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The Cereals Sector in Bosnia and Herzegovina

Preparation of IPARD Sector Analyses in
Bosnia and Herzegovina

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Sektor žitarica u Bosni i Hercegovini

Izvršni sažetak

Analiza sektora proizvodnje žitarica čini jednu od pet studija sektora u 2011. godini i predstavlja osnovu za razvoj Pred-pristupnog instrumenta EU-e za ruralni razvoj (IPARD).

Glavni cilj izvještaja je da da sveobuhvatnu analizu stanja u zemljoradničkom sektoru u BiH, fokus izvještaja je sektor žitarica sa naglaskom na dvije osnovne žitarice : pšenicu i kukuruz, ali je takođe obraćena pažnja na : ječam, raž i zob. Prema tome, ovaj izvještaj doprinosi analizi unutrašnjih jakih i slabih strana kao i vanjskih mogućnosti i prijetnji za ovaj sektor. U svjetlu potreba o problema u sektoru i predstojećih izazova, procijenjene su potrebe ulaganja i formulisane prepuruke u smislu politika. Na ovaj način izvještaj doprinosi formulaciji jednog broja mogućih intervencija u odnosu na politiku u sektoru poljoprivrede i ruralnog razvoja u skladu s potrebama razvoja ovog sektora.

Metodologija

Ova studija daje pregled proizvodnje i prerade žitarica u BiH. Analiza je bazirana na sljedećim aktivnostima:

Istraživanje i statistika

Proučavanje pisanih materijala

Studija je počela pregledom postojećih izvještaja o poljoprivrednom sektoru u BiH uz poseban osvrt na uzgoj žitarica. Vidi poglavlje o korištenoj literaturi i web stranicama.

Statistika

Ova studija se velikim dijelom oslanja na ustanovljene podatke, zbog čega je glavni izvor bilo Ministarstvo vanjske trgovine i ekonomskih odnosa, Sektor poljoprivrede, prehrane, šumarstva i ruralnog razvoja (MoFTER/ SAFFRD), Ministarstvo poljoprivrede, vodoprivrede i šumarstva FBiH, Ministarstvo poljoprivrede, šumarstva i vodoprivrede RS, Odjel za poljoprivredu, vodoprivredu, šumarstvo i veterinarstvo

Distrikta Brčko, Poljoprivredni fakultet u Banjoj Luci i Sarajevu, Agencija za statistiku BiH i drugi.

Nedostatak detaljnih informacija o izvedbi bio je i još je uvijek ozbiljna prepreka za efektivan razvoj i provedbu politike sektora uzgoja žitarica.

Ankete

Učešće u terenskim anketama o mesu i mliječnim proizvodima dalo je korisne rezultate, jer mnogi poljoprivrednici koji uzgajaju žitarice rade to da bi hranili svoje životinje. Ti poljoprivrednici žele da im uzgoj životinja bude unosan, i oni mogu indirektno dati uvid u proizvodnju žitarica.

Utvrđen je konzistentan nedostatak pouzdanih informacija, naročito o tehničkom i finansijskom aspektu rada poljoprivrednika. Studija se bavila ovim nedostatkom kroz manje terenske ankete. Ukupno je ispitano preko 130 poljoprivrednih dobara sa oko 2.500 ha obradive zemlje i pašnjaka, a rezultati su integrisani u studiju o ovom sektoru; svrha je takođe bila da se dobije realna slika zemljoradničkog sektora – pored postojećih statističkih podataka i službenih izvještaja. Nadalje, korištene su procjene eksperata gdje god je to bilo potrebno.

Analiza slučaja

Poljoprivredni fakulteti u Banjoj Luci i Sarajevu uradili su analizu nekoliko pažljivo odabranih slučajeva; analize slučaja su uključile detaljan opis karakteristika proizvoda (nivo tehnologije, oprema, umijeće, standardi kvaliteta, smetnje i slabe strane u lancu vrijednosti) različitih proizvođača (naturalnih proizvođača, holdinga i velikih korporacija) i prerađivača (malih i velikih) uz poštivanje standarda EU.

