to assess the current and potential capacity, as well as the best cold storage solutions. Producers tend to build individual storage facilities, instead of investing jointly
Key point 4	100 producers would be GlobalGAP certified in Bosnia and Herzegovina. UNDP is assisting an additional 133 producers to adopt GlobalGAP and being certified by a German CB.
Key point 5	Raspberry producers have planted the Polka variety for the fresh market. As of 2012, 350–400 tonnes will be produced.
Any other info	Wine is a strategic product in Bosnia and Herzegovina and in particularly for Herzegovina

Name	Merside Musabegovic
Institution	Organska Kontrola
Key point 1	About 30 organic producers in Bosnia and Herzegovina
Key point 2	No regulation on organic in FBH. Everybody can by law call its own production "organic", even if not organically produced and certified. Regulation exists in Republika Srpska.
Key point 3	Cost of certification: BAM 800 for organic certification of a small-scale commercial farm BAM 2200 for GlobalGAP
Key point 4	GlobalGAP and similar standards: Main difficulties for producers: bookkeeping and documentation

Name	
Institution	Statistical Office of Bosnia and Herzegovina
Key point 1	The reliability of data is very much a function of individuals in the field

Name	
Institution	Statistical Office of FBH
Key point 1	Some reliable data exist on livestock and slaughtered animals. No reliable data for crops.

Name	
Institution	Extension service Bijelina
Key point 1	3 advisory staff to cover the whole north-east region

Name	Jovo
Institution	Producer of tomatoes in Bjelina municipality
Key point 1	Weak position on market. In the past Sarajevo was absorbing a large part of the production. But Sarajevo has turned to others. Bjelina wholesale market results in pressure on prices with the presence on the market of Serbian, Turkish and products from TfYR Macedonia.
Key point 2	Consumer preferences in Bosnia and Herzegovina (Western Balkans) are different from those in Western Europe (e.g. clear preference for very big tomatoes)
Key point 3	Significant price fluctuations from one year to the other (2010: 1.80 BAM; 2011: 0.90 BAM)
Key point 4	Risky environment plays as deterrent for investment
Key point 5	Vegetables for the early and late seasons are the only chance
Any other info	Many producers are in financial trouble after taking credit in Swiss Francs (CHF)

Name	
Institution	Balatunka, Balatun
Key point 1	Investment priorities: Cold storage and generator
Key point 2	Produces cornichons and other pickled vegetables under own label for domestic market and under a Swedish company brand
Key point 3	Prices of 420 gram Jars of cornichons: 1.3 BAM for extra quality; 0.7 BAM for 2nd class
Key point 4	Source raw material from Zvornik area where there is a tradition of cornichon cropping

Name	Mehemed Roscic, Analyst and Administration (Policy and RD)
Institution	Ministry of Agriculture of Brcko District
Key point 1	Brčko District is the only entity applying a Single Area Payment (SAP) system. SAP for fruit and vegetables greater than other crops. Easier for Brčko District to check cropped surface at farm level. Impossible for FBH and Republika Srpska.
Key point 2	5 to 7 million BAM/year for 2,500 registered farmers and 18,000 ha of Utilized Agricultural Area (UAA) (1,000 EUR per farmer and 200 EUR /ha). Maximum subsidy per farmer of 60,000 BAM.
Key point 3	Group certification supported by the Ministry of Agriculture: 125 BAM/producer with minimum of 40 producers and obligation to export.
Key point 4	Brčko District just has a small laboratory for soil analysis. Relies on other entities laboratories for other analysis.

Name	
Institution	Extension services of Brcko District
Key point 1	Support budget cannot be below 4 percent of total budget
Key point 2	Subsidies for PGH: 1.5 BAM/m^2; establishment of new PGH: 6 BAM/m^2; Subsidies for Glasshouses: 30 BAM/m^2
Key point 3	2008–2009: IPM project funded by Brčko District that was discontinued
Key point 4	SAP for fruits and vegetables Vegetable production 2,000 BAM/ha Apple and pear, 2,500 BAM/ha Plums, sour cherry, cherry, peach and apricot, 1,200 BAM/ha Nuts: 1,500 BAM/ha Raspberry, strawberry, blackberry: 5,000 BAM/ha
Key point 5	Low investment level due to political risk
Key point 6	Extension service: 3 staff paid 800 BAM and no car

Name	Sasa Lalic, Deputy Minister in Charge of Policy
Institution	Ministry of Agriculture of Republika Srpska
Key point 1	Need to invest in laboratory system

Name	Manager
Institution	UNAPLOD
Key point 1	Lack of management capacity and business strategy (heavy investment in ULO storage not in line with available quality and quantity of apples in the region)
Key point 2	Financial situation worsened by flexible credit interest rates
Key point 3	Quality problems: only 50% of 1st class fruits
Key point 4	Investment needs: Plant protection equipment, capacity development of producers supplying raw material
Key point 5	Producers do not crop more than 4–5 ha, split in 10 parcels. Huge obstacle to reach economics of scale and to increase size of farms.
Key point 6	Need to establish the conditions for IPM implementation. For instance, analyses of residues are made in Novi Sad (Serbia)
Key point 7	Certified GlobalGAP. Certification costs: 3,000 EUR
Key point 8	Supermarkets do not ask for GlobalGAP. Only price driven.
Any other info	Supermarket payment delay acceptable: Konzum HR: 60 days IDEA HR: 90 days Konzum Bosnia and Herzegovina: 120 days

Name	
Institution	Ministry of Agriculture of FBH
Key point 1	Discontinuity of policy due to new minister(s)
Key point 2	The terms of reference of a Market Information System project (PTIS) are in preparation
Key point 3	No law on seed certification in FBH. State level will be in charge of legislative framework, but entities shall enforce. At Federal level, 5 inspectors and 20 inspectors at the border.

Name	Renato Knezevic and Snezana Akulovic (Assistant Director)
Institution	Bosnia and Herzegovina Agency for Plant Health
Key point 1	The agency is in charge of: Plant health Pesticides and mineral fertilizers Varieties Seeds and seedlings
Key point 2	The agency is making a great effort to harmonize the legislation with that of the EU: Legislation on plant health and the legislation and monitoring of potato is in place and being implemented Legislation on marketing of seeds and seedlings is being eleborated
Key point 3	For vegetables, the variety list was established in 2010, but the list is not in line with the EU list. No variety list for fruits, while EU is adopting one.
Key point 4	List of plant protection active substances. Started in 2009. Banned active substances that are not in Annex 1 or not used in one Member State. In Republika Srpska, there is a wide list of registered products including a lot of generics. The Agency would like to set up a commission that would arbitrate limit cases.
Key point 5	Conditions for pesticides distributors: Training of staff Qualifications of staff Certification of pesticide traders
Key point 6	Food safety is supposed to cover levels of residues analyses
Key point 7	The inspection is and will be the responsibility of entities. In both Republika Srpska and FBH, the inspectorates are in the general inspectorates.
Key point 8	Risk plan management will be at State level
Key point 9	Sample testing will be at: State level for potato Entity level for others
Any other info	Significant effort to harmonize legislation and align on acquis made at State level, that can be jeopardized at entity level by lack of enforcement.

Name	Muriz Fazlic, Owner
Institution	Plantaze MEM fruit
Key point 1	Sound planning of cash flow (use of strawberry requiring more labour than capital and that generates income in year one to finance establishment of cherry and apple orchards) Cost for full productive trees (7 years) is 70 BAM
Key point 2	Limited in market development because of limited quantities (no export)
Key point 3	Plan to invest in secondary processing plant (jam, candied fruits) to add value to second class products

Key point 4	Bosnia and Herzegovina fruits are competitive during the season. Virtually no import during the season. Imports take place in early and late seasons.
Key point 5	Central Bosnia has a comparative advantage as the harvest takes place 2 months after Herzegovina and 1 month after eastern Bosnia and Herzegovina. Need to make a crop calendar for the different regions.
Key point 6	Costs for plant protection: 2,000 – 3,000 BAM/ha

Name	Edin Zukan, Owner
Institution	Frutti-Funghi
Key point 1	Able to export fresh berries to the EU (Slovenia, Austria and Italy)
Key point 2	Will be GlobalGAP certified in 2011
Key point 3	Packing in small plastic boxes (125 grams)
Key point 4	Need to invest in a sorting and grading line (sortex) 150,000 EUR
Key point 5	Polka variety from the United Kingdom and the Netherlands
Key point 6	Project to produce jams

Name	Nemir Kadkic
Institution	Bios Visoko
Key point 1	Bios success based on gradual and parallel growths of seedlings, products and market.
Key point 2	Only 10% of the producers supplying Bios crop have more than 1 ha. Most of producers are part-time farmers.
Key point 3	Cooperative in which Mr Kadkic and his wife own 97% of the cooperative. The cooperative works more like a private company providing services to its business partners (credit in the form of inputs, training, information) and creates trust through fair price policy. THE QUESTION: how can we make all the producers benefiting from IPARD if not formally part of a producer organization?
Key point 4	Bios has 2 advisors visiting producers especially for plant protection Bios organizes trainings
Key point 5	Variety choice: Large tomatoes from France, the Netherlands and Israel Bell peppers: Babura paprika (95%) Late season strawberry: harvest after HR and Republika Srpska, coinciding with the Croatian coast tourist peak
Key point 6	Main PGH areas are around Sarajevo and Caplina
Key point 7	Federal Institute regularly checks seed certification and food safety. Documents are available at farm level.

Name	Slavko Korda
Institution	Dominant Ltd., 20 ha in Bosnia and Herzegovina and 3–4 ha in Croatia
Key point 1	Comparative advantage of Herzegovina for early apples, allows to export to the Russian Federation for instance
Key point 2	Land market is a significant constraint for the development of profitable agriculture holdings: Highly fragmented land High price (50,000 BAM/ha) coupled with low financial resources of producers. Older generation reluctant to sell Price in line with its economic productivity Land lease: 1,000 BAM/ha

Key point 3	A great deal of produce from the area is exported to Croatia due to linkages some of the producers (Croatian) have with Croatia and the presence of Agrofructus (AGROKOR) in Caplina
Key point 4	Needs for the value chain development: Processing (no processing in the region) Storage facility to play an integrating and coordination role for small producers Sorting and grading equipment
Key point 5	For quality seedlings, need to import from Italy, as there are none in Bosnia and Herzegovina due to lack of control but mainly because of lack of technology
Key point 6	Possibility of establishing mandarines as there is less risk of frost in Bosnia and Herzegovina than in Neretva valley
Any other info	Generally speaking there is an opportunity to diversify Mediterranean crops (mandarins, pomegranates, kiwi and olives)

Name	Milenko Sose
Institution	AgroHerc Ltd. 500 ha fruit and vineyards
Key point 1	Cooperative is not an option. It is a MUST.
Key point 2	Investments are needed in the production process. The region also needs a distribution centre, an apple cold storage and appropriate dryer for figs.
Key point 3	Olive growing is rather more a prestige activity than economically sound. Low or no profitability.
Key point 4	Like many, produce their own seedlings, extra for market.
Key point 5	“10 producers shall be able to access IPARD funds when they come”

Name	Dodig
Institution	Wholesale market of Caplina
Key point 1	50,000 – 60,000 tonnes 80% of products come from the region Majority go to Sarajevo 10% of the goods marketed go to Dalmatia
Key point 2	The products from the region go everywhere
Key point 3	Large producers use marginally the wholesale market. They prefer to deal with Agrofructus or to link with foreign buyers who are able to buy large quantities.
Key point 4	55 selling points on the market. 3-4 BAM/m^2
Key point 5	Caplina is ideally positioned on an important axis Ploce – Sarajevo – Belgrade

Name	Esteban Milovic
Institution	Popovo polje
Key point 1	Careful planning and progressive growth
Key point 2	Great expertise, and does not hesitate to contract experts for any aspect where expertise is missing
Key point 3	Conflicting situation between the electricity company exploiting the dam upstream, the polje and the producers. The lake is managed on the sole basis of electricity generation maximization, while the whole system (lake, channels and polje) was built with the scope of improving agriculture on the polje.
Key point 4	Received training for GlobalGAP and while not certified yet, uses a certain number of principles of the standard.

ANNEX 9

Case Studies

Case Study reference number: FBH–1

Type of entity: Cooperative

Human resources: 3 management staff and 3 agriculture qualified workers

Economic activities: Marketing of agricultural inputs and products, fruit production, donor project management

Other activities: Advisory services and applied research

Turnover: 482,000 BAM

History

The cooperative was established in 1990. At the time 3 other cooperatives (State coops) were operating in the municipality. The cooperative quickly diversified production engaging for instance in champignon de Paris production. It also introduced potato quality seeds from Serbia. Economic results were highly positive.

After the 1992–1995 conflict ruined the whole region and the cooperative efforts, its 5 members started again from scratch. The years 1996 and 1997 were still characterized by an adverse business environment, in particular due to limited freedom of movement (armed escorts, detour of 7 hours to reach Sarajevo). Since then the cooperative has steadily increased its activities without making significant profits. The cooperative has only just started to invest in infrastructure and productive capital.

Current situation

The cooperative still counts 5 regular members, and employs 6 staff: a director (female), administrative staff, an agricultural shop manager and 3 qualified staff working on the 4.5 ha of apple orchards.

The economic activities of the cooperative are:

- Marketing of fruit and vegetables
- Production of apples
- Sales of agriculture inputs
- Management of donor projects

The main cooperative assets are:

- 4.5 hectares of irrigated apple orchards established in 2006
- A tractor and machinery implements
- A storage facility of 200 m^2, built in 2005
- A grader for apples
- A building in the town centre for an office and agricultural shop, bought in 2008.

Firm management

The cooperative has steadily increased its activity and has made the choice to reinvest systematically the achieved margins. That has resulted in the consolidation of productive and business assets (orchards, storage facility, agricultural shop) after 15 years of activity. Over the years the cooperative has diversified its products (fruits, vegetables and on-farm processed pickles and jams) and services (marketing, inputs supply).

Only 5 members of the cooperative are producers. Every year, the cooperative contracts about 20 producers who become temporary members of the cooperative. The contract stipulates that the cooperative must buy the products supplied by growers, while the latter are free to sell their whole production to any buyer. The only obligation of the farmer is a membership fee of 25 BAM.

In reality, the cooperative functions as a trading company owned by the 5 members, which has diversified its activities and integrated input supply and advisory services to producers. Farmers associated to the cooperative do not elect cooperative organs, appoint the management staff or approve the budget. According to cooperative principles, the assets are the property of the cooperatives, and cannot be claimed by the members.

The cooperative is included in the VAT system and has clear financial records.

Investments

The storage facility and 3.5 hectares of orchards, established on the same plot of land, induced investment of BAM 90,000. The cooperative took a commercial loan to buy the building, where the cooperative has its seat and agricultural shop that cost 100,000 BAM. The cooperative disbursed respectively for the tractor and the grader 30,000 BAM and 25,000 BAM.

The cooperative plans to plant 1 hectare of cherry on leased land, due to the high price of land (40,000 BAM /ha).

Market

The cooperative has based its marketing strategy on client diversification taking advantage of the good network of its members and relations with the Cooperative Union.

After a year of bad experiences, the cooperatives succeeded to substitute supermarkets with other clients. The supermarkets paid 6 months (Mercator, Konzum, Robot, AmokoKomerc), up to 12 months and 18 months (Drvo Promet), after delivery of the goods. In addition, supermarkets systematically declass 3–4% of the shipments, independently of the quality.

The cooperative sells to trade unions, small shops and exports to Serbia.

The cooperative supplies the market with market demanded varieties such as Archarm, Gala Galaxi, Fuji Nagafu, Summerred, Pink Lady or Fuji Kiku 8, produced on their own orchard.

Production and marketing standards

The production part of the cooperative is GlobalGAP certified by DANAK through CRP, its local partner based in Tuzla. The certification costs and the advisory services for the preparation to the standard were paid for by a donor organization. The benefits of the certification are limited as no buyer asks for the standard, while requirements especially in terms of documentation are significant. The Director however recognizes that it helped her to identify critical issues in the firm management and gives her a stronger legitimacy when ordering her employees to respect certain good agriculture practices and hygiene measures. The cooperative will not renew GlobalGAP when they will have to pay for it, however, integrated production rules are and will continue to be applied on the farm.

The goods marketed by the cooperatives are graded, put in boxes or specific packaging as per request of the buyer. The cooperative has registered a brand that appears on packages and boxes used to commercialize the products.

Economic performance

The progressive capitalization of the cooperative is evidence of its positive financial results. These should be boosted as the fruit production, which is the most profitable activity, has entered into full production after five years.

Apple production GVA – 4.5 hectares in two plots

	2009	2010
Production volume		150,000 tonnes
Output value	17,080	68,650
Wages and rent	44,400	48,500
Subvention	0	7,200
Variable costs	63,760	74,070
GVA	-2,280	43,080

The overall turnover in 2010 was 482,000 BAM, while the total costs including 6 employees salaries amounted to 478,000 BAM.

Factors of success

One of the main factors of success of the cooperative is its firm management characterized by the reinvestment of incomes to strengthen cooperatives assets and the financial situation.

The diversification of interrelated economic activities allowed to spread risks.

The brand registered by the cooperative differentiates the products of the cooperative on the market.

Diversification of clients allowing the cessation of business with supermarkets.

Linkages with the University of Sarajevo that performs variety trials and provides advice to the cooperative.

Eventually, the expertise level of the director (Agronomist from Sarajevo University) ensures sound technical and economic practices.

The involvement of the cooperative in social activities such as the initiation of the “Apple Days” or support to the construction of a park for children might have enhanced the authority of the cooperative.

Lessons learned for policy measures

Need to review the cooperative law to ensure that cooperatives are run according to cooperative principles (members are farmers, a minimum of the gross turnover from member activities, etc.).

The cooperative despite not strictly obeying to cooperative principles plays a significant role in the integration of the supply chain in linking producers with the market and applying measures requested by the market. The review of the cooperative law shall be accompanied by measures allowing such companies to exist under a status recognizing their role in the supply chain.

Non-respect of contractual obligations by supermarkets should be condemned by law enforcement.