Konsultacije sa ključnim akterima

Obavljeni su razgovori sa ključnim akterima, a to su između ostalih sljedeće institucije:

- Ministarstvo vanjske trgovine i ekonomskih odnosa, Sektor poljoprivrede, prehrane, šumarstva i ruralnog razvoja,

- Ministarstvo poljoprivrede, vodoprivrede i šumarstva FBiH
- Ministarstvo poljoprivrede, šumarstva i vodoprivrede RS,
- Odjel za poljoprivredu, vodoprivredu, šumarstvo i veterinarstvo Distrikta Brčko
- Poljoprivredni fakultet u Banjoj Luci
- Poljoprivredni fakultet u Sarajevu
- Agencija za statistiku BiH
- Poljoprivredni institut u Banjoj Luci
- Federalni zavod, propagandni materijal za sjeme i bilje /eng. *Federal Institute Seed and Plant Propagation Material*/
- Ostali

Vrijedno je pomena da su na samom početku dogovoreni sastanci sa zvaničnim kontakt osobama u dva entitetska ministarstva u Banjoj Luci i Sarajevu i Odjelu za poljoprivredu, vodoprivredu, šumarstvo i veterinarstvo Distrikta Brčko da bi se saznalo više o ekonomskoj situaciji poljoprivrednika i prerađivača. Takođe je dat uvid u političku situaciju u BiH koja je prilično kompleksna.

Radionice

Značajan naglasak je stavljen na pribavljanje mišljenja velikog broja aktera. Stoga, organizovane su četiri radionice u Banjoj Luci i Sarajevu, neposredni sastanci sa institucijama, proizvođačima i prerađivačima. Tim studije se sastao sa ukupno 100 poljoprivrednika, prerađivača, institucija i drugim akterima. Prve dvije SWOT (Snage, Slabosti, Mogućnosti i Prijetnje) radionice organizovane su u Banjoj Luci i Sarajevu u junu 2011. godine, gdje se diskutovalo o širim javnim i drugim aspektima ratarskog sektora. Drugi krug radionica održan je na istim lokacijama u oktobru 2011. godine, a cilj je bio da se predoče zaključci analiza sektora i preliminarne preporuke za moguće intervencije u pogledu politike, a istovremeno da se od aktera dobiju pouzdane povratne informacije o tim zaključcima i preporukama; smatralo se veoma bitnim da akteri dobiju priliku da daju svoje komentare, a to su uveliko i radili; na primjer, eliminacijom sufinansijske pomoći za obnovljivu energiju kao što je biogorivo i biogas.

Druge provedene aktivnosti

Terenske posjete odabranim lokacijama na kojima će provedene mjere imati veliki uticaj

U septembru 2011. godine obavljena je terenska posjeta najvažnijim područjima u BiH, od Banja Luke do Brčkog i Bijeljine.

Kontakti sa drugim donatorima i NVO-a da bi se saznalo više („naučene lekcije”)

- USAID & SIDA; Projekat unapređenja poljoprivrednih tržišta (FARMA), g. Bruce BROWER, CoP
- UGRIZ, Udruženja gradana za razvoj ruralne informatičke zajednice u BiH
- AgrIng.ba, g. Besim Tabaković, dipl.ing.

Generalni nalazi za razvoj sektora žitarica

Proizvođači žitarica

Proizvođači žitarica u Bosni i Hercegovini su poljoprivrednici, to su generalno mali poljoprivrednici i donekle poljoprivredne zadruge ili preduzeća.

Mala poljoprivredna dobra – uz izuzetak intenzivne proizvodnje povrća i voća – su uvijek miješana poljoprivredna dobra jer površina u akrima ne dozvoljava dovoljan profit i prema tome, zemljoradnici su primorani na uzgoj stoke da bi povećali vrijednost svojih proizvoda. Mnoga od ovih poljoprivrednih dobara služe samo u prirodne i poluprirodne svrhe, a na kraju višak proizvodnje šalju na tržište. Prema tome, oni često ne uzgajaju kukuruz i pšenicu za tržište, nego za krmu za stoku kao i za ljudsku ishranu. Na primjer, od 70.000 poljoprivrednih dobara u RS-oj, 70% (= 49.000) je uključeno u proizvodnju žitarica, a njih 30% (= oko 15.000) proizvodi za tržište; ovo obuhvata do 20% svih poljoprivrednih dobara.

Struktura proizvodnje

Anketa koja je urađena u okviru ove analize pokazuje da prosječni zemljoradnici uzgoje 2.88 ha ozime pšenice, 0.59 ha ječma, 0.64 ha triticales (što je hibrid pšenice (Triticum) i

raži (Secale), 4.03 ha kukuruza, 1.27 ha soje i 0.04 ha suncokreta. Zanimljiv je podatak da je triticale popularniji od pšenice. Konačno, samo 16 zemljoradnika proizvodi silažu kukuruza i oni imaju između 230 ha i 1 ha silaže, dok neki imaju između 230 i 15 ha, a druga grupa između 7 ha i 1 ha; ovo pokazuje da silaža kukuruza još uvijek nije rasprostranjena, dijelom zato što ne znaju kako, a dijelom zbog nedostatka teških traktora za kompresiju silosa, i organizovane radne snage da bi se izgradili lanci silosa; za to je potrebno nekoliko traktora i prikolica, jer kvalitet velikim dijelom zavisi od brzine prilikom silaže.

U Bosni i Hercegovini postoji nekoliko poljoprivrednih dobara koja se isključivo bave ratarstvom; glavni razlog bi mogao biti to da veći poljoprivrednici, koji mogu ostvariti efikasnu proizvodnju, su takođe bogatiji poljoprivrednici koji mogu priuštiti dodatna ulaganja u stočnu proizvodnju.

Glavni razlozi zašto poljoprivrednici uzgajaju pšenicu su

- da se omogući rotacija usjeva i stoga izbjegnemo monokulture kukuruza
- da se izbjegne gomilanje posla
- da se dobije slama za životinje i stajsko gnojivo
- da se dobije materijal za proizvodnju brašna; u prošlosti pšenica je davana mlinovima, a poljoprivrednici su primali odgovarajuću količinu brašna; u današnje vrijeme pšenica se obično prodaje mlinovima, a brašno se kupuje tamo; neki poljoprivrednici sami proizvode svoje brašno na poljoprivrednim dobrima
- da bi se smanjili troškovi jer se uzgoj kukuruza smatra unosnim i neophodnim, dok se pšenica uzgaja da bi se „nešto” žnjelo uz male troškove; ovo dobro odražava rasprostranjeno shvatanje „poljoprivrede malih ulaganja”

Glavni razlozi zašto poljoprivrednici uzgajaju kukuruz su

- da bi povećali profit poljoprivrednog dobra, jer je kukuruz daleko unosniji od pšenice

- da bi proizveli krmu za upotrebu na dobru; ovo je slučaj kod naturalnih poljoprivrednika sa ½ ha kukuruza kao i kod velikih poljoprivrednika; svi poljoprivrednici imaju životinje, mali ih imaju zato što je to dio njihove ishrane, a veliki zato što se tako mogu bolje nositi s fluktuacijama na tržištu bilo da prodaju žitarice ili da tove životinje tim žitaricama
- pošto je kukuruz veoma popularna biljka u svim nerazvijenim, brdovitim zemljama, jer se on može koristiti na poljoprivrednom dobru bez dalje prerade osim mljevenja za ljudsku ishranu i ishranu stoke
- mali zemljoposjednici beru kukuruz uglavnom ručno, dok se pšenica ne bere ručno

Poljoprivrednici drže stoku i tove više životinja kada su žitarice jeftine; ako su cijene pšenice i kukuruza na tržištu dobre, poljoprivrednici smanjuju broj životinja koje uzgajaju i prodaju više žitarica. Ove fluktuacije bi se mogle smanjiti povećanom nabavkom koncentrata stočne hrane čime bi se takođe mogla povećati produktivnost uzgoja stoke i rezultirati većim prihodima za poljoprivrednike.

Vrijednos proizvodnje

U BiH ukupna zasijana površina u 2009. godini bila je 528.028 ha, dok je površina zasijana žitaricama bila 311.538 ha ili oko 59%. Površina zasijana kukuruzom bila je 189.615 ha, odnosno 60,86% zasijane površine, a žetva je iznosila 965.552 t, što odgovara 5,09 t/ha. Površina u akrima zasijana pšenicom bila je 67.747 ha, što je jednako 21,75% zasijane površine a žetva je iznosila 255.899 t, što čini 3,78 t/ha.

U RS ukupna zasijana površina u 2009. godini bila je 323.000 ha, dok je površina zasijana žitaricama bila 215.892 ha ili 66.84%. Površina zasijana kukuruzom bila je 135.000 ha, odnosno 62,53% zasijane površine, a žetva je iznosila 696.000 t, što odgovara 5,16 t/ha. Površina u akrima zasijana pšenicom bila je 45.000 ha, što je jednako 20,84% zasijane površine, a žetva je iznosila 166.000 t, što čini 3,69 t/ha.

U FBiH ukupna zasijana površina u 2009. godini bila je 192.000 ha, dok je površina zasijana žitaricama bila 85.000 ha ili 44,27%. Površina zasijana kukuruzom bila je 48.685 ha, odnosno 57,28% zasijane površine, a žetva je iznosila 239.605 t, što odgovara 4,92 t/ha. Površina u akrima zasijana pšenicom bila je 19.011 ha, što je jednako 22,37% zasijane površine, a žetva je iznosila 74.992 t, što čini 3,94 t/ha.