Need to support producers to circumvent supermarkets by measures promoting direct selling, farmer markets in urban centres.

Investment in storage facility and post-harvest equipment (grader) contribute to product quality and improve the supply chain performance.

In absence of a demand for private standards (GlobalGAP), state good agriculture practices shall be compulsory in order to receive any state support.

Case Study reference number: FBH–2

Type of entity: Commercial farm

Human resources: 4 family members and 2 seasonal workers

Economic activities: Cabbage production

Other activities: Farm owner – female and her husband full time employed out of farm

Turnover: 2009: 3,200 BAM 2010: 2,000 BAM

History

No tradition in cabbage or any other agricultural production. In 2003, the farmer bought 0.3 ha of land in order to produce cabbage as the 'Poljorad' company organized a buy-off of cabbage in the region. The owner is employed in the 'Poljorad' milk collection station and her husband works as carrier. She decided to buy land and start to produce cabbage in order to earn some extra income as 'Poljorad' is a safe channel for all production volume.

Current situation

Owner is a female of approximately 40 years of age. Accomplished secondary school but without adequate employment. Conventional production is organized on 0.3 hectares of land. Cabbage is the only crop. Produces for local company 'Poljorad', cabbage processor, on contractual basis. Besides, vegetables for the family – potato, bean, lettuce, carrot and onion is produced in the garden near the house. Although production is organized on only 0.3 ha, the farm is among the largest in the region oriented to cabbage production.

Only one milking cow for family needs and for manure.

There is a creek next to the plot with cabbage but the land is not irrigated due to the lack of equipment and inability to finance acquisition. Small devices for cabbage planting and hoeing.

Farm management

Production is normally based on the use of seed purchased in the local agricultural pharmacy and only if purchased seed does not sprout enough seedlings are purchased. The same seed is used every year because of good experience with it.

Yields are unstable depending on climate conditions. No certification. No irrigation. The farmer does not apply crop rotation as he has no idea what could be another crop. No innovative approach whatsoever. No farm records. Insufficient knowledge about production technology and farm economics. No vision or idea about possibilities to develop and improve production. The same seed, same plot and same market outlet every year. Completely relied on 'Poljorad' and does not even think about other possible outlets, although not satisfied with the price. Yet, placement is safe as 'Poljorad' buys off the whole production regardless of quality. Besides, the cantonal ministry of agriculture in 2008 financially supported cabbage production.

The farmer uses mainly manure. Half of the quantity is produced on-farm and half is bought. Plant protection means are used only when needed.

As price does not depend on quality of production the farmer is not oriented to improve quality and does not have sufficient knowledge to change this attitude. The farmer does not have even basic knowledge about standards in production.

Farmer admits there are lot of issues regarding cabbage production in which she needs education and training, she is ready and willing to attend it, but no one is organizing it. She also complains that the extension service does not do its task and that farmers cannot count on their professional help, support and advice.

Investments

Over the past decade the main investments were purchase of land – 0.3 ha. It was financed from the family's own savings.

If financial means were available the farmer would buy land and try to increase production volume. She would also invest in some simple irrigation system in order to increase yields.

Market

There is only one outlet for the whole production on a contractual basis. The farmer has no influence on price. Price is not a part of the contract and it is not negotiable. The farmer complains that the price is too low due to the monopoly position of Poljoprad.

Production and marketing standards

Cabbage production is conventional. Producer knows almost nothing about IP, GlobalGAP and other standards.

Cabbage is gathered on farms, packed in bags, and taken to 'Poljorad' immediately without any grading or sorting.

Economic performance

	Cabbage		
	2008	**2009**	**2010**
Surface (ha)	0.3	0.3	0.3
Production volume tonnes	16	17	12
Selling price	0.20	0.20	0.17
Output value	3,200	3,400	2,040
Subvention	2,240	-	-
Variable costs *			

The producer was not able to give accurate data on incomes and costs. Her approximation of variable costs in 2010 for 0.3 ha of cultivated land is; seed 40–50 BAM, manure and fertilizers 200 BAM and plant protection 20–30 BAM.

The selling price dropped in 2010 compared to the two previous years. The farmer feels uncomfortable as she does not know the selling price before the harvest season.

Factors of success

Nothing could be underlined as factors of success on this family farm. Cabbage production on this farm is rather a hobby that brings some extra income than a well planned and organized business activity.

Lessons learned for policy measures

Extension and advisory services were mentioned as one of the weakest points and almost useless to farmers as their main tasks are administrative jobs and not those they are intended for.

Farmers feel abandoned and left to themselves without extension and advisory services, without agricultural loans and lack of support harmonized with their needs.

Agricultural policy ad hoc measures such as financial support in only one year can be counter productive and confusing and misleading for farmers.

No knowledge about EU standards and the implication of integration into EU markets.

Case Study reference number: FBH–3

Type of entity: Family commercial farm

Human resources: 10 family members and up to 30 seasonal workers

Economic activities: Production of potato and wheat

Other activities: Farm manager and his wife full-time employed, all other family members employed only on farm

Turnover: 2009: 111,000 BAM 2010: 120,000 BAM

History

The owner's father has been dealing with agriculture for decades cultivating 4 ha of family owned land. The owner himself studied economics and became fully employed out of agriculture after completing university. He took over the family farm in terms of running it after the 1992–95 war. Together with his wife he kept employment but they have been engaged in potato production as well ever since. The cultivated land surface has been increased gradually by both buying and renting.

Current situation

Conventional production is organized on 18 hectares of land about 700 metres above sea level, out of which 10 hectares is own land and 8 ha rented. In the last two years 6 hectares were allocated for wheat production, one hectare was used for vegetable production for family needs and as experimental plots, and 11 hectares were used for potato seed production. The farmer has two tractors, trailers for manure spreading and a two-row machine for potato picking out.

The producer also keeps 1 cow and 15 hens for family needs. Besides, he also produces onions, carrots, tomatoes and paprika.

The land is not irrigated, but investment in irrigation is planned.

Farm management

Production is based on the use of quality seed for early, medium and late varieties. The farmer uses his experimental plot to test varieties. Strongly devoted to maintaining a reputation of a good and reliable producer. Produces both mercantile and seed potato to improve economics. Orientation to seed with high genetic potentials such as varieties Agria, Aladin and the most expensive one H2PC. Purchases seed from dealers with reputation. Uses Bayer's commodities for plant protection. Uses at least three varieties every year in order to reduce risk.

An average yield was 23 tonnes/ha. No certification. Crop rotation regular practice.

The farmer plans on a long-tem basis. Has the economic knowledge necessary to run the farm successfully. Yet not registered as a firm and has no precise records of expenditures. He claims one of his main economic problems is the lack of own labour on one side, and insufficient machinery on the other, which makes him dependent on seasonal labour and raises production costs significantly.

The farm continuously cooperates and uses the professional services and advice of the Federal Institute of Agriculture, Sarajevo and the Institute of Agriculture Banja Luka.

Storage capacities are inadequate and insufficient. Own embedded storage facilities are 100 tonnes and ca. 70 tonnes rented but considered both by the farmer and interviewer inadequate. Storage capacities priority problem to be solved.

Investments

Over the past decade the main investments were purchase of land – 6 ha, one tractor and picking out machinery. Investment mainly financed by commercial loans with a 12 percent annual interest rate.

The main investment priority is storage, the irrigation system and a packing machine. Investing in an irrigation system is planned for the next year. Farmer also plans to build basins for manure according to the Nitrate Directive on three localities for 600 tonnes of manure.

Market

There are two main outlets for products, the green market and wholesale with an approximate share of 50 percent each. Intermediaries are included in both cases on an ad hoc basis with no contract. A minority of production is sold locally to neighbours thanks to a very good reputation in the region. Prices are commonly formed on the basis of supply and demand, and in some years the price is bellow producer costs. Therefore, the farmer is getting more oriented to seed potato production. So far, he had no problem to place production and sell it thanks to a good reputation and high quality. Wheat is sold to the mill immediately after harvesting.

Production and marketing standards

Potato production is conventional. Producer knows about IP, GlobalGAP and other standards. His long-term plan is to switch to IP and estimates that he will not have any trouble to market his products thanks to high demand for the quality varieties he produces.

Potatoes are gathered manually and packed in 40 kg bags. After a few hours they are graded on the machine and stored in10 kg bags.

Economic performance

	Potato		Wheat		Total	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)	10	11	6	6	16	17
Production volume tonnes	230	250	30	30		
Output value	103,500	112,500	7,500	7,500	111,000	120,000
Subvention	-	-	4,500	3,600		
Variable costs *						

The producer was not able to give accurate data on all incomes and costs. His approximation of potato seed cost is 3,200 BAM per ha, mineral fertilizers 1,700 BAM, and plant protection 400 BAM per ha. Total fuel and seasonal labour costs according to the farmer's estimation were 13,000 BAM. The cost of land renting is 50 BAM per ha.

The selling price of potatoes varies from 0.40–0.50 BAM and for wheat 0.25–0.30 BAM. Subsidy for wheat was 0.15 BAM in 2009 and 0.12 BAM in 2010.

Although no records on costs and incomes are kept, the farmer estimated that the total profit of potato production amounted to 55,000 BAM in 2009 and 65,000 BAM in 2010, whilst wheat production profit was 6,500 BAM in both years, plus premium.

Factors of success

Among factors that contributed to the good results of the farm, the following appear to be the main elements:

- Good general education level of the owner, particularly in economics. He took over all decisions related to management on the whole family owned farm.
- Orientation to the use of quality seed and a strong devotion to maintain a good reputation on the market.
- Good coordination with research and scientific institutions and willingness to further improve knowledge. Farmer attended and participated in trainings organized at municipal and cantonal level on a regular basis.
- Farmer is aware of the need to constantly improve knowledge and practice.
- Investment decisions are made on the basis of capabilities and liquidity of the farm, they are rational, planned and conducted gradually.

Lessons learned for policy measures

Extension and advisory services mentioned as one of the weakest points and almost useless to farmers as their main tasks are administrative jobs and not those they are intended for.

Farmers feel abandoned and left to themselves without extension and advisory services, without agricultural loans and with a lack of support harmonized with their needs.

Support to storage capacities and irrigation systems in potato production is crucial for production improvement and development.

Knowledge about EU standards and the implication of integration into EU markets insufficient.

Case Study reference number: FBH–4

Type of entity: Farmer

Human resources: 4 family members

Economic activities: Production of fruit

Other activities: none

Turnover: 2009: BAM 144,000 2010: BAM 156,000

History

The beginning of the production at this farm dates back to 1990, when a mixed orchard was planted on 1 hectare with three crops: plums, apples and pears, and remained as such until the war and immediately after it. In 1998, the orchard was expanded by 1 hectare. More intensive production began in 2002, so the orchard was again expanded by 2 hectares, followed by the purchase of machinery. Six more hectares of orchard had been planted until 2005, and an additional 2 hectares in 2007. Today the total of land under orchard is 12 ha.

Current situation

The farm owner produces fruits on 12 ha of the land (his own property), which is not irrigated. The ratio of the fruit crops is the following: apple (4 ha), pear (4 ha), and plum (4 ha). These are older plants and fully fruitful. The production structure has not changed in the past several years.

Besides producing fruits, the farmer has a lactating cow for the family needs only.

The farmer has needed machinery (tractor and implements), which is enough for complete agricultural technical work on the whole land. He also has a 10-tonne truck, so he carries out the transport by himself. Part of the produced goods is stored in two cold storage rooms whose capacity is 20 and 60 tonnes respectively, and the rest is immediately sold to the cooperative PMG in Gradacac.

Farm management

The ratio of plants has not changed for many years, so each of the three crops takes 1/3 of the land used in production. Apples and pears are planted densely, unlike plums whose spacing is 4 x 5 metres. Before planting the orchard, all plants were bought from a fruit nursery in Srebrenik. After the harvest, the fruits are manually sorted and graded into wooden boxes and crates, and then transported to the cold storage rooms (apples and pears) or immediately (plum) to the purchase centre in Gradacac.

Unfortunately, like most of the Bosnia and Herzegovina farmers, this interviewed farmer does not keep own accounting and bookkeeping records that may show important production and economic performance parameters, so this report includes only the information about the production volume and the prices of sold products from 2009 and 2010.

The farmer has a registered business, but he is not included in the VAT system.

Investments

The farmer has two cold storage rooms whose capacity is 20 and 60 tonnes respectively. The first, smaller one (20 tonnes) was constructed in 2007 for a total of BAM 11,000. The second one (60 tonnes) was constructed in 2010 for BAM 35,000. Both cold storage rooms have controlled conditions (atmosphere) for keeping the products. Such systems enable the control of temperature, relative air humidity, and the presence of oxygen and carbon dioxide.

As for the new plants, the planting of two hectares of orchard (plum, apple and pear) in 2007 should be pointed out. There are no accurate data on that investment, but the farmer estimates it at BAM 20,000.

The following investments in machinery should be singled out: a tractor for BAM 20,000; a sprinkler and an atomizer for a total of BAM 20,000. Both investments were made in 2010. In past years there were smaller investments in implements for a total of BAM 6,000.

It needs to be noted that all investments have been made with own funds only, without any credit debts.

The farmer's priority investment in the next period would be the construction of a micro-accumulation tank to ensure a water source and create conditions for the installation of the drip irrigation system in one part of the orchard. The tank would be the only appropriate solution for the shortage of water and increasingly often drought, because increasing the water supply in another way (digging a well up to 20 metres of depth, use of

town water supply system) would cost too much. The farmer also plans to buy land and plant new 2 ha with plums, that is, to increase the land under plum to 6 ha. He also plans to install an anti-hail protection net on 2 ha of the apple and pear plants each in order to reduce the production risk to minimum.

Market

The farmer stores all produced first class apple fruits (about 60 tonnes) in the cold storage rooms and waits for better prices. Once the prices have risen, he sells the apples in the market, most often at open air markets (Arizona market in the Posavina Canton). The apple fruits of poorer quality (about 10 tonnes) are immediately transported to the interested fruit processing business entities that most often compensate it to the farmer with own products. About 90 percent of the pear yield is transported to the purchase centre in Gradacac immediately after harvesting and sorting, while the remaining 20 percent (about 10 tonnes), including the apples, are stored in the cold storage rooms and later sold in the open air markets. All plum fruits are transported immediately after the harvest to the purchase centre in Gradacac.

The sale is not based on any signed contract but it takes place solely on the basis of previous positive experiences and verbal agreements.

Unfortunately, a major problem in the Federation of Bosnia and Herzegovina is the failure of relevant institutions (Federation and cantonal ministries of agriculture) to provide information concerning the anticipated purchase prices and the amount of incentives, so the producers always take some risk in fruit production.

Production and marketing standards

The fruit production is integral. The farmer has certified production, achieved through the membership in the cooperative PMG. Specifically, PMG managed to obtain a collective certificate GLOBAL-GAP from a relevant accreditation firm, thus enabling access to the European market. The cooperative monitors and verifies the production procedures used by its cooperating partners and producers under its auspices. Should any irregularities be discovered, the producer's membership in the cooperative is revoked.

Economic performance

The farmer was not able to present variable costs by individual fruit crops. It should be pointed out that the average yields for all three fruit crops are good for local circumstances, with the following ranges: plum 17.5 tonnes/ha, apple 17.5–20 tonnes/ha and pear 15 tonnes/ha. In 2009 and 2010 the farmer received a financial incentive to the amount of 0.10 BAM/kg for plums.

	Plum		Apple		Pear	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Area (ha)	4	4	4	4	4	4
Production volume (tonnes)	70	70	70	80	60	60
Output value – BAM	42,000	49,000	35,000	40,000	60,000	60,000
Output value/ha	10,500	12,250	8,750	10,000	15,000	15,000
Subsidies – BAM	7,000	7,000	-	-	-	-
Total value	49,000	56,000	35,000	40,000	60,000	60,000
Total value/ha	12,250	14,000	8,750	10,000	15,000	15,000

Factors of success

The farmer has pointed out several key factors for the success of his farm in fruit production:

- Tradition and experience in production
- Meeting of agricultural deadlines and consistent application of agricultural machinery
- Possession of appropriate storage space (cold storage rooms)
- Accessibility to the market
- Membership in the cooperative
- Option to fund all investments with own funds

Lessons learned for policy measures

A major problem faced by the farmers engaged in fruit production is uncertainty of subsidized or minimum selling prices.

The next problem is water shortage in this region and impossibility to construct an irrigation system. Specifically, climatic changes in the past several years have also reflected on this region, so drought occurs increasingly often, and the water sources, if any in the form of streams and small rivers, most often become dry during the vegetation period or they are contaminated with sewage and thus unusable for agricultural production.

The position of the farmers in the Federation of Bosnia and Herzegovina is unfavourable and not equal with the farmers in the Republic of Srpska and the region (Croatia and Serbia) because of lack of benefits (cash grants) concerning subsidized fuel ("blue diesel") or mineral fertilizers. On the other hand, there is CEFTA and the trade without customs duties.

Case Study reference number: Federation of Bosnia and Herzegovina–F5

Type of entity: Farmer

Human resources: 5 family members staff + 3 seasonal workers

Economic activities: Production of peach, apricot, apple and grape

Other activities: Full-time employment out of the farm

Turnover: 2009: 71,070 BAM, 2010: 87,520 BAM

History

Fruit production on this property was started in the 1950s of the past century, so the farmer has been involved in this production since his early childhood. Initial production was carried out on 2 ha of peach trees and vines. Production was interrupted in 1992 when the war started and the owner left the property and became a refugee. After the war, the farmer returned to his property and decided to restart production in 2000. It was necessary to dig out and remove the old orchard and conduct complete land re-cultivation and preparation prior to production. Production was re-established on the same piece of land, so peach production and vine growing was organized on 2 ha of land. A tractor with accessories (rotary cultivator and atomizer) was purchased in the same year. The first enlargement took place in 2004 when the farmer bought 1.1 ha of land and established an apple orchard on one part of it and an apricot orchard on another. Three years latter another 1 ha of land was bought for the purpose of producing seedlings of apple and apricot seedlings as well as of some other fruits with insignificant commercial importance for this farm. Currently, the farmer owns 4.1 ha of land production surface and applies modern technology but also machinery in pretty good condition. In 2011. The farmer managed to finish construction of his own cold storage with a capacity of 100 tonnes.