Međutim, neki domaći stručnjaci tvrde da se u Federaciji pšenica uzgaja na jedva više od 10.000 hektara: „Zvanični podaci o proizvodnji pšenice, naročito u FBiH, su prilično nedosljedni i prema riječima generalnog direktora Žitozajednice (Alija ŠABANOVIĆ) and direktora Direkcije za robne reserve (Tončo BAVRKA) ne odražavaju stvarno stanje, jer je ukupni godišnji urod znatno manji. Naime, zvanični statistički podaci govore da je u 2009. godini u Federaciji BiH ubrano oko 75.000 tona pšenice sa ukupne površine od 19.000 ha. Prema riječima gore navedenih direktora, ukupna proizvodnja pšenice u FBiH kreće se između 5.000 i 10.000 tona maksimalno, a ovaj nivo proizvodnje potvrđuje količina uvezene pšenice, s jedne strane, i kupovina pšenice iz domaćeg uzgoja – koja u FBiH ne premašuje 5.000 tona (dok u Republici Srpskoj kupljene količine se kreću između 30.000 i 40.000 tona) sa druge strane. Pored toga, informacije o podsticajima za proizvodnju pšenice u Federaciji BiH za 2009. godinu dokazuju da su proizvedene količine mnogo manje od zvaničnih. Budući da je ukupni podsticaj dodijeljen Federaciji BiH u 2009. godini iznosio 1,73 miliona KM, a podsticaj po kilogramu je bio 0,12 KM, može se zaključiti da je ukupna podržana proizvodnja iznosila 14.400 tona. Na osnovu ove informacije i pretpostavke da skoro 90% proizvođača imaju pravo na takve podsticaje, može se reći da je ukupna proizvodnja u Federaciji BiH u 2009. godini iznosila oko 16.000 tona ubranih sa ukupne površine od 4.000 ha.”

U Distriktu Brčko ukupna zasijana površina u 2009. godini bila je 13.028 ha, dok su žitarice

zasijane na 10.646 ha ili 81,72%. Površina zasijana kukuruzom bila je 5.930 ha, što je jednako 55,70% zasijane površine, a žetva je iznosila 29.947 t, što odgovara 5,05 t/ha. Površina u akrima zasijana pšenicom bila je 3.736 ha, što je jednako 35,09% zasijane površine, a žetva je iznosila 14.907 t, što čini 3,99 t/ha.

Prema statističkim podacima u RS i FBiH, osim žitarica takođe su zastupljeni usjevi stočne hrane a ovdje i zeleni kukuruz za krmu; površina zelenog kukuruza u RS bila je 4.453 ha, a u FBiH 16.717 ha, proizvodnja 128.848 t, odnosno 340.081 t, a prosječan urod po hektaru bio je 28,34 t odnosno 20,34 t. Podaci za Distrikt Brčko nisu dostupni.

Sve gore navedene cifre su zasnovane na statističkim godišnjacima; međutim jedan privatni prodavač sjemena je rekao da je 90% kukuruza i 70% pšenice zasijano na sjeveru Bosne i Hercegovine, uz rijeku Savu, jer je ostatak Bosne brdovit i nepogodan za uzgoj žitarica; nadalje, prema njegovoj procjeni, površina u akrima zasijana kukuruzom je 120.000 ha, a pšenicom 50.000 ha. Jedan drugi prodavač sjemena je napomenuo da je površina pod kukuruzom oko 150.000 ha, a pod pšenicom 60.000 ha. Ovo bi bilo znatno manje od ukupnih cifara u Bosni i Hercegovini; odnosno 257.362 ha za pšenicu i kukuruz bez usjeva stočne hrane.

Procjene prodavača sjemena su možda realnije po pitanju hibridnog kukuruza, jer ova sjemena moraju kupovati poljoprivrednici, dok poljoprivrednici mogu i često koriste pšenicu koja se čuva na poljoprivrednom dobru za sisanje, jer biološki nije potrebno kupovati sertifikirana sjemena.

Prilikom posjeta terenu, u cijeloj zemlji se mogu vidjeti male parcele (manje od 1 ha) zasijane kukuruzom; manji zemljoradnici često ručno obrađuju ove male površine. Klimatski uslovi za uzgoj pšenice i kukuruza su različiti; dok kukuruzu odgovaraju suha i topla ljeta, pšenici ne odgovara suviše suha klima, jer suha klima tokom cvjetanja znatno smanjuje urod. Prema tome, 90% kukuruza

je zasijano u sjevernoistočnom dijelu Bosne i Hercegovine, dok je 30% pšenice pronađeno u drugim dijelovima osim sjevernoistočnog dijela, na primjer, oko Odžaka, Orašja, Bihaća, Cazina, Livna i jugoistočnog Mostara.