Current situation

The farmer owns and uses a total of 4.1 ha of agricultural land. Out of it 1 ha is planted with peach, 1.1 ha with apple, 0.8 ha with apricot and 0.8 ha with vine. The rest of the land is planted with various fruits with no commercial importance, but also with some fruit that is planted for curiosity or experimental reasons and purposes (chestnut and olive trees). The entire used surface is irrigated with the “drop” system. Underground streams are used for this purpose. Absorption wells are in certain places as deep as 120 m.

The farmer has a complete range of needed machinery so he has no need to rent it. Besides, since 2011, he has his own cold storage with a 100 tonne capacity. He believes this facility will be of great use, as he will not be forced to place his products on the market immediately after harvest in the peak of the season when the prices are low. Therefore, the farmer hopes to gain a higher profit with the same production scope in near future.

Firm management

The farmer deals with fruit production on the basis of orchards established in accordance with modern principles. The only shortcoming is the lack of an anti-hail protection system. But, the farmer claims that hail is pretty rare in the region, so the risk of undertaking fruit production without this system is low and acceptable, particularly when investment costs of such a system are taken into consideration.

All necessary agro-technical measures are applied in orchards including regular inter-row cultivation, winter and summer pruning and application of chemical agents as prescribed by modern conventional production. Vine growing production is organized according to a pergola-tendon system, so-called high plant system. Cardinal, Victoria, Matila and Black Magic are among vine varieties used on this farm. During the pruning season, seasonal workers are employed, as household labour is insufficient in that period. Fruit is harvested, placed into wooden boxes and delivered to buyers. Sorting is done immediately after the harvest on the farm.

Unfortunately, like most of the farmers in the country, the farmer does not practice farm accounting and bookkeeping that could be used as a basis to determine indicators of production and economic performance. That is why this case study includes only data on volume of production and selling prices in 2009 and 2010.

The farmer is a registered agricultural producer and he is not a member of any association or cooperative.

Investments

Over the last decade the following investments in assets should be mentioned:

- Acquisition and cultivation of 1.3 ha of land in 2003 – total costs 50,000 BAM
- Planting of various fruit trees in 2004 – total value 20,000 BAM
- Acquisition, re-cultivation of land and planting in 2007 – total costs 55,000 BAM
- Acquisition and cultivation of land in 2010 – total investment value 40,000 BAM
- Acquisition of a new tractor with accessories in 2010 – total value 75,000 BAM
- Drilling for irrigation purposes and installation of feed water pumps on two locations in 2011 – value in total 30,000 BAM
- Average annual costs of maintenance and enlargement of irrigation system – 20,000 BAM
- The building of cold storage was finished in 2011, invested over many years – total investment value approximately 170,000 BAM

Mentioned investments were financed by loans and own sources in an approximately even proportion of 50:50%.

Regarding future investments the farmer plans to establish 0.5 ha of apple orchard with anti-hail protection. Besides, replacement of existing vine varieties with modern ones is also planned. Regarding machinery acquisition, a cultivator is seen as a priority in future investments. The farmer planes to enlarge production continuously in accordance with finance availability.

Market

Entire volume of production is placed on the market place "Čapljina", mainly immediately after harvest by mean of direct selling to interlopers. For that purpose, the farmer has rented a parking place at this market place. A part of the apple production is stored until the selling price increases and distributed afterwards. The farmer claims no significant problems in production placement at the market.

So far, the farmer has had no previously agreed selling price with his products. Average selling prices over a few previous years were: peach – 1.0 BAM/kg, apricot 1.5 BAM/kg, apple 1 BAM/kg and grape1.1 BAM/kg.

Production and marketing standards

Fruit production on the farm is exclusively conventional. Although he is familiar with majority certificates, there is no need for the farmer to become certified as the market does not require it, so none of the standards common in fruit production is applied.

The farmer's opinion is that certification of production would not significantly influence his activity as local consumers have neither awareness of integral or organic production nor the purchasing power to reorient their demand towards such products. He also thinks that the institutional framework is insufficiently developed to recognize, protect and support such production to an adequate extent.

Fruit is sold in wooden boxes. The farmer transports it by his own vehicle to the market, where the buyers take it over.

Yields per land unit achieved in production of all fruits are pretty high. Achieved yield in 2010 was 20 tonnes/ha for peaches, 10 tonnes of apricot on 0.8 ha (respectively 12.5 tonnes/ha), taking into account that the orchard still has not reach its full yield capacity. Production of apples was 30 tonnes on 1.1 ha (27.3 tonnes/ha), and part of the apple orchard is also rather young. On 0.8 ha total grape production was 20.2 tonnes or 25.3 tonnes/ha.

Economic performance

The owner was not able to give data on variable costs per sort of fruit, therefore only output value is presented in this part. The farmer got no support for any of the productions he deals with.

	Peach		Apricot		Apple		Grape	
	2009	**2010**						
Surface (ha)	1.0	1.0	0.8	0.8	1.1	1.1	0.8	0.8
Production volume (tonnes)	15.3	20.2	7.8	10	22.4	30.1	19.7	20.2
Selling prices (BAM/kg)	1.0	1.0	1.5	1.5	1.0	1.0	1.1	1.1
Output value – BAM	15.300	20.200	11.700	15,000	22.400	30.100	21.670	22220
Output value/ha	15.300	20.200	14.625	18.750	20.3642	27.364	27.088	27.775
Subsidies – BAM	0	0	0	0	0	0	0	0
Total value	15.300	20.200	11.700	15,000	22.400	30.100	21.670	22220
Total value/ha	15.300	20.200	14.625	18.750	20.3642	27.364	27.088	27.775

Farmer is also employed in a local company.

Factors of success

The farmer pointed out several factors as crucial for his economic success in fruit production:

- Irrigation of land – pointed out as the most important by farmer
- Regular intensive education in new technologies, varieties, hybrids, (attending seminars and applying acquired knowledge and innovation)
- Good choice of seed and adequate protection in proper time
- Obedience of agro-terms and use of agro-techniques
- Experience and long practice in production
- Quality of products
- Adequate machinery
- Even better economic results are expected from 2011 on, thanks to cold storage

Lessons learned for policy measures

One of the greatest problems faced by fruit producers is price uncertainty, as the fruit selling price is determined exclusively by the buyer while the farmer has no influence on it.

The farmer strongly opposes donations that are very often given to people that poorly deal with agriculture, or even do not deal with it at all. Thus, these funds fail to achieve the aim and money is spent elsewhere out of agriculture.

A serious shortcoming of this region (Čapljina region) is the high share of uncultivated agricultural land. A suggestion for potential policy of natural resource management might be introduction of tax on unused agricultural land.

The key factor of this farmer's success is the knowledge obtained through education and practice in fruit production over a long period. He emphasizes the insufficient government support to agricultural producers together with a poor policy of domestic producers' protection.

This farmer, like most of the others in this region is familiar with the standards in production and storage required for accession to EU markets but they do not see the need to apply them.

Case Study reference number: FBH–F5

Type of entity: Farmer

Human resources: 4 family members + 8–10 seasonal workers during the harvest

Economic activities: production of berry fruit (raspberries and blueberries) and renting machinery

Other activities: none

Turnover: 2009: BAM 20,538 2010: BAM 16,887

History

The farm owner began producing raspberries in 2004 when he left the Armed Forces of Bosnia and Herzegovina because of his uncertain job position. He made the decision to begin agricultural production – raspberry production on the basis of good examples, that is, the neighbours from his nearby area who began that production in 2001 and had achieved good results in both production and financial terms.

Current situation

The farmer has a total of 2.2 ha of agricultural land in use, 1.5 ha of which is his own land and the remaining 0.7 ha is rented. The rent is paid in goods (raspberries) in a ratio of 150 BAM/ha. On the rented land the farmer planted raspberries on 0.25 ha, and blueberries on 0.15 ha that are still not fruitful. The rest of the rented land is covered by plum trees. As for the farmer's own land, 0.2 ha is used for vegetable production (potatoes, beans, onions, garlic, etc.) only for the family consumption, while the remaining 1.3 ha is used as natural meadows for hay production. Raspberry and blueberry plants on a total of 0.4 ha are watered by a drip irrigation system. Because of the objective danger of hail, the farmer installed an anti-hail protection net on 0.1 ha of raspberry plants.

Besides commercial raspberry production, the farmer earns some income by renting own machinery (rotary cultivator). The farmer has a lactating cow.

Farm management

Raspberries are planted on the basis of modern technology, including espalier cultivation form (wooden posts and wire), a drip irrigation system, and anti-hail protection. The spacing between plants is 25 cm within a row and 2.2 m between the rows. The cultivar that is common for the whole cultivation area is Willamette. During the harvest, the family members' labour is not enough for all the work, so seasonal workers are hired. The harvest usually begins in mid-June and lasts for the following about 30 days (in 2011 the record of 37 days of harvesting was set). The fruits are put (harvested) into plastic crates and as such delivered to the buyers who transport the raspberry fruits every day to their cold storage rooms. There is no sorting of fruits at all.

Like most of the Bosnia and Herzegovina farmers, this farmer does not keep his own accounting records that may show important production and economic performance parameters, so this report includes only the precise data about the production volume and the prices of sold products from 2009 and 2010.

The farmer is a registered agricultural producer and a member (founder) of the farmers' cooperative Poljar, which is a very important intermediary in the purchase of expendable material, sale of products and the transfer of knowledge.

Investments

In addition to the raspberry and blueberry plants, the farmer has a rotary cultivator of 12 KW with a trailer and a tiller, received as a donation in 2008. In 2010 the farmer installed an anti-hail protection net on 0.1 ha because of the danger of hail in this area. That investment was partially made with his own funds (BAM 800), while the remaining larger part of the investment (BAM 2,000) was a donation.

The farmer plans to expand the orchard in the next period so as to plant new raspberry cultivars, whose composition is 95 percent Willamette and 0.5 percent Meeker, on 0,1 ha of land, and blackberry on 0.1 ha. He also plans to buy a power tiller, which is his main investment priority.

As for the standards, the farmer is acquainted with them, but he still has no intention of investing in the standards because it is not a local market requirement.

Market

Owing to the farmers' cooperative Poljar from Zeljezno Polje (Municipality Zepce) as an intermediary, the farmer sells raspberries in two places – to KLAS d.o.o [ltd.] from Sarajevo, a bakery industrial company, and HEKO from Bugojno. In 2009, 90 percent of products went to KLAS (the remaining 10 percent to HEKO), and in 2010 the product delivery to KLAS was somewhat lower – 70 percent of the products went there, while the remaining 30 percent were delivered to HEKO. The raspberry price varies from year to year, and it depends on the supply and demand equally in domestic and international markets. In 2009, both buyers paid raspberries 3.50 BAM/kg on average, but in 2010 KLAS paid 2.40 BAM/kg, and HEKO 2.70 BAM/kg.

There are contracts on sale before the season begins, but except guaranteed minimal price (1.20 BAM/kg), selling prices are unknown and their definition in the contract is that they depend on market trends. On the other hand, the farmers are not able to affect the prices that depend only on the decision of the buyers (KLAS and HEKO). This farmer is satisfied with the selling prices in 2009 and 2010. The payment is made usually about 30 days after the harvest is finished. Unfortunately, the prices were considerably lower in 2011, when KLAS announced that the purchase price for the strawberry would be 1.70 BAM/kg.

Production and marketing standards

Raspberry production is conventional. Agricultural production is a new occupation for this farmer (since 2004), but he has managed it excellently, and today he is a record holder in raspberry production. In 2009, he achieved 5.3 tonnes of yield on 0.25 ha (21.2 tonnes/ha), and in 2010 it was 6 tonnes (24 tonnes/ha). Such production results were accomplished because of consistent application of modern technology for this crop, the knowledge gained through numerous trainings organized by the Faculty of Agriculture and Food Sciences from Sarajevo, USDA (United States Department of Agriculture) projects LAMP and FARMA, and a programme organized by REDAH (Regional Development Agency for Herzegovina). It was REDAH that provided important information about standards in raspberry production, the importance of the GLOBALGAP certificate, and generally good agricultural practices. Although the farmer is acquainted with most of the standards, he has not applied them because it was not a market requirement. The largest current problem faced by the farmers engaged in raspberry production in this region is the problem of raspberry root because of Phytophthora. The interviewed farmer still does not have that problem because of a good selection of location for plants (on a slope, and with a good water and air supply).

Economic performance

The farmer was not able to present variable costs, so only the value of output is presented here. Besides the money earned from the sale of raspberries to the buyers, additional income is earned through the cantonal financial incentives to an amount of 0.20 BAM/kg, and another 5 percent as the VAT return. Specifically, as the sale goes through the cooperative and on the basis of individual producers' contracts, each farmer is entitled to the VAT return with prior application for it and BAM 20 of administrative tax.

	Raspberry	
	2009	**2010**
Area (ha)	0,25	0,25
Production volume (kg)	5,300	6,000
Output value – BAM	18,550	14,940
Output value/ha	74,200	59,760
Subsidies – BAM	1,060	1,200
Return of 5% VAT	928	747
Total value	20,538	16,887
Total value/ha	82,150	67,548

Additional income from renting machinery (rotary cultivator): 20 ha x 200 BAM/ha = 4,000 BAM

As additional sources of income that come from outside of agriculture, the farmer mentioned an allowance for demobilized soldiers and a fee through occasional work in the construction industry.

Factors of success

The farmer has pointed out several factors for the success of his farm in raspberry production. These are:

- Education and knowledge gained through numerous workshops in the past several years in the organization of a local farmers' cooperative
- Consistent application of modern technology, with mandatory irrigation above all
- Consistent application of all agricultural technology measures
- Proper selection of location, taking into account the properties of soil that needs to be permeable and that will not hold moisture for a longer time
- Proper selection of fruitful seedlings that are left for the following year, and
- Full engagement of all family members in the production, with needed enthusiasm and belief in success

It needs to be particularly noted that the farmer had no knowledge or previous experience until he began to produce raspberries in 2004, so his achieved production results are a good practical example that needs to be followed.

Lessons learned for policy measures

A major problem faced by farmers engaged in raspberry production is the uncertainty of the selling price that is directly determined by the buyer and that cannot be affected by the farmers and cooperatives. A good thing in this region is the existence of competition (two buyers).

The cantonal subsidy in the amount of 0.2 BAM/kg is a factor in the expansion of the raspberry production in this region. More land (25 ha) was planted only in the last three years (2009–2011) than in the period 2001–2008 (22 ha).

One key factor in the farmer's success is the knowledge gained owing to the work of the cooperative. Unfortunately, professional and advisory services are still not operational in this region, although they should act as an intermediary in the needed transfer of knowledge.

Finally, it should be pointed out that most of the famers in this region have been acquainted with the standards that are needed to approach those in the EU, but there is no need to introduce and apply those standards.

Case Study reference number: FBH–6

Type of entity: Farmer

Human resources: 10 family members

Economic activities: Production of fruit: strawberry, plum, and cherry

Other activities: Gas station

Turnover: 2009: BAM 69,300 2010: BAM 71,700

History

The farm exists since 1974, when the owner's father began to engage in agricultural production. Fruits (strawberry, plum, raspberry, blackberry, apricot, and peach) were cultivated on 3 ha of own land, using extensive agriculture. The farm owner began with more intensive production of strawberries and plums in 2000, when the post-war expansion of fruit production, particularly strawberries, began in this region. Since 2006 the owner has expanded the production area by renting the land, and he is also engaged to a small extent in cattle breeding.

Current situation

The farmer has a total of 4 ha of agricultural land in use, 3 ha of which is his own land, and the remaining 1 ha is rented. That rented 1 ha and 1 ha own land are irrigated. All available land is used for fruit production. The farmer does not produce vegetables. He has two lactating cows and uses their products (milk, calf, and stable manure) for own needs.

The strawberries are produced on an area of 1 ha, and the plum on 2 ha. One hectare is covered by cherry saplings (450 trees), in their 4th year since planting and as such still do not produce a considerable yield.

Besides commercial production of fruits (strawberry, plum and cherry), the farmer runs a gas station along with his wife, brother and father.

Farm management

The strawberries are planted using principles of modern technology and with an installed drip irrigation system. The plants are exploited for three years, after which they are replaced. His relatively numerous family can do all the harvesting, so the seasonal workforce is hired very rarely.

Harvest, sorting and packing are done manually. Transport to a warehouse is done by own transportation means (tractor and van). The farm has a storage building whose capacity is 500 tonnes. Strawberries are transported in wooden boxes.

Like most of the Bosnia and Herzegovina farmers, this farmer does not keep his own accounting records that may show important production and economic performance parameters, so this report includes only the precise data about the production volume and the prices of sold products from 2009 and 2010, with variable costs estimated to 50 percent of the value of production.

Investments

Besides the plants of strawberry, plum and cherry, the farmer invested BAM 90,000 in a storage building whose capacity is 500 tonnes. Then there is a used tractor, bought in 2009 for BAM 10,000, including needed implements and a trailer for a total of BAM 5,000. The farmer also has a van that is sometimes used for production and transport purposes.

In 2009, the farmer bought 0.7 ha of land (BAM 14,000), planning to cultivate strawberries soon.

As for standards, the farmer is acquainted with them, but he still has no intention of investing in the standards because it is not a local market requirement.

Market

The owner is a commercial producer and has a registered business, but is still not in the VAT system. He appears in the market along with the company ¨Brazda.¨ Usually 50 percent of the produced strawberries are sold to the purchase centres, while the remaining 50 percent goes to the market. Strawberries are taken to the market most often in bulk and without being classified. The payment is usually immediately on the spot.

The farmer is not able to affect the prices that are determined in agreement but mostly dictated by the buyer. The farmer was satisfied with the selling prices he obtained in 2009 and 2010.

Production and marketing standards

Strawberry production is conventional. Modern agricultural machinery and also the drip irrigation are applied, so high yields of strawberry are achieved.

Product type	2010	2009	2008
Strawberry	35	35	30
Plum	45	50	50
Cherry	2	-	-

Economic performance

Besides the data on output and prices, the farmer gave estimated variable costs of production that, in his opinion, account for about 50 percent of the value of production. As for financial incentives, the farmer received 3,500 BAM/ha from the Federation of Bosnia and Herzegovina authorities to begin with cultivating strawberries. This amount is received every three years after the old plants are removed and the new ones are cultivated. Strawberries were sold for an average 1.5 BAM/kg in both reported years, and plums for 0.42 BAM/kg in 2009, and 0.45 BAM/kg in 2010. A smaller part of the cherry yield in 2010 was used for own needs, while the most part was sold in the market. The income earned from the sale of the cherries was about BAM 1,200.

	Strawberry		Plum		Cherry	
	2009	2010	2009	2010	2009	2010
Area (ha)	1	1	2	2	1	1
Production volume (kg)	35,000	35,000	50,000	45,000	0	2,000
Output value – BAM	52,500	52,500	16,800	18,000	-	1,200
Output value/ha	52,500	52,500	8,400	9,000	-	1,200
BDV	26,250	26,250	4,200	4,500	-	600
BDV/ha	26,250	26,250	2,100	2,250	-	600

Factors of success

The farmer has pointed out that the important contributing factors to the success of his farm in the strawberry production are the experiences that both he and his family members have gained, then the workshops organized quite often over the last several years, and also the event “The Days of Berry Fruit” in Celic, which is traditionally held annually during the harvest. Also, the application of modern technology contributes to the success, primarily mandatory irrigation, where there is no shortage of water that is taken from a nearby river. Then there is the consistent application of all agricultural technology measures, and proper selection of location taking account of land properties; selection of cultivars and safe seed material, and full engagement of all family members in the production, with needed enthusiasm and belief in success.

Lessons learned for policy measures

A major problem faced by the farmers engaged in the strawberry production is uncertainty of the selling price that is directly determined by the buyer and can be little influenced by the farmers and cooperatives. Still, because of the noticeable demand for strawberries, the farmer has an option to sell them in the market if he does not consider the offered purchase price suitable.

Some key factors for the farmer’s success are knowledge and own work. It should be noted that most of the famers in this area have been acquainted with the standards that are needed to approach those in the EU, but still there is no need to introduce and apply those standards.

Case Study reference number: Federation of Bosnia and Herzegovina –V–3

Type of entity: Farmer

Human resources: 3 family members

Economic activities: organic production of paprika, potato and onion, and other conventional production

Other activities: none

Turnover: 2009: 4,045 BAM 2010: 4,294 BAM

History

The owner has been dealing with organic vegetable production since 2005. He also has planted cherry trees and vine on his land but these productions are conventional, not organic. The farmer has 6 ha of land, but only 0.6 ha is used for agricultural production. Out of that 0.3 ha is allocated for organic vegetable production and the remaining 0.3 ha is under fruit crops. 0.1 ha is cherry orchard, 0.1 ha is planted with vines and 0.1 ha with other fruit trees for own consumption.

The farmer decided to start organic production after the call of ECON Foundation to participate in the preparation of future farms for organic production. In return he received a donation in the form of 120 m^2 of greenhouse in which he started organic vegetable production under the supervision and advice of ECON experts.

Current situation

The farmer owns 6 ha of agricultural land, out of which only 0.6 ha is used for agricultural production. The land is the exclusive property of the farmer. This 0.6 ha of land is used for the following purposes: paprika (variety Vedrana) is produced in a plastic greenhouse on 120 m^2, potato (variety Anais) 0.1 ha; onion (variety Stuttgart); water melon (own seed) 0.03 ha; and water melon (variety Crimson Sweet) 0.03 ha, French beans 0.01 ha; on small surfaces, mainly for own consumption beans, garlic and peas are produced as well. Only paprika is produced in open field.

0.1 ha is planted with cherry trees, 0.1 ha with vines, 1.1 ha as well with some fruit trees for experimental reasons and purposes (peach, pomegranate, fig). Entire used surface is irrigated with the “drop” system. Underground streams are used for this purpose by means of absorption wells on two locations.

The farmer does not possess his own machinery for fruit and vegetable production so he rents a tractor for basic cultivation. A rotation cultivator used for other operations was donated by UMCOR in 2004. Seeding is performed manually.

The farmer has one breeding sow and seven heads of poultry.

Firm management

Cherries are planted on the distance basis 5 x 5, and vines on 1.5 x 2. Family labour is sufficient even during the harvest season, so there is no need for employment of seasonal workers. After harvesting, products are sorted on the spot, placed in wooden and plastic boxes, then in nets and delivered to buyers, respectively to ECON on the farm. Products are not stored on the farm at all but sent for sale immediately.

Unfortunately, like most of the farmers in the country, the farmer does not practice farm accounting and bookkeeping that could be used as a basis to determine indicators of production and economic performances. That is why this case study includes only data on output value based on the calculation of volume of production and selling prices in 2009 and 2010.

The farmer is a registered agricultural producer. He is also a member of ECON Foundation ECOLINE (NGO for rural development and protection of the environment). Both organizations are very important intermediaries in inputs’ acquisition, products’ sale and transfer of knowledge.

Investments

Over the last decade the following investments in assets should be pointed out:

2004. Acquisition of rotary cultivator, donation from UMCOR;

2005. Acquisition of water pump, value 3,600 BAM, financed by means of a loan from a microcredit organization.

Regarding future investments the farmer plans to enlarge production of vegetables in greenhouses and the introduction of new varieties in cherry, vine and vegetable production. The farmer planes to enlarge production continuously in accordance with financial availability.

Purchase of tractors with all required accessories and of a van to facilitate distribution of commodities to sale points is seen as priority regarding investments in machinery.

Market

After harvesting the entire production volume is sold on the farm without storing. As there is no van or any vehicle to transport commodities to market, ECON buys almost the entire production at the farm gate and distributes it further to shopping centres Mercator and Merkur. ECOLINE also takes over and distributes the part of production intended for sale in smaller shops or for export to the Russian federation.

The farmer delivers products to ECON on a contractual basis, but the contract does not limit the farmer from selling products to another buyer if a higher price is offered. But, the farmer claims he is satisfied with the cooperation with ECON and with the terms, prices and services it provides, thus, he did not need to look for another buyer. Average prices achieved over the last several seasons were: paprika – 1.30 BAM/kg, potato 0.5 BAM/kg, onion 1 BAM/kg, honey melon 0.80KM/kg, watermelon 1KM/kg, cherry 1.5KM /kg.

Production and marketing standards

Entire vegetable production on the farm is exclusively organic. The farmer conforms to all principles of organic agriculture in fruit production as well, but still did not get certified as an organic producer in fruit growing yet. He received group certification as a common certificate for the group of organic producers, and he is currently focusing efforts on meeting requirements for personal certification. Thus, placement of commodities on the market would be facilitated and ensured if and when an increased volume of production is achieved.

Yields achieved in production are pretty high for this type of production. In 2010, 780 kg of paprika was produced on 0.012 ha, 800 kg of potato on 0.1 ha, 780 kg of onion on 0.1 ha, 150 kg of honey melon on 0.03 ha, 280 kg of watermelon on 0.03 ha, 550 kg of cherry on 0.1 ha and 520 kg of grape on 0.1 ha. The entire grape production volume is processed on farm into brandy and sold afterwards.

Economic performance

The owner was not able to give data on variable costs per production or activity, therefore only output value is presented in this part. The farmer got no support for any of the production he deals with.

	Paprika		Potato		Onion		Honey melon	
	2009	2010	2009	2010	2009	2010	2009	2010
Surface (ha)	0.012	0.012	0.1	0.1	0.1	0.1	0.03	0.03
Production volume (kg)	820	780	770	800	720	780	150	150
Output value – BAM	984	1,014	462	400	720	780	135	120
Output value/ha	82,000	84,500	4,620	4,000	7,200	7,800	4,500	4,000
Subsidies – BAM	0	0	0	0	0	0	0	0
Return 5% VAT	0	0	0	0	0	0	0	0
Total value	984	1.014	462	400	720	780	135	120
Total value/ha	82,000	84,500	4,620	4,000	7,200	7,800	4,500	4,000

	Watermelon		Cherry					
	2009	2010	2009	2010	2009	2010	2009	2010
Surface (ha)	0.03	0.03	0.1	0.1				
Production volume (kg)	820	780	770	800				
Output value - BAM	820	780	924	1,200				
Output value / ha	2,733	2,600	9,240	12,000				
Subsidies - BAM	0	0	0	0				
Return 5% VAT	0	0	0	0				
Total value	820	780	924	1,200				
Total value/ha	2,733	2,600	9,240	12,000				

Besides income from agricultural production the farmer is retired and gets a pension.

Factors of success

Several factors can be pointed out as crucial for his economic success in fruit production:

- Obedience of agro-terms and use of agro-techniques
- Experience and long practice in production
- Quality of products
- Successful cooperation with ECON that provides producers with regular training in organic production as well as with free advice regarding agricultural experts

Lessons learned for policy measures

Price uncertainty is one of the main problems farmers are faced with. The market determines the price without the farmer's influence on it.

The key factor of this farmer's success is the knowledge obtained through the education in organic production provided by the ECON foundation and the ECOLINE Association. Varieties used for production on the farm in vegetable production are mainly Dutch high-yield varieties.

Farmers see no help from the government. They feel abandoned and completely left to themselves and the non-governmental sector. This farmer also claims that the government does not support organic production whatsoever and does not follow it in an institutional and legislatory sense. Beside, he claims that agricultural policy is inadequate, ineffective and neglectful, but apart from protection of domestic production he does not seem to have any other idea what policy measures should be.

Vegetable production in FBH is heavily burdened with the uneven agricultural policy in two entities. For example, the list of varieties approved for import is different in the Republika Srpska and FBH, and the one for Republika Srpska is wider and includes the best and the most modern vegetable varieties that are not allowed in FBH. Therefore, seeds are the object of the grey economy, as there is no border between entities and the seed itself is tiny and easily smuggled. On the other hand, farmers get no support if they use varieties that are not on the list. Therefore, vegetable producers in FBH are forced to choose between higher yields with no support and breaking the law, and lower production that can be supported.

Case Study reference number: CS-FBH-V4

Type of entity: Farmer

Human resources: 5 family members

Economic activities: Production of paprika, tomato, cabbage, leek, carrot, onion and gourd

Other activities: none

Turnover: 2009: 36,250 BAM 2010: 41,700 BAM

History

The owner started agricultural production on his father's property. After the farmer's father died the property was split among descendants and the interviewed farmer inherited 0.8 ha of land. Currently, he is actively engaged in agriculture together with his family, wife and three children.

Current situation

The farmer has 1.5 ha of available agricultural land. 0.8 ha is his own property and the remaining 0.7 ha belongs to his neighbours that concede land to him to cultivate it for free. The structure of used land is as follows: tomatoes 0.07 ha, paprika 0.07 ha, cabbages 0.3 ha, leeks 0.2 ha, carrots 0.2 ha, onions 0. 15 ha and gourds 0.1 ha. The entire land surface under vegetables is irrigated my means of 'drop by drop' system.

There are 2 pigs, two goats and 10 poultry heads on the farmer's property but the livestock is grown only for the farmer's household needs not for sale.

The farmer also has 20 tonnes of storage capacity for after harvest vegetable storing, but only for a few days, and afterwards products are delivered to buyers. There is no cold storage in the farmer's possession so the entire production volume is sold in the peak of season when the prices are the lowest.

Firm management

Products are sorted manually as there is no equipment for it, packed in carton board or wooden boxes, stored and delivered to buyers after two to three days.

Like most of the farmers in the country, the farmer does not practice farm accounting and bookkeeping that could be used as a basis to determine indicators of production and economic performances. That is why this case study includes only data on output value based on the calculation of volume of production and selling prices in 2009 and 2010.

The farmer is neither a registered agricultural producer nor is he a member of a cooperative. His attitude is that the cooperative that exists in the region where he lives and works exists only formally, and the farmers do not benefit from membership.

Investments

Two greenhouses to a total value amount of 30,000 BAM are the main investments over the past decade. A part of this investment was financed by savings and another part – one third – by an MCO loan. The loan amounted to 10,000 BAM, the payment period was 4 years and the annual interest rate 10 percent. There was no grace period.

The farmer plans future enlargement of greenhouse vegetable production as well as investing in storage capacities in order to enlarge it and improve protection for products of weather influence. As the tractor is almost worn out acquisition of a new one is seen as priority, but the farmers sees no possibility to finance it, being ineligible for a commercial bank loan while the interest rates in MCOs are, according to his opinion unbearably high.

Besides, the farmer is aware of the need to improve storage capacities in terms of cold storage in order to enable storing of production until the prices at the market rise, and thus achieve higher profit.

Market

Placement of the whole production volume is done at the wholesale market "Čapljina" to intermediates who then distribute it to all parts of Bosnia and Herzegovina.

So farm, the farmer runs his business and cooperates with buyers and intermediaries on an ad hoc basis, without contract either for volume or for price. This creates uncertainty of production placement and price determination with no influence from the farmer's side.

Average selling prices over several past years were: tomatoes 0.95 BAM/kg, paprika 0.75 BAM/kg, cabbage 0.40 BAM/kg, leek 1.20 BAM/kg, carrot 0.80 BAM/kg, onion 0.60 BAM/kg, gourds 0.55 BAM/kg.

Production and marketing standards

The entire vegetable production on the farm is integral. The farmer is not familiar enough with EU standards in production and distribution of products. Yet, he claims this knowledge would be welcome for future integration to the EU market, without basic understanding of what this integration really means.

No certification is undertaken yet on the farm. The farmer sees no need to certificate production, as there is no requirement for it at the local market where he sells his products. He thinks this would be a waste of money for the time being, as consumers do not have the purchasing power to pay higher prices, and support from the government, according to the farmer's opinion, cannot be expected.

Vegetables are sold in carton board or wooden boxes, and the farmer transports them to the market by his own vehicle.

Yields in 2010 were tomato 5 tonnes/ha, paprika 5 tonnes/ha, cabbage 10 tonnes/ha, leek 12 tonnes/ha, carrot 8 tonnes/ha, onion 8 tonnes/ha and gourds 6 tonnes/ha.

Economic performance

The farmer gets no support from the government for any of his agricultural production, so all income coming from agriculture is presented in the table below.

	Tomato		Paprika		Cabbage	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)	0.07	0.07	0.07	0.07	0.3	0.3
Production volume (kg)	4,500	5,000	4,500	5,000	9,000	10,000
Output value – BAM	4,050	5,000	3,600	3,500	3,600	4,000
Output value/ha	57,857	71,429	51,429	50,000	12,000	13,333
Subsidies – BAM	-	-	-	-	-	-
Povrat 5% PDV	-	-	-	-	-	-
Total value	4,050	5,000	3,600	3,500	3,600	4,000
Total value/ha	57,857	71,429	51,429	50,000	12,000	13,333

	Leek		Carrot		Onion		Gourd	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)	0.2	0.2	0.2	0.2	0.15	0.15	0.1	0.1
Production volume (kg)	10,000	12,000	7,000	8,000	7,000	8,000	5,000	6,000
Output value –BAM	12,000	14,400	5,600	6,400	4,900	4,800	2,500	3,600
Output value/ha	60,000	72,000	28,000	32,000	32,667	32,000	25,000	36,000
Subsidies –BAM	-	-	-	-	-	-	-	-
Povrat 5% PDV	-	-	-	-	-	-	-	-
Total value	12,000	14,400	5,600	6,400	4,900	4,800	2,500	3,600
Total value /ha	60,000	72,000	28,000	32,000	32,667	32,000	25,000	36,000

This farmer has no additional income as he is engaged solely in agricultural production.

Factors of success

Several factors can be pointed out as crucial for the economic success of this farm:

- Obedience of agro-terms and use of all required agro-techniques
- Experience and long practice in production of each crop
- Quality of products that farmers achieve is satisfactory

Lessons learned for policy measures

Price uncertainty is one of the greatest problems this farmer is faced with. The market determines the price without farmer's influence on it.

Farmer sees no good will from the Government to help domestic agricultural production and protect it. Like most of the farmers in FBH, this one is also unprepared for the market economy and he still sees protection of domestic production by means of introducing high taxes and customs as the main role of the Government.

According to the farmer's opinion distribution of numerous forms of donations for agricultural production in FBH so far was unfair and very often it ended in the hands of the wrong people, respectively those that are not agricultural producers whatsoever.

The farmer is aware of a lack of knowledge regarding EU standards and points out the need to become familiar with them, considering the possibilities BH has through the EU integration processes.

The extension and advisory service "Gaj" operating in this region is seen as very helpful and useful in terms of providing farmers with information and advice on various issues related to agricultural production.

Case Study reference number: Republika Srpska–1

Type of entity: Farmer

Human resources: 3 family members staff and 5–15 seasonal workers

Economic activities: Production of vegetables and machinery servicing

Other activities: none

Turnover: 2009: 124.713,5 BAM 2010: 186.375 BAM

History

The owner of the farm started in 1989 with 0.25 hectares of potato. At the time his main income came from the bar he was running. In 1990, using the seeds obtained the previous year, he planted 2 hectares of potato. The obtained income encouraged him to expand and introduce cabbage and watermelon. The war that broke out in 1992 forced him to close the bar and focus on agricultural activity. In 1995, at the end of the war, the farm was enlarged by 7 hectares and the opening of an agriculture shop came to complete the family income.

Current situation

The farmer crops 13 hectares of irrigated land (10 owned and 3 leased). Three hectares of the total surface are planted with cereals and hay (crop rotation purpose). The rest is planted with the following vegetables:

1. Onion
2. Potato
3. Watermelon
4. Cabbage

The producer is currently transforming a shop into two basic warehouses of 160 m^2 and 125 m^2 that will allow storing respectively 100 tonnes of onion and 90 tonnes of potato.

The level of machinery is satisfactory and allows also additional income through servicing other producers (onion harvesting).

The producer also keeps 2 cows and 5 boars. He sells about 20 piglets every year. Organic manure is used for vegetable crops.

Firm management

The farm has grown progressively during the first 5 years of existence, avoiding disproportionate investments. The grower has constantly innovated by systematically using quality seeds, searching for information on new technologies (visit to producers in Holland), making his own varietal and agro-technical trials and using the expertise of a professor of Banja Luka University.