Uopšteno govoreći, teško je dobiti tačne podatke jer su precizni podaci dostupni samo ako se poljoprivrednici prijavljuju za subvencije; ali mnogi poljoprivrednici su suviše mali ili se plaše procedura registracije, tako da nisu svi poljoprivrednici koji uzgajaju pšenicu registrovani i to umanjuje dostupnost tačnih podataka.

Zaključak o proizvodnji je da je površina pod kukuruzom negdje ispod 189.615 ha, jer stručnjaci vjeruju da je to vjerovatnije između 120.000 i 150.000 ha. Po pitanju pšenice, stručnjaci misle da bi proizvodnja mogla biti 50.000 ha umjesto zvanično prijavljenih 67.747 ha.

Profitabilnost pšenice i kukuruza

Upitnici sa farmi i studije slučaja koje su provedene kao dio analize ovog sektora pokazuju da proizvodnja pšenice u prosjeku za 2011 godinu ima prinos od 578 KM po hektaru uključujući poticaje, dok kukuruz u prosjeku daje 944 KM po hektaru. Više je ekonomski isplativo za farmere da uzgajaju kukuruz nego pšenicu, ovo takođe pokazuje važnost kukuruza u BiH u odnosu na pšenicu i druge žitarice. Ovi rezultati su u skladu sa procjenom pilot projekta Farm Accountancy Data Network (FADN) , koje su takođe indicirale da profitabilnost ječma, raži i zobi je niža nego profitabilnost kukuruza.

Central European Free Trade Agreement (CEFTA) i EU

Članstvo u CEFTA-i (od 2007.) je u suštini integrisalo sve prethodne bilateralne i multilateralne sporazume o slobodnoj trgovini koji su tada bili na snazi, a koje su potpisale sve zemlje regiona. Ovo članstvo je pružilo BiH važne trgovinske povlastice i disciplinu (uključujući liberalizaciju trgovine, smanjenje izvoznih subvencija, smanjenje ili ukidanje tarifa ili drugih trgovinskih

prepreka za domaće proizvode, primjenu međunarodno usaglašenih pravila vezanih za veterinu, propisa o zdravlju bilja vezano za međunarodnu trgovinu hranom i poljoprivrednom robom itd.). Sve ovo je u skladu sa trgovinskim sporazumima sa EU koji su bitan dio EU/BiH Sporazuma o stabilizaciji i pridruživanju. CEFTA je u potpunosti u skladu sa obavezama i prednostima koje BiH ima zbog članstva u WTO za koji se i prijavila.

Što se tiče odnosa sa EU, isti se mogu podijeliti na dva odvojena perioda. Prvi period je trajao od 2000. do 2007. godine kada je BiH uživala povlašten tretman u vezi sa izvozom poljoprivrednih proizvoda na EU tržište. To je značilo da je svake godine EU izdavala posebne uredbe u kojim je identifikovala tipove, količinu i vrijednost robe koja je imala prednost za uvoz iz BiH. Jedini uslov je bio da BiH obezbijedi odgovarajući dokaz kvalitete i sigurnosti proizvoda. Nažalost, BiH proizvođači nisu mogli zadovoljiti ove standarde tako da je veći dio izvozne kvote koju je utvrdila EU ostala neiskorištena.

Drugi period je počeo 2007. godine kada je BiH potpisala Sporazum o stabilizaciji i pridruživanju sa EU. Ovaj Sporazum (u dijelu o trgovini) institucionalizuje pravila trgovanja između BiH i EU; međutim, isti još nije ratifikovala EU zbog predmeta Sejdić/Finci. BiH je dobila priliku da izvozi većinu poljoprivrednih proizvoda na EU tržište bez ikakvih carinskih dažbina ili drugih pristojbi. Za određeni (manji) broj proizvoda EU je rezervisala nivo zaštite putem carinskih dažbina i drugih kvota. S druge strane, BiH se obavezala da će postepeno ukinuti carine i druge pristojbe na poljoprivredne proizvode koje dolaze iz EU. Za neke proizvode pristojbe su odmah ukinute dok je za druge ovaj proces podijeljen na faze, te će BiH do 2013. godine u potpunosti liberalizovati trgovinsko partnerstvo sa EU.

Priroda drugih promjena carinskih tarifa je bila viša u smislu harmonizacije sa obavezama koje proizilaze iz usvojenih međunarodnih propisa i sporazuma, koje iz tog razloga nemaju značajan uticaj na zaštitu lokalne

proizvodnje. Veliki spoljnotrgovinski deficit BiH vezan za poljoprivredne i prehrambene proizvode jasno govori da spoljnotrgovinska politika nije pravilno iskorištena.