However, the absence of bookkeeping prevents a fine analysis of the economic performance by crop. Only production volumes and average prices are available for the recent years.

The farm is registered and is included in the VAT system. An accountant keeps financial records for the State administration.

Investments

The farm is characterized by a low investment level. The grower shares machinery with the farm of his father. The main investments made in recent year are one sprayer subsidized (40 percent) by the Government and an organic manure spreader.

The producer is also investing in a storage facility.

The main investment priority is land to increase the farm size. However, while the price of land per hectare is reasonable (10,000 – 20,000 BAM) the high level of land fragmentation implies high transaction costs to buy large size plots.

Market

Supermarkets (Delta and Mercator), the two cooperatives OPZ-VIP Krajna and PZ-VIP Krajna, as well as the green market of Banja Luka are the main market outlets. Traders who supply small shops also buy some quantities on the green market.

The grower experienced late payments and no payment from OPZ-VIP Krajna, a cooperative he is member of, in 2009 and 2010. The incapacity of OPZ-VIP Krajna to honour the payment is most likely caused by the fact that the cooperative itself had not been paid for delivery to supermarkets. Since then, the grower privileged direct business with supermarkets or PZ-VIP Krajna. This cooperative has exported onions to Croatia in 2010.

Supermarkets pay usually 60 to 90 days after delivery, though contractually the payments are due after 45 days.

Over the last 15 years, the producer has observed an increase of pressure on prices due to a shift in balance of domestic supply and demand and market liberalization. After the war, a number of people previously employed in other sectors shifted to market oriented agriculture. This resulted in a reduced demand and offer increase. In recent years, the liberalization through Stabilisation and Association Agreement (SAA) and other trade agreements has exposed Bosnia and Herzegovina producers to competition and further reduced prices. This also resulted in higher quality standard requirements.

Production and marketing standards

Vegetable production is conventional. The producer has heard about IP, but considers that conditions are not suitable to engage in this type of production. He had also heard about GlobalGAP, but does not envisage getting any certification, as buyers do not require it.

All vegetable products are graded by hand or with a calibrator (potato). The type of packaging depends on the client request. Simple packaging in bags is usually used for the green market, while supermarkets require specific packaging. 1 tonne cardboard boxes are used for watermelon (cost 20 BAM per unit). These requirements do not present any difficulty to the producer who finds necessary packaging on the local market. It just increases input and labour costs.

The PZ-VIP Krajna has invested in a grading line and is able to grade large volumes for the market. The producer hopes to be able to market their product to Croatia and Russia.

Economic performance

The producer was not able to give variable costs per crop. His approximation of the total variable costs for the whole farm is 90,000 BAM. That is more or less an average of 8,000 BAM per hectare of vegetable crop.

	Potato		Onion		Watermelon	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**
Surface (ha)	4	3.4	2.5	2.4	2.9	1.9
Production volume	162,650	121,400	121,600	106,300	113,800	121,200
Output value	27.162,5	76.350	66.825	79.725	30.726	30.300
Output value/ha	67.90,6	22.455,9	26.730	33.218,8	10.595,2	15.947,4

Additional income by machinery servicing:

- Gross income: 250 BAM/ha x 30 ha = 7,000 BAM
- This amount must be reduced by the running and amortization costs.

Factors of success

Two factors seems to be at the origin of the good performance of this farm:

- The systematic innovative attitude of this farmer who was one of the first to use high quality seeds and who made his own experiments with the assistance of university professors.
- A wise financial management avoiding too heavy investments and making the best use of existing assets (machinery sharing with his father's farm).

The readiness to satisfy market demand in terms of standards (quality, packaging) reveals also a progressive attitude.

Lessons learned for policy measures

Non-respect of contractual obligations by supermarkets should be condemned by law enforcement.

The farmers might be able to store non-perishable fruit and vegetables at farm level for short periods and there is a need for these basic storage facilities. Supporting basic storage facilities at farm level might be useful.

Organizations like PZ-VIP Krajna if well managed are key to improving quality and supply chain performance. In addition, in the perspective of IPARD and CMO they would enable medium-scale producers to access available funds.

Information and innovation are key for performance increase. Simple messages and demonstrations of the impacts of technologies and techniques should be channelled to farmers.

In the absence of a demand for private standards (GlobalGAP), state good agriculture practices should be compulsory in order to receive any state support.

Case Study reference number: Republika Srpska–2

Type of Producer: Commercial

Human Resources: 3 family members and 10 seasonal workers

Economic activity: Production of vegetables and beekeeping

Other activities: Involvement in the "Association for Rural Development and Environmental Protection" as President

Total turnover: 2009: 3,500 BAM 2010: 31,000 BAM

Background of the agricultural farm

Until 1990 the farm was engaged in the production of tobacco, considering that in the area of Ljubinje, thanks primarily to agro-climate conditions, this production was dominant. Since 1990 the producer has begun to run on vegetable production, and since 1995 exclusively on the production of peppers (yellow). During the period 2005–2009 the farm was producing organic onions. For the purposes of organizing the production of organic onions, the farm received a certificate by the only certifying body in Bosnia and Herzegovina ("organic control") for organic production in accordance with the standards OK. The buyer of organically produced onions was an association of Mostar "Ekolajn". Current production of peppers is according to the conventional production system.

The current situation

The farm has a total of 200 ha of land (agricultural and forest). In terms of total arable land, it has 6 ha, of which 3 ha are private and 3 ha rented. From a total of 6 ha of arable land every year, on a surface of between 1 to 1.5 ha of cultivated land there are peppers (open air), while the rest of the arable land is used for grains (wheat, oats), because of crop rotation and facelia for beekeeping. The farm is also involved in the production of own pepper seedlings on an area of 150 m^2. Price of land rent is 500 km/ha.

Although in the area of Ljubinje, a limiting factor in production is the lack of water for irrigation of crops, the farm for the purpose of organizing its own production, successfully resolved the irrigation area under peppers.

The farm has an adopted storage area of 60 m^2. Peppers are picked by hand and manually sorted and packed in cardboard boxes weighing between 17–20 kg and as such, transported and sold in the markets of western Herzegovina. While in the area of Ljubinje there is a private cold storage with a capacity of 500 tonnes, the farm does not use their services.

The farm has 6 dairy cows (Gatačko cattle). The entire quantity of milk turns into a "*cheese from sheepskin.*" The farm on average annually produces about 300 kg of cheese and sells it at the price of 10 BAM.

Farm management

The farm was registered in the Farm Register under the respective Ministry and is not in the VAT system. Given the favourable agro-climate conditions and available irrigation water, the area under pepper production in terms of planted areas from year to year is constant (1 to 1.5 ha/year). The farm said that the increase in the production of pepper (early and late varieties) seedlings is one of the key problems, i.e. determining the quality of seeds, as well as a lack of financial resources. The funding, along with the application of modern management systems in the production of peppers and the construction of the collection centre in the area of Ljubinje, would significantly affect the increase in area and yield of peppers on the farm.

Investments

The farm is characterized by low levels of investments. In the previous period, the only investments were aimed at providing "drip" irrigation, petrol pumps and laying down the pipes, and adaptation of a facility for temporary storage of peppers.

In the future, the farm is planning introduction of GlobalGAP, purchasing the networks for shading the area of 2 ha and anti-hail for a period of use of 5 years. The advantage of procurement of an anti-hail network is primarily to protect and increase the yield by up to 30 percent.

Market

The farm produced peppers and marketed them in Capljina (Western Herzegovina). In terms of sales methods of paprika, selling takes place through a broker/trader, who by his own means of transport and packaging materials purchases (net) goods from the farm. The price of the product is formed on the basis of supply and demand and market price is dictated by current price trends in the market place in Capljina. The agreed purchase is being implemented at a lower price by 0.10 to 0.15 BAM/kg of the prices on the market in Čapljna, in order to enable trade to go-betweens and have space for distribution and sale of paprika on the given market. After taking over the goods the payment is made immediately. So, the farm practically sells peppers "*on the doorstep*".

Production and marketing standards

Production of peppers is conventional and in the open air. While the planned investments anticipate introduction of GLOBALGAP, there is no need for standardization of primary production now because the market (the market in Čapljna) does not require it from the local agricultural producers. Following the harvest of peppers, peppers are not stored but immediately put on the market. Since the farm has its own nursery, during the production of seedlings, the integral production protection is applied twice, although the farm does not apply guidelines specific to integrated production. Production of pepper is concentrated in the area of Popovopolje, peppers are planted in early June and harvested in September. On the area of 1 ha, there are 80,000 plants planted with a yield of 0.50 kg/plant. Packaging of products for sale is manual in cardboard boxes of 17–20 kg, it is second hand cardboard packaging for fruit. Although in the area of Ljubinje there is cold storage of a capacity of 500 tonnes, a zero cooling system owned by a private person, the producer does not use the services of the same. The producer in the future, through a newly established association, plans to organize the collection of peppers in Ljubinje and wider distribution on the market.

Economic performance of production

For the period 2009–2010 the producer has relevant data on pepper production. Variable costs of production were 9,000 BAM per ha.

	Peppers	
	2009	**2010**
Area (ha)	1.5	1
Size of production (tonnes)	3.5	40
Value of production	3,500	31,000
Value of production/ha	2,333	31,000
Variable costs	9,000	9,000
GVA	-6,667	22,000

Production of pepper in 2009 is characterized by extremely low yields and a negative value of production, as a consequence of heavy hail. Planned production on the surface area of 1.5 ha was supposed to be between 50–60 tonnes. Hence, the planned investment in providing protection against hail finds its full justification. Given that the farm has not contracted production with some processing capacities in the Republika Srpska and Bosnia and Herzegovina, it is not eligible to apply for subsidies on purchased quantities of product. The exceptions were in 2005 and 2006, when the farmer supplied the goods to VITAMINKA AD Banja Luka and on that basis was provided a subsidy by the MAFWM to the amount of 0.10 BAM/kg. For the purposes of organizing the production of peppers in the open in the period 2009–2010, the farm is eligible and for the registered production area it received NPK fertilizer in quantities of 300–400 kg/ha and diesel fuel in quantities of 120 litres/ha from the Ministry of Agriculture, Republika Srpska.

Additional farm income:

- Production of cheese in sheepskin: 300 kg/year x 10 KM/kg= 3,000 BAM
- Honey: 750 kg/year x 14 BAM/kg= 10.500 BAM

Success Factors

The producer states the following key success factors:

- Good quality land, available water and microclimate
- Agro-ecological conditions affecting a high percentage of dry matter in the product, which allows storing of products, and that in doing so does not lead to lower quality
- Use of the system for “drip” irrigation contributes to the quality of the product

Lessons learned for the proposal for policy measures:

- Determining the quality of seed of yellow peppers is a major problem for farmers
- The introduction of GlobalGAP standards demands high costs from farmers
- The problem of fragmentation of land makes it difficult for the rational organization of production
- Good conditions for the production of early and late peppers require greater financial resources and implementation of adequate management systems
- The crucial need of vegetable producers in the area of Ljubinje is organizing the collection centre, through which they would be able to distribute their products on the market

Case Study reference number: Republika Srpska–3

Type of producer: Semi sustainable

Human Resources: 5 family members (own labour) and during seasonal work 10–20 employees per year

Economic activity: Production of organic berries (raspberry); production of apples and stone fruit (plums); brandy production

Other activities: Family members (2) employed outside the farm in state institutions

Total turnover: 2009: 9,720 BAM 2010: 9,510 BAM

Background of the agricultural farm

The farm, during 2001, in cooperation with ECON Tuzla, started producing and collecting herbs, and in 2002, they expanded their production, and in addition added the production of medicinal herbs and began production of cucumber. Production of raspberries on the agricultural farm followed in 2003 year in a system of organic production. The farm covers a total of 15 ha, and has 8 ha of arable farmland, with 1.4 ha under fruit, and the remaining 6.6 hectares are pastures. The structure of the fruit plantations is: 0.8 ha is under raspberry, 0.3 ha under apple trees, and the rest of 0.3 ha under plums. Given that the main production on the farm is production of organic raspberry, the farm has OK standard, or certificate by "Organic Control", the only certificate body in Bosnia and Herzegovina, and its production is under its constant supervision. The farm is not a member of any cooperative or association within this area. It is situated at an altitude of about 900 m.

The current situation

The farm has a total of 15 ha of land, of which 9 ha of arable land, and in the structure of the land there are 1.4 ha of orchards. The structure is dominated by raspberry plantations on about 0.8 ha, while the rest consists of 0.6 hectares of apples and plums. Production of raspberries is organic. The farm is certified for organic production. Planted plums (0.3 ha) are mainly used to produce brandy, and the farm generates income by selling it, while the production of apples is a potential source of revenue in the near future (as yet not always in the fruiting stage). Plums and apples are also found in the system of organic production.

Farm Management

The farm is registered in the Farm Register under the Ministry and is not in the VAT system. The work on the farm includes all family members, and it is managed by the owner. This is a classic example of a family agricultural farm, where in addition to family labour, land is a basic factor of production, and a primary goal is to provide income and food security for the farmer's own family.

Investments

Due to the fact that this is a family farm, the farm features a low level of investment in the previous period. To start production of raspberries, the farm received credit for the purchase of seedlings (6,000 pieces) from the cold storage, which they have already repaid. In cooperation with other farmers (total 10), the farm participated in co-financing the construction of irrigation pools (2010) for the surfaces under raspberry.

Besides this, the farm has recently purchased used machinery and equipment; i.e. they purchased a used tractor and supplements (1996), then the atomizer of a volume of 100 litres with pipes. The value of this investment amounted to 1,300 BAM.

The investment plan of the agricultural farm in the future is related to the expansion of the production areas and raising plantations with 10,000 plants and cover the entire surface of the raspberry production area by "drip" irrigation. Depending on the realization of the production of raspberries, apples and plums, as well as placements in the existing as well as some new markets, the farm plans to build a mini cold store and a drying facility for fruits.

The market

Currently, the farm sells its only product, raspberry to the cold store "Boss Agro Food" in Potocari. So, it is agreed production. When they deliver raspberry to the cold storage, the producer has no information about the price of purchased products. The price is mainly formed on the basis of average prices, but they are higher when it comes to organic production of raspberries. Confirmation of this was last year's average price of raspberries (conventionally produced), which amounted to 1.80 BAM/kg, and the farm was paid,

2.90 BAM/kg, i.e. 1.10 BAM/kg higher, because it is organically produced raspberries. When it comes to models of payment, during the cold storage, in the season, there is payment of an advance of funds, and at the end of the season, within 90 days, the rest of the funds are paid. When delivered to the cold storage, raspberries are packed in plastic crates on a daily basis, and in this way transported to the cold storage in Potocari. Distance of the cold storage from the agricultural farm, on average, is about 25 km.

Production and marketing standards

Raspberry production is organic. For the purposes of organizing the production of organic raspberries, the farm is certified by the "organic control". From an economic perspective, production is characterized by low production costs, because it includes all family members, the production takes place on private land without the use of chemicals (mineral fertilizers and protective means). The largest cost in a production cycle is a seasonal workforce (on average, annually 10–20 employees), for a total daily amount for workers of 900 BAM until the moment of harvest and 500 BAM after the harvest. The total yields of raspberry in the period 2009–2010 were about 3 tonnes. Small yields are compensated by achieving a higher purchase price (2.90 BAM/kg in 2010, and 3.2 BAM/kg in the year 2009).

Economic performance of production

In 2009, there were 0.35 ha under raspberries and in 2010 this was further expanded to 0.45 ha, for a total of 0.8 ha. Yields for the 2009–2010 year amounted to 3 tonnes, where the farm from an additional 0.45 ha achieved a 30 percent yield only in 2011 and in 2012 they expect full yield.

	Raspberry	
	2009	**2010**
Area (ha)	0.35	0.8[38]
Size of production (tonnes)	3	3
Value of production[39]	9.720	9.510
Value of production/ha	27.771	27.171[40]
Variable costs	2,000	6.750
GVA	7.720	2.760

In 2009 total farm variable costs of production amounted to 2,000 BAM and referred to the application of manure and the cost of hired labour.

In 2010, due to the expansion of the area under plantations of raspberries, variable costs were higher than in the previous year and amounted to 6,750 BAM, of which 3,500 BAM is spent for the seedlings (5,000 x 0.70 BAM/pcs.), ploughing and milling amounts to 3,150 BAM (70 BAM/dunum) and the application of manure (100 BAM).

Success Factors

The key success factors stated by the producer are the following:

- Low production costs and higher purchase price
- Long-term secured product placement (raspberry)
- Advantage of non-grading the products (raspberry)

Lessons learned for the proposal of policy measures:

Given the existing production and future plans for intensive production, not only of strawberries but also of apples and stone fruits, the farm has an essential need for greater financial resources. At the same time it is necessary to provide means for establishing the irrigation system ("drip"), as well as insurance, whether it is anti-hail protection with the insurance institutions or otherwise.

[38] Note: total planted area under raspberries (0,8 ha).

[39] Note: The value of raspberry production in 2009 was 3.2 KM / kg, and 2010 years 2,90 KM / kg. The total income includes the value of production subsidies generated for the period 2009-2010 and amounted to 120 KM (2009) and 810 KM (2010).

[40] Note: Production value / ha calculated on the basis of yield in 2010 with the old raspberry plantations in 2009. With additional planted areas in 2010 (0.45 ha) in 2011 was achieved only 30% yield. Full yield is expected in 2012.

Case Study reference number: Republika Srpska–4

Type of producer: Cooperative

Human Resources: 6 of cooperative members

Economic activity: Production of berries (raspberries and blackberries); production of wine from berries, production and sale of planting material

Other activities: Rent available cooperative space

Total turnover for production of berries: 2009: 216.800 BAM 2010 BAM: 137.470 BAM

Background of the Cooperative

General agricultural cooperative "Srebrenica" was founded on 18 April 2002. The establishment of the cooperative was participated in by 10 cooperative members and the cooperative currently has 6 members. The cooperative is open and of a multi-ethnic composition. In cooperation with the scientific – research institutions from Bosnia and Herzegovina and Serbia (Institute of Pomology, Sarajevo and Cacak) and international organizations (GTZ formerly and currently GIS), a cooperative started producing berries (raspberries and blackberries). In 2003, the cooperative started a nursery for raspberries and blackberries, and the starting material was donated by GTZ. The collection of the first products was provided for through cooperative agreements with "Bosnaplod" from the Brcko District. The cooperative, in 2003, worked on the area of three municipalities: Bratunac, Srebrenica and Milici, and had about 470 cooperative members.