INDUSTRIJA PRERADE

Ovo poglavlje se isključivo bavi malim i srednjim preduzećima za preradu koja imaju manje od 750 uposlenika ili obrt manji od 200 miliona eura, jednostavno zato što nema takvih preduzeća– uz izuzetak grupe MIMS (vidi ispod).

Industrija primarne prerade

U vrijeme Jugoslavije bilo je 18 velikih državnih mlinova za brašno (usmjereni na pšenicu) i mlinova za stočnu hranu (usmjereni na kukuruz) u Bosni i Hercegovini koji su bili jednako korišteni na cijeloj teritoriji i relativno moderno opremljeni jer su korištene tehnologije zapadne Evrope. Danas, najveći dobavljači mašina i opreme za mljevenje u BiH i druge zemlje bivše Jugoslavije su Švicarska, Italija i Češka (Buhler, GBS, Prokop, Ocrim i drugi). Tokom posljednjih nekoliko godina, turski proizvođači su takođe igrali važnu ulogu u dobavljanju mašina za mljevenje. Izgledi za ulazak u tržište EU navelo je proizvođače brašna da uvedu nove proizvodne tehnike za proizvodnju hidro-termalno prerađenog brašna, brzokuhajuće prekrupe i stabilizovanih pšeničnih klica, kao i da poboljšaju kvalitet domaćeg brašna.

U Jugoslaviji, ukupni kapaciteti za skladištenje i preradu bili su oko 455.000 tona pšenice. Broj velikih mlinova se smanjio. Nakon 1995. godine, ukupan broj mlinova se povećao zbog mnogo novoizgrađenih malih privatnih mlinova, tako da ima ukupno 80 mlinova u BiH. Mnogi mlinovi su namijenjeni za proizvodnju brašna, a otpaci i nusproizvodi se koriste za ishranu životinja; samo 20 mlinova je isključivo namijenjeno za proizvodnju krme.

Kapaciteti i stvarna izvedba

Trenutno ukupni kapaciteti se procjenjuju na 650.000 tona godišnje. Pošto je svjetski prosjek upotrebe pšenice po glavi 135 kg u razvijenim zemljama, Bosni i Hercegovini bi

trebalo 513.000.000 tona godišnje za njenih 3,8 miliona stanovnika.

Prema podacima iz Federalnog Ministarstva poljoprivrede, proizvodnja hrane u nekim sektorima je mnogo veća nego što je to prijavljeno. Detaljna analiza materijala je pokazala da proizvođači nerado dostavljaju podatke koji prikazuju stvarnu proizvodnju. Prema procjenama, stvarna proizvodnja mliječnih proizvoda, proizvoda od brašna i drugih je veća nego što je to prijavljeno.

Veoma često postojeći kapaciteti nemaju mnogo zajedničkog sa stvarnom izvedbom, naročito kada su mlinovi u državnom vlasništvu ili su bili u državnom vlasništvu; na primjer, tokom 2005. godine iskorišteno je manje od jedne trećine ukupnih kapaciteta mlinova u FBiH. Do sada je najznačajniji mlin KLAS, koji preradi 400 t po radnom danu. Ovaj mlin zaista radi punim kapacitetom. On godišnje da oko 120.000 tona i pokriva oko 20% od ukupnih tržišnih potreba BiH. KLAS zapravo ne namjerava da poveća proizvodnju, a tehnologija koju koristi datira iz 2003. godine; KLAS je dio jedine jake kompanije u Bosni i Hercegovini, grupe MIMS, koja je danas jedna od najvećih privatnih kompanija u BiH, koja zapošljava preko 5.000 ljudi. Grupa MIMS je osnovana prije oko 10 godina kao kompanija za proizvodnju hrane, građevinskog materijala i kućanskih aparata na veliko. Danas ona ima mnogo kompanija članica kao što je Merkur (prodaja na malo), KLAS i Sprind (mlin i pekara, a u 2009. godini svaka je ostvarila promet od oko 57 miliona eura), pivare Sarajevo i Tuzla, i Vegafruit.

Industrija sekundarne prerade

Industrija sekundarne prerade uključuje industriju pečenja hljeba i pivare.