In order to increase this production in a given area, the cooperative has credited cooperative members with seedlings of berries, but because of the bad repayment by them, the cooperative gave up such a way of doing business and started its own production. In 2007, the cooperative established its own plantations of raspberry and blackberry on a surface area of 22 ha, taken on the basis of concessions for a period of 30 years and a concession fee of 550 BAM/year. Plantations of berries are under a system of organic production, under strict supervision, "Organic Control", the only certifying body in Bosnia and Herzegovina in Sarajevo. Organically produced raspberries and blackberries are collected by "Agro Food Boss" in Potocari, and from there, the products are placed on the EU market (Sweden).

Current situation

The cooperative was given a concession of the land area of 22 ha for production of soft fruit and use for a period of 25 years. The amount of the concession fee is 25 BAM per unit area. Of the total 22 ha, raspberry production is organized on 8 ha, 12 ha is blackberry and the remaining 2 ha is intended for nurseries of raspberries and blackberries. The entire production is on a system of organic production. The cooperative does not have a warehouse and cold storage. After harvesting the product is packed in plastic green crates (the green colour indicates that the product is produced through a system of organic production) of 2 kg and delivered to the cold store "Boss Agro Food" in Potocari. In addition to primary production, the cooperative has been engaged in the processing and production of wine from blackberries, raspberries and cherries (0.75 litres and 0.2 litres with 4 percent of alcohol), and since 2010 in the production of medicinal herbs: lavender, heather, lemon balm, mint and Timjan) through collaboration with the Italian organization CESVI. Wine production was launched in 2007.

Management of the cooperative

The cooperative is in the VAT system and in the Farm Register of the Republic of Srpska. The cooperative has 6 members, open type and multi-ethnic. It has 22 ha of land under concession, where they produce berries (raspberries and blackberries). The bodies of the cooperative are the Assembly and Supervisory Board. The Supervisory Board consists of 2 members. The management structure consists of the director and the cooperative co-founders.

Investments

In the previous period, the cooperative had several capital investments:

- Adaptation of cooperative space
- Establishment of plantations of berries on 22 ha. For establishment of a plantation, the cooperative borrowed funds from "Boss Agro Food" i.e. it took a loan of 100,000 EUR. Total loan of the cooperative has been repaid in the meantime.

- Drip irrigation procurement
- In order to initiate production of blackberry and raspberry wine, the cooperative invested in a processing plant. For this purpose, the cooperative took credit from the commercial bank. Approximately two thirds of the loan is repaid, there is still one third. The capacity of the winery is 200,000 litres of wine per annum. Current capacity utilization is 10 percent.
- The cooperative has provided bus transportation for the seasonal workforce, van, truck and tractor.
- In 2010 the cooperative invested in launching the production of medicinal plants in cooperation with the Italian organization CESVI.

Planned investments relate to:

- Expansion of nursery production of berries, especially greenhouse. In 2011 the cooperative established the nursery. For this purpose, it has imported 40,000 seedlings (Italy) at the price of 1 EUR per unit. Production of planting material is organic and has been reported to the certifying body "Organic Control". Funding for nursery production control is extracted from its own resources
- Procurement of equipment for the distillation and production of essential oils
- Formation of an educational centre near the plantations and organizing tourist activities

Market

Given the existing production, the cooperative currently sells two types of products, primary (raspberries and blackberries) and secondary (wine from the berries and cherries) on the market. Placement of raspberries and blackberries is directed towards the cold store "Boss Agro Food." Wine of the berries is sold on the market of Bosnia and Herzegovina, and through market centres (Tempo, Konzum, Mercator and Robot). Until now, the cooperative has not been able to export wine beyond the borders of Bosnia and Herzegovina. As one of the key problems of selling wine, the cooperative mentions lack of funds for promotional activities in order to promote this product, but equally a fully developed awareness of local consumers for its consumption. In terms of trading conditions, the cooperative has a contract for the purchase of primary products with the "Boss Agro Food". Price of organic raspberry is around 3 BAM + 0.30 BAM to transport them.

The payment of delivered goods is sometimes delayed up to 180 days, but the buyer of the cooperative compensates prolonged payments with other services. Selling wine is undertaken through shopping malls. The best cooperation, in terms of contractual arrangements and payment of goods supplied, is with Mercator, since Mercator pays the cooperative within 15 days of wine delivery. The cost of a bottle of wine (raspberry, blackberry and cherry) of 0.75 litres is 10 BAM, and of 0.2l litres it is 2 BAM. Blackberry wine with honey of 0.50 litre (carton package) is between 13–14 BAM retail. Necessary packaging for produced wine (bottle) is provided through the cooperative company "Enigma" from Rudo, which imports containers from Croatia (Hum on Sutla), while the PVC caps for bottles are imported from Slovenia.

Production and marketing standards

The production of berries is organic. Production is organized on 22 ha, of which 12 ha of blackberries, 8 ha of raspberries and 2 ha of a seedling production of raspberries and blackberries. Raspberry yields ranged from 2 tonnes (2010) to 45 tonnes (2009), blackberry from 47 tonnes (2010) to 70 tonnes (2009). About 50 percent of the total planted area is under drop-by-drop irrigation. The cooperative in the total production area has a nursery to produce seedlings of raspberries and blackberries of an area of 2 ha. In 2010, the nursery produced 200,000 seedlings of raspberries. During this period, blackberry seedlings were not produced, due to very low demand. In 2009, on the same production area, nursery production of raspberry seedlings ranged around 150,000, and blackberries 10,000.

The cooperative owns the certification for the organization of organic production of berries, obtained by the "Organic Control" from Sarajevo. OK introduction of standards is financed by the "Boss Agro Food". The cooperative has also provided the introduction of HACCP standards for the production of wine (raspberry, blackberry and cherry, blackberry wine with honey, and wine made from cherries).

Of the total quantity of wine produced annually (20,000 litres), the most produced is blackberry wine (12,000 litres), then cherry wine (4,000 litres) and raspberry (4,000 litres). From blackberry wine, the most wine is produced and packed in bottles of 0.75 litres and then of 0.2 litres and smaller quantities are of blackberry wine with honey.

For the production of raspberry wine, the percentage ratio of wine that is packed in bottles of 0.75 to 0.2 litres was 80:20 percent, while the percentages of sour cherry wine is identical, bottles of 0.75 to 0.2 litres.

Economic performances

	Raspberry		Blackberry	
	2009	**2010**	**2009**	**2010**
Area (ha)	8	8	12	12
Production (tonnes)	45	26	70	47
Value of production	148.500	85.800	66.500	44.650
Subsidies[41]	1.800	7.020		
Total value of production	150.300	92.820	66.500	44.650
Value of production/ha	18.787,5	11.602,5	5.542	3.720,8
Variable production costs/ha[42]	11.272,5	6.961,5	3.325	2.232,5
Total variable costs	90.180	55.692	39.900	26.790
Gross Value Added/ha	7.515	10.906	2.217	3.488,3
Total GVA	60.120	37.128	26.600	17.860

Additional sources of income the cooperative achieves through:

- Wine production. It produces about 20,000 litres of wine per year. The structure of production is shown in the table below.

Type of wine	**Quantity**	**Price/unit (BAM/litre)**	**Income in BAM**
Blackberry wine	12,000		96,000
0.75 litres	7,200	10	72,000
0.2 litres	3,600	2	7,200
Blackberry wine with honey 0.5 litres	1,200	14	16,800
Raspberry wine	4,000		33,600
0.75 litres	3,200	10	32,000
0.2 litres	800	2	1,600
Sour cherry wine	4,000		24,000
0.75 litres	2,000	10	20,000
0.2 litres	2,000	2	4,000
Total	20,000		153,600

  Costs related to the amount of product packaging for bottles of 0.75 litres are 4.5 BAM, and for 0.2 litres they are 1.5 BAM. From this it follows that the cost of packaging annually amounts to 56,700 BAM (0.75 litres), or 9,600 BAM (0.2 litres).

- The production and sale of seedlings:
  - price of produced raspberry seedlings is 0.50 BAM/piece, to which VAT of 17 percent would be added. On produced seedlings, the cooperative in 2010 achieved subsidies from 0.10 to 0.20 BAM/piece.
  - price of produced blackberry seedlings in 2009 amounted to 1.80 BAM/piece, to which VAT of 17 percent would be added;
- properties for rent owned by the cooperative (1 room, price for the rented space is 150 BAM/month)

[41] Note: Subsidies for collection of blackberry have not been paid in 2009-2010. Only the Subsidy Rule Book on incentives in agriculture in 2011 introduced a measure of payment for the purchase of blackberries.

[42] Note: Estimated variable costs are 60% compared to the value of production.

Success Factors

The key success factors of the cooperative were stated as the following:

- Guaranteed collection of their own primary products in the domestic market
- "Drip" irrigation, which can significantly affect the increase in yield
- Participation in the prestigious fairs, in Bosnia and in the region
- Good cooperation with high scientific institutions in Bosnia and Herzegovina and the region, international organizations and advisory/extension services

As one of the potential success factors of the cooperative in the future would be a wine export outside Bosnia and Herzegovina, because according to the cooperative, it met all the conditions for export (standardization of products), but due to lack of markets and financial resources to promote this product, the cooperative is not able to implement this plan now.

Lessons learned for the proposal of policy measures:

- Increased financial support for the implementation of activities aimed at promotion of blackberry and raspberry wines on domestic and foreign markets
- The introduction of stronger controls on goods imported from other countries in Bosnia-Herzegovina
- Support to measures for diversification of economic activities in rural areas, specifically in this case support to the development of tourism activities in the area of Srebrenica and creating recognizable tourist attractions in this part of the Republic of Srpska.

Case Study reference number: Republika Srpska–5

Type of producer: Cooperative

Human Resources: 12 cooperative members

Economic activity: Production of stone fruits (cherry and sour cherry)

Other activities:

Total turnover: 2009: not achieved 2010: 3,400 BAM

Background of the agricultural farm

Agricultural Cooperative "Stela" was established in 2006, with 7 founders. The main motivation for organizing and establishing a cooperative was renting municipal land to run the fruit production. The land belonged to the former cooperative, which became the property of the municipality, then the municipality rented it to the newly formed cooperative for a period of 20 years, with the price of the land ranging from 120 BAM/ha for the first 4 years of use, and then 200 BAM/ha. The total rented land area is 16.5 ha. It is a specialized cooperative, a member of the Cooperative Union of Republika Srpska. The cooperative owns the office space of 12 m^2.

The current situation

The cooperative has 16.5 hectares of rented land. The price of land rent for the first 4 years of use is 120 BAM/ha, then 200 BAM/ha. The entire area is under extensive orchards of stone fruits, cherry, sour cherry and plum (1 ha). Perennial planting of stone fruits are undertaken exclusively using their own means. In 2010, cooperative members achieved a total yield of 2 tonnes of cherries; in 2011 the yield of cherry varieties of Oblačinska and Maraska was around 30 tonnes. There are 10,000 sour cherry trees and 1,000 cherry trees. After the harvest, the product is manually sorted and calibrated, and then packed in plastic boxes of 700 grams, which are placed in wooden hollandaise and transported to the market (market Čapljina).

Management of the Cooperative

The cooperative is a member of the Cooperative Union of Republika Srpska. It is not included in the VAT system. The cooperative was registered in the register of agricultural holdings in the Ministry of Agriculture, as well as its members. All founders equally contribute to the work and functioning of the cooperative. A key factor of the current successful operation of the cooperative is the respect and implementation of the basic principles of the cooperative and the timely and equal distribution of land among members of the cooperative. The cooperative management reports regularly to the assembly meetings on realized activities. Their members provide support in obtaining grants from the relevant ministry through distribution of subsidized fertilizer and fuel.

Investments

Since this is a young cooperative, investments in the previous period were minimal. To initiate and organize fruit production, the cooperative has been donated a tractor and a real estate area of 2 dunums, where one part of 12 m^2, with its own funds, were converted into office space. The necessary machinery, such as an atomizer for the application of chemical protection is provided through the orchard machinery ring from the Sloga cooperative from Ljubinje.

Having in mind that a cooperative does not have the relevant machinery and equipment in respect of the production and purchase of fruit, a priority investment is:

- Providing space (warehouse) for storage
- Provision of facilities for fruit packaging (packing facility)
- Standardization of production (introduction of GlobalGAP)

Market

Like most farmers in the area of the municipality of Ljubinje, the cooperative sells its products on the market in Capljina (Western Herzegovina). Packaging, transport and sale of fruit on the market in Capljina is not shared, i.e. each cooperative member sells separately its product at retail points in Čapljina market. This clearly points to the conclusion that the cooperative and cooperative members have not built a common approach to the market. Cherry is picked with the stalk because it can be used after three days (it is less prone to shrinkage). After that it is packed in plastic boxes of 700 grams, which are placed in wooden hollandaise and transported

to the point of sale. The selling price of cherries on the Čapljna market, on the first day is around 2.10 BAM/kg, and in the end it is 1.40 BAM/kg. The average selling price during the cherry season is around 1.70 BAM/kg. The price of cherry depends on the variety and quality and it is about 3.5 BAM. Before the sale of fruit at a market in Capljina, cooperative members define a common selling price. They do not have contracted sale, they are paid immediately after delivery. The cooperative plan is to expand the market, provided that the above-mentioned conditions are fulfilled with respect to the realization of priority investment.

Production and marketing standards

Production of fruit is conventional. The cooperative plans to introduce GlobalGAP standards and are currently in negotiations with USAID FARMA regarding implementation of these activities. Production takes place on 16.5 hectares of land, of which 4 ha under cherry and 12.5 ha under sour cherries. Sour cherry began to have a yield in 2010, when it amounted to 2 tonnes of sour cherries, while the 2011 yield was significantly higher and amounted to 30 tonnes. Predictions are that in 2012 yields will be between 80–90 tonnes of sour cherries and 10 wagons of cherries. With regard to agricultural techniques utilized for the types and amounts of applied protective chemicals in the orchards, the producers record types and quantities and check whether these chemicals are in accordance with the list of permissible chemicals in the Republika Srpska, Bosnia and Herzegovina. For the purposes of pomology technique practices, the orchard management engages external labour, while the other activities are carried out by own (family) labour. The major problem in the production of sour cherries and cherries in this area is represented by an insect (žilogriz), whose occurrence requires high costs of application of protection, on average twice a year. Periods of application are up to 10 April and 20 June.

Economic performance of production

Given that the planted sour cherry had a yield for the first time in 2010, economic performance can be shown only for a given period. Variable costs of production of sour cherry in 2010 per ha amounted to BAM 1,000 BAM/ha, i.e. a total of 12,500 ha. Management practices included pomology technique and maintenance of raised orchards. For the cherry, the costs of establishing an orchard were BAM 9,000/ha.

	Sour cherry
	2010
Area (ha)	12.5
Size of production (tonnes)	2
Value of production[43]	3.400
Value of production /ha	272
Variable costs	12.500
Gross margin BAM	- 9.100

There were no additional sources of income of the cooperative.

Success Factors

Taking all the above relevant facts about the current situation of the cooperative into consideration, the success of its first survival and its business status cannot be precisely estimated. The cooperative is still in its infancy, it is evident that insufficient financial resources limit the infrastructure: machinery, equipment and storage space, as well as the undeveloped common market. However, if we exclude the above, then the success factors can be listed as agroclimate conditions suitable for this type of production and proximity to markets (Čapljina), where there is strong demand for the above products (sour cherry and cherry).

Lessons learned for the proposal for policy measures:

- The introduction of standards GlobalGAP involves high costs
- The problem of availability of information to cooperative on incentives defined by rules of eligibility for receiving subsidies
- Insufficiently developed awareness of cooperatives, in particular on the benefits of organizing farmers into cooperatives
- Increase funding for capital investment in fruit cooperatives (standards, equipment, machinery and storage space)

[43] Napomena: Vrijednost proizvodnje izračunata na osnovu prosječne prodajne cijene višnje od 1,70 KM/kg.

Case Study reference number: Republika Srpska–6

Type of producer: Large corporate producer

Human Resources: 2 family members (own labour) and during seasonal work 30 workers/year (from March to November)

Economic activity: Vegetables

Other activities: -

Total turnover: 2009: 430,620 BAM 2010 BAM: 562,500 BAM

Background of the agricultural farm

The farm is located in Semberija. During the 1980s, the farm dealt exclusively with the production of tobacco, when it was considered one of the largest producers of tobacco during the former common state. In order to improve the production of tobacco, the farm from 1982 to 1990 invested in facilities for drying tobacco, and chronologically: 1982 – the classic drying facility for tobacco; in 1983 – two brick drying facilities, 1984 – automatic dryers, and by 1992 the farm had a total of 4 automatic dryers.

Production of tobacco lasted until 1996, after which the farm, since then until now, has been exclusively engaged in the production of vegetables. In the beginning (1996) vegetable production was organized on 50 dunums (5 hectares) and most of the crops were cabbage, kale and cucumber. The farmer estimates that between 2005–2010, he produced a total of about 750 tonnes of vegetables a year (cabbage, peppers, beets, carrots, onions). Today, this farm is considered one of the largest producers of vegetables in the open air and an organizer of purchase from this area. In cooperation with ZZ "Voćar" from Zvornik, it organized the collection of vegetables. It is estimated that the total quantity of collected vegetables (including the amount of surveyed households) was 3,000 tonnes.