Pekarska industrija u RS ima oko 36 registrovanih preduzeća. Kapaciteti za skladištenje i mljevenje zrna kreću se do 50.000 tona. Kvalitet tehnoloških mogućnosti mlinova i skladišta znatno variraju. Nekadašnja velika državna preduzeća i sadašnje dioničke kompanije imaju savremenu opremu za razliku od privatnih malih mlinova sa jednostavnijom

tehnologijom i veoma upitnom proizvodnjom. Na osnovu podataka Zavoda za statistiku Republike Srpske, tokom poslednjih 15 godina zabilježeno je da uvoz pšenice čini 80% a domaća pšenica 20% ukupno prerađene pšenice. Pored ovoga, postoje podaci o vanjskoj trgovini, na osnovu kojih se može zaključiti da najviše vanjske trgovine ide na uvoz pšenice. Značajni ekonomski subjekti bave se proizvodnjom životinjske hrane, sa relativno stabilnom proizvodnjom od 25.000 tona godišnje.

Vodeće pivare su Bihaćka pivovara u Bihaću, Sarajevska pivara u Sarajevu i Pivara Tuzla u Tuzli, sve se nalaze u FBiH, kao i Banjalučka pivara u Banjoj Luci u RS.

U pivarskoj industriji kukuruz se nekad koristi kao djelimična zamjena za ječmeni slad, jer je kukuruz jeftiniji od slada i ne kvari ukus. Međutim, to pivu daje svjetliju boju. Kukuruz se može dodavati pivu u obliku brašna, zrnaca ili pahuljica. Postoji mnogo različitih razloga za korištenje kukuruza: cijena, dostupnost i uticaj na konačni proizvod su glavni razlozi. U mnogim državama slad je dostupan u ograničenoj mjeri, i onda se zamjenjuje i to vjerovatno kukuruzom; u Evropi se uglavnom koriste zrna kukuruza, dok se u Aziji koristi riža.

Kvalitet proizvoda i zahtjevi za kvalitetom

Izvještaji i mišljenja partnera su obično podijeljena po pitanju kvaliteta žitarica domaće proizvodnje. Jedan je napomenuo da je kvalitet objektivno izjednačen, bez znatnih odstupanja iz godine u godinu, i da poljoprivrednici inače ispunjavaju potrebne standarde kvaliteta. Samo tokom izuzetno vlažnih godina ili sušnih godina, kvalitet i kvantitet nisu u skladu sa zahtjevima.

Drugi, naročito mlinari, kažu da kvalitet žitarica domaće proizvodnje ne odgovara zahtjevima tržišta. Naročito od 2002. godine kada je zabilježen nagli pad kvaliteta. Da bi pekarska industrija postigla potreban kvalitet, mlinovi u BiH moraju miješati pšenicu; omjer miješanja domaće i uvezene pšenice je 10 – 20% domaće sa 80 – 90% uvezene pšenice!

Nadalje, u prvom krugu radionica spomenuto je da su prerađivači često nailazili na žitarice pune fitokemikalija, očigledno zbog nedostatka inspekcija.

Svi mlinari koje smo posjetili rekli su da je kvalitet domaće pšenice suviše nizak, tako da oni moraju uvoziti pšenicu boljeg kvaliteta radi miješanja. Drugi su rekli da bi oni kupavali više domaće pšenice ako bi se na neki način podržao uvoz pšenice boljeg kvaliteta.

Međutim, nameće se i problem da kvalitet uvezenih žitarica varira iz godine u godinu, i od mlina do mlina. Ovaj problem je posljedica nedostatka odgovarajućih zakonskih propisa (i njihovo provođenje) u polju mlinarsko-pekarske industrije, ali i u odnosu na pekare i proizvođače tjestenine. U FBiH su usvojeni neki propisi u mlinarskoj industriji u odnosu na tehničko-tehnološku opremu i potrebu za osobljem da bi kompanija funkcionisala. Manji mlinovi i pekare koriste ovu situaciju i kupuju pšenicu i prerađuju je u brašno odmah, bez prethodne laboratorijske analize ili završnih priprema (pranje, odvajanje nepotrebnih tvari). Pekarski proizvodi sumnjivog kvaliteta koji se nude potrošačima u Bosni i Hercegovini su rezultat takve prakse.

POLITIKA VLADE za SEKTOR

Relevantne institucije koje upravljaju poljoprivredom i agroprerađivačkom industrijom u Bosni i Hercegovini su:

Ministarstvo vanjske trgovine i ekonomskih odnosa

S obzirom da BiH i dalje nema Ministarstvo poljoprivrede na državnom nivou, međunarodne obaveze vezane za poljoprivredu uglavnom provodi Ministarstvo vanjske trgovine i ekonomskih odnosa koji stoga ima Sektor za poljoprivredu, prehranu, šumarstvo i ruralni razvoj.