Current situation

The agricultural farm has a total of 30 ha of total arable land, of which 13 ha are own, and 17 ha are rented. The farm takes the state-owned land under rent (2.5 ha), for a period of eight years, for the price of 560 BAM/ha. The rest of the 14.5 hectares is rented land from private persons at a price of 350 BAM/ha. The structure of arable land is 24 hectares under vegetables, and the remaining 6 ha under cereals. Vegetable production is undertaken exclusively in the open air. Out of the total area under vegetables, 18 ha is under irrigation of which 13 ha of its own land and 5 ha of the rented area. Vegetable production is conventional. In terms of animal production, the farm, for own use is producing pigs (20 heads), goats (30 heads) and poultry (30 animals).

Farm management

The farm is managed by the owner, and out of the rest of the family members, just one member is actively involved in working on the farm. The farm is in the Farm Register of the relevant ministry, which practically means it is entitled to receive subsidies. When it comes to the status of the farm in the VAT system, this farm has a status of "user-flat fees inclusive" to the amount of 5 percent. This means that when selling products, to the selling price is added a lump-sum compensation to the amount of 5 percent. With respect to the available production capacities and equipment of the agricultural farm, it can be concluded that it is a large corporate producer, with a rounded production process (primary production and packaging).

Investments

Thanks to cooperation with ZZ "Voćar" from Zvornik, the farm, in the previous period, imported machinery and equipment for the organization of vegetable production in open air to a value of 26,000 BAM. It is using machinery (onion harvester, beets, carrots) 25 to 30 years old. Also the farm for the purposes of irrigation of the area under vegetables has a "Typhon" irrigation system, whose purchase was financed from own funds to the amount of 15,000 BAM.

During the ongoing renovation of the existing warehouse space to build a cold storage of 500 m^3 with 2 chambers and fully equipped. The capacity of the cold storage is about 300 tonnes of goods. The value of the investment is 72,000 BAM and 10,000 BAM is funded by the municipality of Bijeljina, 20,000 BAM is a subsidy fund from the Ministry of Agriculture, Republika Srpska and 42,000 BAM from its own funds.

Although production on the farm is mainly directed towards the production of vegetables, the owner of the farm intends to undertake production of goat milk and cheese in the future. The decision of the producer to undertake this production is because there is an assured market (hypermarket in Bijeljina), and there is interest for these products even over a wider area.

Market

Main products: onions, beets, carrots, peppers, potatoes and cabbage, are placed on the local market, and part of the quantity is exported through ZZ "Voćar" from Zvornik to Croatia. On the local market (Bijeljina) the main customers are hypermarkets (MAXI), agents from wholesale markets and greengrocers. In addition to selling fresh produce, the farm, to a large extent relies on the processors of vegetables and considers them as one of the most important sales channels. Most significant buyers of industrial goods are ZZ "Voćar" and the company for processing and canning of fruits and vegetables "Tanasić" doo Bijeljina from Dvorovi – Bijeljina. With regard to handling products after harvest, this is carried out semi-automatically, sorting onions, potatoes and beets, which are manually packed in bulk (industrial goods), or in crates of various materials (wood, cardboard) and nets, intended for hypermarkets, and the market intermediaries.

In terms of trade arrangements and modalities of payment, the farm has not concluded a contract of sale with the hypermarket (MAXI) but the sale is based on mutual agreement and advance payment of goods supplied. The same principle exists with the intermediaries who sell goods from the farms on wholesale and vegetable markets. As far as selling the industrial goods is concerned, the farm has a contract with ZZ "Voćar" and "Tanasić". Payment is due immediately after delivery ("Tanasić" Ltd.), as well as with ZZ "Voćar" except for beets; payment for the delivered beets is within 90 days.

Production and marketing standards

Production of vegetables is in the open air and it is conventional. Vegetable production is organized on 24 ha, of which 18 ha under irrigation i.e. 13 ha of own land are irrigated, and 5 ha rented. Approximately 2.5 ha of the land is rented by the farm from the state for a period of 8 years and the farms pays 1,400 BAM for this on an annual basis, while the cost of the remaining 14.5 ha is 5,075 BAM. Thanks to agroclimate conditions and agro-technology, as well as to irrigation systems, the return achieved on this farm can be assessed as satisfactory. Production for the market is for fresh products but for industrial processing too. Production of potato is directed towards industrial processing or manufacturing of chips. Currently the marketing of goods and reaching the markets (Croatia) is not conditioned by marketing standards. For placement, in the opinion of the owner of the farm, the key is quality and quantity. If there is a requirement of the market for the introduction of certain marketing standards, the producer is ready to adopt and apply them on his own farm.

Economic performance of production

	Potato	Cabbage	Onion		Beets		Carrots		Pepper	
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010
Area (ha)	9	8	4	4	8	12	3	3	3	3
Size of production	270	480	240	240	360	540	90	90	135	135
Value of production	86,400	96,000	96,000	120,000	64,800	162,000	72,000	72,000	81,000	81,000
Value of production /ha	9,600	12,000	24,000	30,000	8,100	13,500	24,000	24,000	27,000	27,000
Subsidies[44]	8,640				6,480	16,200	7,200	7,200	8,100	8,100
Total value	95,040	96,000	96,000	120,000	71,280	178,200	79,200	79,200	89,100	89,100
Variable costs	48,470	38,400	38,400	52,800	13,670	44,550	10,296	10,296	17,820	17,820
GVA	46,570	57,600	57,600	67,200	57,610	133,650	68,904	68,904	71,280	71,280

The farm is exclusively engaged in agriculture, and therefore does not receive any other revenue sources.

Success Factors

The key success factors, the producer states are the following:

- Guaranteed product placement
- Due to organizing the collection of vegetables for producers from Semberija, the farm receives significant subsidies from the Ministry of Agriculture, Republika Srpska
- Export of products to Croatia (Podravka) and potential ability to export goods to the Russian Federation market

Lessons learned for the proposal of policy measures

In addition to the existing machinery and equipment for the production of vegetables, and construction of cold storage (investment over), the farm intends to obtain equipment for sorting and packing of goods.

[44] Note: Subsidy is 10% of total value of production.

Case Study reference number: Republika Srpska –7

Type of producer: Semi-sustainable farm

Human Resources: 2 family members and 2 workers in a season

Economic activity: Production of stone fruits (plums) and the production of brandy. Other activities: production and sale of maize

Total value of production of brandy: 16,800 BAM

Background of the agricultural farm

The holding is located in the Doboj region. Initially it dealt with agricultural and livestock production, and since 2003 it has begun engaging in fruit production on 1.5 ha. Currently, they grow plums, of autochthon variety of Trebavka and Magyar, and in addition they complete the assortment with different varieties such as variety Čačanska rodna, Čačanska rana, Ljepotica and Najbolja. Overall fruit production is directed to processing and production of brandy. The farm has 5 ha of land, of which 4 ha under fruit trees, and the rest under cereals.

Current state

The farm has 5 ha of land, of which 4 hectares are under fruit orchards and 1 ha under crops. Three hectares of the plums are in the full production stage, and one hectare is expected to have full yield in the coming year. Production of plum is conventional and semi-intensive. The farm does not have facilities for storage and preservation of products. Given the commitment of the farm for the production of brandy, this production is still in its initial stage, i.e. in this early stage a cauldron of 200 litres capacity for the production of brandy has been procured. Plantation under plum is not irrigated. Besides selling brandy and grain as one source of income, the property owner is engaged in trading activities (he owns a private shop).

Farm Management

The farm is a member of a cooperative and an association. The farm is registered in the Ministry of Agriculture Farm Registry, and it is eligible to receive government subsidies. It is not included in the VAT system. The farm is managed by the owner, who, in addition to family members, is actively involved in working on the farm. This is an example of the classic farm, typical of the Doboj region, which as part of the production factors is using their own land and labour.

In the past, the farm made the following investments:

- (1) Procurement of a kettle of a volume of 200 litres, worth 9,000 BAM
- (2) Purchase of tractors, ploughs, sprayers, tillers, worth up to 30,000 BAM

This was all funded from its own sources.

It is planned to invest in:

- (1) Purchase of distillates, to the value of EUR 3,000
- (2) Construction of basements for storage of brandy, to an estimated value of 15,000 BAM
- (3) Stainless steel barrels for brandy

Unless there are favourable lending conditions, the planned investments will be funded from own resources.

Market

The farm does not place the plum on the fresh market, it is processed into brandy. Given that the production of brandy is at an initial stage and that the intention of the farm is to expand this production, which would be followed by a significant investment in the necessary equipment, the current annual production of brandy is around 2 tonnes. About 50 percent of the total annual production is kept in the form of farm stock, because in that way over time, they achieve a better quality of product and expect a higher price, and the remaining (50 percent) is placed on the market. Brandy is divided into two classes, Class I and II. Classification depends on the preparation of “husk” and the process of distillation. In addition, to determine the class of brandy, the producer uses flavour and fragrance as indicators of product. About 60 percent of brandy, intended for market is in the first class and 40 percent in the Class II. The sale price of brandy of Class I is 10 BAM/litre, and of Class II 6 BAM/litre. One part of the produced brandy is sold through its own shop, while the remaining part is sold on the farm.

Production and marketing standards

Production of fruit is conventional. It is a semi-intensive plum orchard. The farm does not have standards for both primary and secondary production. Brandy is produced in a traditional manner. The farm, given that selling brandy "on the doorstep", has not paid increased attention to packing and preparing goods for sale.

Economic performance of production

Economic performance of production will be presented for the production of plums and brand:

	Indicators	
	2009	**2010**
Area under the plum (ha)	3	3
The volume of production of plum (tonnes)	20	20
Total production of brandy (litres)	2,000	2,000
Value of production of brandy	16,800	16,800
Variable costs	8,400	8,400
Gross value added	8,400	8,400

The farm achieves its total revenue through the sale of brandy, and it is annually around 16,800 BAM. The estimated cost of production of brandy is 50 percent of the total value of production, which means that the cost of production of brandy is around 6,720 BAM, and total profit is 10,080 BAM.

Success Factors

The key success factors the producer states are favourable agroclimate conditions, the tradition of production of plums in the Doboj region, high quality varieties, and the use of advisory services in the process of plum production.

Lessons learned for the proposed policy measures:

- Greater support in providing extension services in the production of plums, in order to intensify production
- Introduction of education programmes for the production of brandy
- Greater support for investment in equipment to produce brandy and the introduction of marketing standards

Case study reference number: Republika Srpska –8

Type of producer: Cooperative (agriculture)

Human resources: 4 full-time employees and 4 seasonal workers

Economic activities: Collection, packing and selling of fresh fruit and vegetables

Other activities: Seed potato production (2009–2010)

Total turnover of potato production: 2009: 40,800 BAM 2010: 110,000 BAM

History of Cooperative

The cooperative was established in 2009 and was founded by five persons. The cooperative is engaged in seed potatoes production, purchasing, packaging and selling of fresh fruit and vegetables. Fresh fruits and vegetables are purchased by the cooperatives from about 200 farmers in the area of Lijevce and Potkozarje, or a total of 8 municipalities. The cooperative is of an open type of cooperative. In terms of economic operations, the cooperative, although it is a young cooperative, operates very successfully. In the year of founding (2009) it achieved a turnover of 0.5 million BAM and a profit of 500 BAM, while the turnover in 2010 amounted to BAM 2 million of which BAM 1 million has been exported to the market of the region and the EU, and the profit is 50,000 BAM. According to the six-month report, in 2011, the cooperative had a turnover of 1.5 million, and a third is related to exports.

Current situation

The cooperative is specialized in the sale of fruits and vegetables. It has 600 m^2 of storage space that can take about 100 tonnes of goods. Also part of the cooperative is a cold store with a capacity of 25 tonnes. Due to the lack of own space, the cooperative hired the said storage area (600 m^2) and office space of 50 m^2. The rent per month for storage and office space is 3,000 BAM + VAT (17 percent). For the purpose of seed potato production, the cooperative rents the land. In 2009, 5 ha of the land was rented and the cost was 100 BAM/ha from an individual agricultural producer. The following year (2010), the area for the same purpose was doubled (10 ha), and production was organized in a collaborative way with another cooperative (ZZ Manjača – Zmijanje), which implied the transfer of 10 hectares of land owned by ZZ Manjača for production of seed potatoes. In addition to the ceded lands, the duty of the subcontractor cooperative consisted in the provision of services of machinery and labour, while the organizer of production was responsible for the procurement of raw materials and product selling. The subcontracted cooperative, according to the agreement, was eligible for subsidies.

Cooperative Management

The cooperative is included in the VAT system and is registered in the Register of farms under the Ministry of Agriculture, Republika Srpska. One manager manages the cooperative. The total number of full-time employees is 4. As far as management bodies are concerned, the cooperative has an Assembly and a Supervisory Board. The Assembly of the cooperative meets 5–6 times per year, when there is a report on the activities and operations, as well as to discuss future plans of the cooperative.

Investments

In the previous period the cooperative invested in the establishment of the following:

2009:

(1) Buying a transport vehicle (van) of the value of 13,000 BAM

(2) Office Equipment of 5,500 BAM

(3) Fiscal cash registers of 2,500 BAM

(4) Two scales from 5,000 BAM

2010:

(1) Procurement of forklifts of 20,000 BAM

(2) Two pallets of 1,000 BAM

2011:

(1) Packing for vegetables to the amount of 100,000 EUR. For the purchase of packing equipment, 50 percent of credit funds is provided, and the other half is provided from donations (Ministry of Agriculture, Republika Srpska, FARMA Project and the local community).

Planned investments are directed to buy 1 hectare of land for construction of cold storage and an office building, the estimated value is about 150,000 BAM, then the provision of 100 ha of land under concession, equipment for packing and sorting of fruit, machines for the processing of mercantile potatoes.

Market

The agricultural cooperative sells fruits and vegetables on the local and international markets. In the domestic market (area of Bosnia and Herzegovina), the cooperative sells products to domestic hypermarkets, Delta, Tus, Robot and Mercator. On foreign markets, sales channel wholesalers are also used, and they distribute products to retailers in Croatia, Serbia, Montenegro and Austria. The goods in Croatia are sold in the following cities: Zagreb, Rijeka and Varazdin; in Serbia, Belgrade and Novi Sad. When you export goods to the markets of CEFTA countries, then the goods are not required to have GlobalGAP or IP certificates, while the exports to Sweden were carried out with verification of compliance with IP by the Swedish certifying house.

One of the subcontractors complies with the guidelines of integrated production, i.e. producers of fruit, but do not have a certificate.

As far as the markets of neighbouring countries are concerned, the cooperative does not have contracts on deliveries, but everything is done on the basis of agreements and issuing invoices. All billing goes through the account, because of the producers, i.e. only on the basis, that they can obtain VAT refund and subsidy. On the domestic market, the cooperative enters into a contract with hypermarkets, usually with payment due at 30–45 days, but payment usually goes up to 90 days. The cooperative delivers the products to the customer, after cooperative members and contractors bring goods to the warehouses of the cooperative. The cooperative, in Bosnia and Herzegovina, does not use wholesalers as their buyers, but only retail networks. Producers are paid for products purchased after no later than 50 days.

Production and marketing standards

Production of seed potato is conventional. Some farmers, i.e. members of the cooperative were already familiar with the GlobalGAP standards and guidelines of the IP. The cooperative plans to introduce HACCP and ISO standards with the establishment of processing facilities.

Due to the main activity of the cooperative and the presence of a packing facility, the cooperative takes products from producers and then they are sorted, packed and graded in an automatic way (onions and potatoes). Depending on customer requirements, various types of packaging are provided (crates, nets, wooden boxes). The product range consists of potato (sales volumes are between 1,500 and 2,000 tonnes), onions, apples, pears, plums and melons (watermelon has annual sales between 500 and 600 tonnes). The total quantity of goods sold in 2010 amounted to 4,000 tonnes, in 2009 it was 1,800 tonnes. Obvious differences in the classification of goods are the result of the expansion of business activities in a wider region, and strengthening the market position of the cooperative.

For the presence on the market, the Coop uses a variety of promotional materials, as well as the promotional slogan: ***"S nama do prirode".***

Economic performance

Seed potato production economic performance:

	Potato	
	2009	**2010**
Area (ha)	4	10
Size of production (tonnes)	60	100
Value of production[45]	40,800[46]	110,000
Value of production/ha	10,200	11,000
Variable costs	10,797	26,993
GVA	30,003	83,007

[45] Note: Value of seed potato with average price of 0,68 KM/kg (2009) and 1,1,KM/kg (2010).

[46] Note: Value of production in 2009 includes the subsidy, while in 2010 the Coop gave subsidies to ZZ Manjača.

Success Factors

The cooperative sets out the following key success factors:

- Good communication with clients and members, and distributors,
- Responsibility in business
- Collective marketing
- Application of IP and GlobalGAP standards with individual farmers, whose products find their way to the regional and EU market
- Staff of the Coop and their management skills
- Good organization of the cooperative and its members

Lessons learned for the proposal of policy measures:

The main problem for the cooperative and its members is slow VAT refunds. To illustrate this, the State owes the Cooperative over 50,000 BAM from 2010. Furthermore, in order to broaden and increase the specialization of the cooperative, the cooperative requires greater financial support from the Government for the provision of machinery and equipment for packing and standardization of goods. Particular emphasis is to establish better sales contracts and payment of sold goods, as well as establishing better and closer cooperation with agricultural producers, within the area of the cooperative.

Case Study reference number: Republika Srpska –9

Type Production: Commercial farm

Human Resources: 6 family members and 5 workers in a season

Economic activity: Production of stone fruits and apples

Other activities: Production and sale of grain (corn)

Total value of production: 2009 : 113,250 BAM 2010 : 182,000 BAM

Background of the agricultural farm

The farm is located in Potkozarje. The farm began to undertake fruit production in the 1981. Due to the existence of farm "plantations" in Gradiska, the farm received a credit for establishment of 2 ha of fruit, and they were involved with that type production until 1996. Since 1996, it has expanded the existing production in stages, and today the fruit orchards cover 8 ha.

Current situation

The farm has 13 hectares of own land, of which 11 ha are arable land. The total area under fruit trees is 8 ha, of which the structure of orchard is 5 ha apple, 1 ha plum, 1 ha of peaches and 1 ha pears. The following varieties of apples are grown on the farm: Idared, Golden Delishes, Pins, Red Chef, Granny Smith, etc. The most common varieties of plum are: Stemly, Čačanska Ljepotica, and of peach Red Heaven. The pear section is dominated by July Beauty, Butira, Santa Maria, Krasanka and Viljamovka, and all fruit and vegetables were in intensive farming systems. Since 2002, the farm has been applying an integrated production system, and since 2010 it has a certificate for the application of the GlobalGAP standards. Fruits are not irrigated, which is a major obstacle in increasing the yield. The farm, mainly to meet their own needs in food, has a few livestock, consisting of two dairy cows, a breeding animal and 5 pigs.

As far as facilities for fruit production are concerned, the farm has a basic storage capacity of 60 tonnes, volume 240 m^3 and 130 m^3 cold storage, with a capacity of 30 tonnes of apples. The farm is also equipped with adequate machinery and equipment necessary for the production process.

Farm management

The farm is a member of both cooperative and association. The farm is registered in the Ministry of Agriculture Farm Registry, and it is eligible to receive government subsidies. In the VAT system, the farm has the status of a beneficiary of lump sums amounting to 5 percent. This means that the selling price of products is charged and an additional lump sum added to the amount of 5 percent. The farm owner is manager of the farm; family members are actively involved in work on the farm. Bearing in mind that fruit are produced under intensive farming systems and with the implementation of IP systems, as well as GlobalGAP standard, it can be concluded that this farm does not fall into the "typical rural farm" in the Republic of Srpska, but it is a specialized farm, which follows primarily market requirements, "know-how," all in order to improve fruit production. The only product which is kept in cold storage until a suitable moment of selling is apples.

Investments

In the past, the farm has made the following investments:

(1) Purchasing of land, to a total value of 10,000 BAM

(2) Construction of cold storage, to a total value of 20,000 BAM

(3) Purchase of an atomizer, to the value of 6,500 BAM.

Investments have been realized from their own resources.

In 2010, the farm with the help of the association of integrated fruit production, introduced GlobalGAP. Support of the introduction consisted of a co-financing of the costs, which are related to the standardization and implementation of GlobalGAP. For the introduction of GlobalGAP, the farm has allocated EUR 450.

Planned investments are the following in:

(1) Extension of the existing cold storage capacity of 90 tonnes, to an estimated value of 30,000 BAM

(2) Purchasing a tractor, value of 30,000 BAM

(3) Putting into operation the purchased land of 1.3 ha, on which would be planted cherry and peach. Estimated investment value is 30,000 BAM.

Planned investments will be financed from their own funds and credit.

Market

The product after harvest is generally sold on the market. The only fruit, which is stored in a cold storage after the harvest, is apple. All the early varieties of fruit, the farm sells immediately after harvest. The farm has no packing facility and sorters which means that the entire handling of products is undertaken manually and for these purposes seasonal labour is hired. The most common material,in which the products are packed, are cardboard boxes and wooden crates so called "letvarice".

The producer uses different channels for marketing their products:

(1) Cooperative (the farmer is a members of the cooperative)

(2) Packing UNAPLOD from Kozarska Dubica, with whom he has a contract for delivery of goods, and according to the contract he has an obligation to deliver goods to the warehouse of the packing facility

(3) Various wholesalers and retailers with whom he does not have signed specific trade agreements

(4) Various forms of direct selling.

Basically their products, regardless of the way of placement, are placed on the territory of Banja Luka.

Payment for products through the various intermediaries is quite diverse and ranges from 15 days to several months.

Production and marketing standards

It is integral fruit production. The farm has GlobalGAP standards. The structure of fruit and fruit varieties is quite heterogeneous. GlobalGAP standards are introduced for plums, apples and pears. Currently the farm considers that established standards, in the domestic market, where the majority of production is sold, do not bring the expected competitive advantage. Notwithstanding the current market situation, the owner of the farm has a clearly defined objective to continue with the introduction and implementation of marketing standards and is of the opinion that the farm is going to have some benefits from these norms in the near future.

Economic performances of production

	Apple		Pear		Plum		Peach	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Area (ha)	5	5	1	1	1	1	1	1
Size of Production (tonnes)	150	175	15	20	30	35	25	25
Value of production	56,250	115,500	15,000	20,000	13,500	17,500	25,000	25,000
Value of production /ha	11,250	23,100	15,000	20,000	13,500	17,500	25,000	25,000
Subsidies[47]	2,450	2,800	350	400	350	400	350	400
Total value	58,700	118,300	15,350	20,400	13,850	17,900	25,350	25,400
Variable costs	12,375	24,843	2,684	3,570	5,125	6,623	7,098	7,112
GVA	46,325	93,457	12,666	16,830	8,725	11,277	18,252	18,388

Success Factors

As the key success factors, the producer states favourable agro-climate conditions and the tradition of fruit growing in Potkozarje, own work force, successful business, the relatively "stable" distribution channels, a good practice after the harvest, possession of marketing standards, continuity in the production of fruits and continuous expansion of plantations.

Lessons learned for the proposal of policy measures:

- Increased government support in the development of fruit production
- Increased financial support for further standardization of production
- Strengthening of marketing activities

[47] Note: Total subsidies for sold fruits (apples, pears, plums and peaches) in 2010 were 4,000 KM, and in 2009, 3.500 KM.

Case Study reference number: Republika Srpska –10

Type Producer: Large corporate producer

Human Resources: 2 family members and 40 full-time employees, from 200–250 seasonal workers

Economic activities: Production of stone fruits and apples

Other activities:

The total value of production: 2009: 1.006.450 BAM 2010: 1.940.400 BAM

Background of the agricultural farm

The farm is located in Laktasi. In 2003, the producer bought 2 fruit orchards from the former state company "Plantation" from Gradiska, which are located on the territory of the municipality of Banja Luka and Laktasi, of a total area of 240 ha. Purchased orchards were devastated, which is why the producer was being forced raise new, young fruit plantations. The farm is registered as a legal entity.

Current situation

The farm has 400 ha of arable land, of which 240 ha under fruit trees and orchards, which are not currently irrigated. Main fruits are apples, pears and peaches. There are 120 ha under apple trees, 80 ha of pear and about 20 ha peach. In addition to these three main cultures, plums are grown on 7 ha, apricot and cherry on 5 ha, and cherry on 3 ha. The apple orchards have the following varieties: Idared. Granny Smith, Golden and Red Delishes, and others. Pears – Viljamovka Julska ljepotica, Butira; Peach: Red Heaven, Plum: Čačanska rodna, Ljepotica i Rana, and Stenli. At the moment the cherry variety is Burlat.

The farm has a cold storage with a capacity of 5,000 tonnes, and a ULO storage of 4,000 tonnes. The farm also has all the necessary agricultural machinery and equipment for the organization of agricultural production. The introduction of GlobalGAP is ongoing through the project "integrated fruit production." All fruits are planted on a system of intensive farming.

Farm management

The farm is a member of the association. The farm is registered in the Ministry of Agriculture farm registry, and it is eligible to receive subsidies. It is in the VAT system (17 percent). The farm owner is the manager. From the currently 40 permanently employed persons, 7 persons are graduate engineers and technicians, and the rest is unskilled labour force. The farm is specialized in fruit production.

Investments

Investments to date were primarily focused on buying old fruit plantations and the necessary machinery (tractors), the reconstruction of cold storage, road infrastructure and land development (creating terraces and grubbing). It is estimated that for this given investment, the owner allocated about BAM 18 million, of which 70 percent of the investment was obtained from their own funds, and 30 percent from credit.

As a priority investment, construction of irrigation systems is imposed, with an estimated value of 1.5 million BAM, then the procurement of anti-hail nets for 120 ha of plantations, in Ivanjaska location, estimated at a value of BAM 3.5 million machines for sorting and packing, estimated at 1 million BAM, renewal of existing equipment (tractors, etc.) for 300,0000 BAM. In addition to investments in primary production, the owner intends to invest in facilities and equipment for the production of brandy. Estimated investment is EUR 200,000.

Planned investments will be financed from the cooperative's own funds and credit.

Market

Thanks to the existence of, or adaptation of cold storage, the fruits after the harvest are stored in listed buildings, awaiting a favourable price for sales on the market. The fruits are packed in wooden crates and cardboard boxes, depending on the demands of customers and markets. Given the planned investment in the purchase of machinery for sorting and packing, this process is currently performed manually.

For their produce, the farm market is both within Bosnia and Herzegovina and in the region. Approximately 30–40 percent of total production is completely sold on the foreign market, and the rest on the Bosnia and Herzegovina market.

Different sales channels are used for marketing of products. When product is sold on the domestic market, the producer sells goods to both retail and wholesale. The main centres of the placement region are Banja Luka, Sarajevo, Tuzla and Zenica. All goods are paid in advance regardless of whether they are sold to a domestic or foreign buyer. Third class goods are sold to the processing industry in the Republic of Srpska. The producer has the best experience when it comes to the domestic processing industry with "Sava" from Bijeljina.

When it comes to export arrangements, goods are sold in the Russian Federation, Serbia and Croatia. In addition to sales of industrial goods to domestic processors, the producer exports pears to "Takovo" company in Serbia. Consumer goods are sold wholesale in Croatia in Zagreb and Pula. Significant customers are the firms from the Russian Federation market. Sales of goods to the Russian Federation is performed by cold storage Gradiska and all goods are paid 100 percent in advance. The producer does not have long-term contracts and mostly it is agreement on sale of goods.

Given that the orchards are young, the producer expects, when the orchards are in full fruiting, that he will be able to enter into contracts with buyers because he will have continuity in the delivery of goods.

Production and marketing

Production of fruit production is conventional. The structure of fruit and fruit varieties is quite heterogeneous. Production is located at two sites in Rijecani and Ivanjska. There are 7 types of fruits, stone fruits and apples, a dominant culture are apples, pears and peaches.

The farm is in the process of introducing GlobalGAP standards, through the project with the help of integrated production of the fruit associations, and making it compliant with GAP. The producer plans to build facilities for the production of brandy and introduce HACCP and ISO standards.

Economic performances

	Apple		Pear		Peach		Plum		Cherry	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Area (ha)	100	125	60	80	20	20	10	10	5	5
Size of production	1,000	1.600	300	500	250	250	150	200	15	40
Value of production	400,000	960,000	240,000	400,000	225,000	225,000	60,000	100,000	30,000	100,000
Value of production /ha	4,000	7.,680	4,000	5,000	11,250	11,250	6,000	10,000	6,000	20,000
Subsidies	30,000	96,000	9,000	30,000	7,500	15,000	4,500	12,000	450	2,400
Total value	430,000	1.056,000	249,000	430,000	232,500	240,000	64,500	112,000	30,450	102,400
Variable costs	350,000	625,000	210,000	360,000	90,000	90,000	40,000	40,000	20,000	20,000
GVA	80,000	431,000	39,000	70,000	142,500	150,000	24,500	72,000	10,450	82,400

Success Factors

The producer points out favourable agro-climate conditions as a key success factor; because there is no problem with frost. As success factors he also emphasizes access to private capital, and the fact that they first entered the process of privatization of former state agricultural enterprises and the establishment of highly intensive production, with the use of new technologies in fruit production, which results in the production of high quality fruits, then good practice after the harvest and constant communication and cooperation with experts from the domain of horticulture, both domestic and foreign. However, what can be a major problem in the long run is still a lack of long-term contracts of sale of products, especially if one bears in mind the significant investment in the entire production.

Lessons learned for the proposal of policy measures:

- Increased government support in the development of fruit production
- Running additional training for graduate engineers in agriculture (support of organizing non-formal education for working engineers)
- Stimulate young engineers to be employed in the economy

Case Study reference number: Republika Srpska –11

Type of producers: Commercial farm

Human Resources: 1 (female) family member and two employees in the seasonal economic activity: production of vegetables indoors

Other activities: Production and sale of flowers, vegetables, nursery production

Total value of vegetables production: 2009: 17,675 BAM 2010: 9,680 BAM

Total output value of flowers: 60,000 BAM

Total value of nursery production: 24,000 BAM

Background of the agricultural farm

The farm, since the beginning of operation, was primarily focused on the production of vegetables in the open air or indoors. Vegetable production dates from 1993 and was concentrated in Prnjavor municipality where the farm was registered, with a total area under vegetables of 1,500 m^2. In 2010, the farm owners moved to the area of Banja Luka region, where they continue to deal with greenhouse production of vegetables and flowers, on a surface are of 700 m^2.

Current situation[48]

Currently the farm has 700 m^2 of covered space. Two greenhouses, covering an area of 200 m^2 are used for production of vegetables (peppers, tomatoes, onions, spinach and lettuce), to a total value of 4,000 BAM, and a greenhouse of 300 m^2 for the production of flowers. Greenhouses, suitable for vegetable production are standard, with no side holes with a metal frame, unlike the greenhouses, intended for the flowers, which have side vents. The farm, in its production programme, is engaged in the production of seedlings, which are placed on the market. During the season, two workers are hired in the spring for a period of 1 month for nurseries of vegetables and flowers. Only one member (female) of the farm is involved in vegetable and flower production. The farm, before and after the change of residence, retains the existing system of production of vegetables, i.e. vegetable production is organic, but not officially certified, except for cabbage production, for which the farm (at the previous location) received the certificate of completed training in IP in 2005.

Farm management

The farm is not a member of any association or cooperative. The previous farm was registered in the Farm Registry in the Ministry of Agriculture and was eligible for subsidies. By moving the production and place of residence, the farm is not registered yet. The reason for that is a land ownership issue, where the farm intends to establish new and expand the existing production of vegetables. It is not included in the VAT system. The farm owner is the manager, but the female family member is responsible for organizing the entire production.

Investment

The farm purchased 1.2 ha of land with credit funds in the previous period, and the land was intended for existing greenhouses (3) and establishing new ones. The credit amounted to BAM 20,000 for a period of 3 years. The farm is obliged to repay 700 BAM per month. The loan was taken from microcredit organizations. Also, a moto-cultivator and machines were provided in the previous period. It is planned to invest in:

(1) The purchase of irrigation systems

(2) To obtain certificates for standardization of production

(3) Establishing new greenhouses on the purchased land

(4) Installation of heating systems in the newly built greenhouses

Planned investments will be partly financed from its own funds and partly from borrowed funds.

Market

The major market for product placement is still an area of Prnjavor municipality. The selling point for the vegetables and fruits is the local market, where the producer hires a stand (2m stand, rent is 120 BAM month

[48] Note: description of current situation will be related to the period before and after the movement of the farm from Prnjavor to Banja Luka.

+ 4 BAM place/day). The packaging of products for sale is in crates and nets, specifically peppers are packed in mesh bags of various weights or cardboard boxes. For packing lettuce, spinach and onions, cardboard boxes are also used, and for packing of tomatoes, wooden boxes are used – hollandaise quantities of 10 kg. Picking of tomatoes is done with a shank, which is widely recognizable and very attractive to customers. Generally, methods of packing vegetables and fruits are arranged by the producer. Retail prices for individual products ranged as follows: Pepper 1.5 BAM/kg (2009), 1.2 BAM/kg (2010); tomatoes 1 BAM/kg in 2009 and 2010; onions from 3.5 to 4 BAM/kg in 2009 and 2010; spinach 2.5 BAM/kg in 2009 and 3 km/kg in 2010 and salad 1.5 BAM/kg for the period 2009–2010.

Production and marketing standards

Production of vegetable is under cover and organic. Farm is not certified for the production of vegetables. The main vegetable crops are: peppers, tomatoes, onions, spinach and lettuce. Due to the lack of application of pesticides, the farm achieved a 30 percent lower yield in vegetables, which are compensated through slightly higher selling price substantially. In exchange for fertilizers, the farm uses organic fertilizer, produced by the Californian earthworm (existing landfill for plant waste, which processes Californian earthworms, produces humus, which in turn is used for fertilization in greenhouses production).

Economic performances of production

Economic performances of production for vegetables:

	Onion		Spinach		Lettuce		Paprika		Tomato	
	2009	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**	**2009**	**2010**
Area m^2	200	350	500	200	500	250	1.300[49]	500	250	350
Size of production (kg)	400	650	700	300	1.200	600	5.200	2.900	2.300	1.500
Value of production	1.400	2.600	1.750	900	1.800	1.200	7.800	3.480	2.300	1.500
Subsidies[50]	300		750		750		450		375	
Total value	1.700	2.600	2.500	900	2.550	1.200	8.250	3.480	2.675	1.500
Variable costs	600	350	600	300	800	800	2,000	600	1.200	800
GVA	1.100	2.250	1.900	600	1.750	400	7.450	2.880	1.475	700

Besides the production of vegetables, an extra source of income of the farm is production and sale of flowers, and seedlings of vegetables (peppers, tomatoes and lettuce). On an annual basis, the farm produces about 50,000 seasonal flowerpots, which are sold at 0.50 to 1.50 BAM/flowerpots,15,000 flowerpots sold at 0.50 BAM and 35,000 flowerpots at 1.50 BAM. Therefore the total annual income from the sale of flowers is 60,000 BAM. In addition, the farm sells nursery peppers, tomato and lettuce. On an annual basis, the farm produces a total of 2,000 flowerpots of picked seedlings of peppers and tomatoes. Planted tomatoes are sold between 0.50–1.00 BAM/potted, which means that the income from sales of tomato is 500–1,000 BAM/year. Flowerpots of planted peppers (1,000 units) are sold for 3.00 BAM/piece, which means that the annual income is 3,000 BAM. Annual production of non-picked/potted lettuce seedlings is 2,000 containers (seed containers of 100 plants/ container). Non-picked/potted salad is sold at 10 BAM/container, which amounts to 20,000 BAM.

Success factors

The key success factors are the tradition and quality, guaranteed sale of the product (tested and known customers).

Lessons learned for the proposal of policy measures:

- Support the organization of training programmes in the production of vegetables and flowers, especially preparations of producers for appearance on the market (marketing activities), introduction of standards in the production of vegetables and flowers.
- Support the establishment of specialized associations and cooperatives for the production of vegetables and flowers, which would significantly affect the increase of competitiveness of product placement and organization of markets, etc.

[49] Note: Paprika in 2009 were produced in open air (1,000 m^2) and in greenhouse (300 m^2).

[50] Note: Subsidies received from the municipality in 2009, were 1,5 KM/m^2.

Please address comments and inquiries to:

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