Uprava za zaštitu zdravlja bilja

Uprava za zaštitu zdravlja bilja je upravna organizacija unutar Ministarstva vanjske trgovine i ekonomskih odnosa osnovana je u maju 2005.godine. Već više godina

organizacija ima manjak uposlenika i nije postigla mnogo u sastavljanju sekundarne legislative i prilagođavanju iste sa međunarodnim standardima i standardima EU; BiH je potencijalna kandidatkinja za EU. BiH je odobrila Međunarodnu konvenciju o zaštiti bilja (IPPC) 2003. godine ali i dalje nije u mogućnosti da ispuni njene uslove. Evropska Unija pomaže Bosni i Hercegovini da prevaziđe neke od prepreka u cilju poboljšanja njenih nacionalnih fitosanitarnih usluga i da uskladi njenu politiku sa legislativom EU i međunarodnim obavezama i standardima vezanim za ovo područje. Projekat uključuje zdravlje bilja, proizvode za zaštitu bilja kao i sjemenje i biljne materijale. Između ostalog, pomoć je usmjerena ka sastavljanju, usvajanju i provođenju propisa EU, jačanje inspekcija i širenje laboratorijskih kapaciteta kao i podizanje svijesti odgovornih o boljim sistemima funkcioniranja.

Agencija za sigurnost hrane

Agencija za sigurnost hrane BiH osnovana je 2006. godine i predstavlja nezavisnu administrativnu organizaciju čije obaveze i zadaci su određeni Zakonom o sigurnosti hrane iz 2004. Agencija za sigurnost hrane je stacionirana u Mostaru i obavlja različite naučne aktivnosti (npr. sakuplja i analizira podatke o hrani i hrani za životinje), analizira rizike, dostavlja naučna stanovišta državi i provodi međunarodne konvencije i ugovore vezane za sigurnost stočne hrane. Agencija takođe pokreće, sastavlja i organizuje provođenje odredbi za hranu i stočnu hranu i u kontaktu je sa komisijom „Codex Alimentarius“. Dodatni zadaci su kontrola inspektora za sigurnost hrane na entitetskom nivou, prijedlog Vijeću ministara da zvanične laboratorije za sigurnost hrane postanu „priručne laboratorije“, nastanak registra poslovnih upravitelja, podizanje svijesti potrošača i drugi.

Entitetska ministarstva poljoprivrede i Odjel u Distriktu Brčko

Dok RS ima samo jedno Ministarstvo poljoprivrede koje upravlja entitetskom

politikom i subvencijama, FBiH ima ne samo jedno entitetsko Ministarstvo poljoprivrede, nego i 10 kantona sa svojim organima koji dijele nadležnosti sa entitetom. Izmijenjeni Zakon o novčanoj podršci poljoprivredi i ruralnom razvoju Federacije definiše vrste poticaja između kantona i Federacije. Ipak, s obzirom da nema strategije za ruralni razvoj, subvencije za proizvode imaju veću finansijsku pomoć nego mjere za ruralni razvoj.

Ne postoji jasna politika za subvencije s obzirom da su tu uključene područne premije, podrška za proizvode i doprinosi od gnojiva. Subvencije nisu u skladu sa politikom EU za poljoprivredu koja preferira područne premije. Budžet za poljoprivredu i ruralni razvoj je u entitetima i dalje nizak. Nedostatak efikasne administracije sputava poljoprivrednike i agroprerađivačku industriju u cijeloj zemlji. Takođe, s obzirom da ne postoji Ministarstvo poljoprivrede na državnom nivou, situacija je jako nepredvidiva i nepovoljna.

Politika trgovine

Izvoz poljoprivredno-prehrambenih proizvoda je iznosio 200 miliona eura tokom 2008. godine, a 70% izvoza je bilo u zemlje zapadnog Balkana. Izvoz poljoprivrednih proizvoda je premašio iznos od 1.3 milijarde eura tokom 2008. godine, čiji je rezultat bio veoma negativan neto trgovinski bilans poljoprivredno-prehrambenim proizvodima od više od 1 milijarde eura, što će reći da je BiH veliki neto uvoznik hrane. Uvozne dažbine za većinu prehrambenih proizvoda su približne nuli, a malo uvoznih dažbina koje su na snazi će se još više smanjiti u sklopu Sporazuma o stabilizaciji i pridruživanju i Centralnoevropskog ugovora o slobodnoj trgovini (CEFTA).

Prva zajednička aktivnost na nivou države vezana za spoljnotrgovinsku politiku (u odgovornosti Ministarstva vanjske trgovine i ekonomskih odnosa) je započeta 1998. godine kada su usvojene prve BiH carinske tarife i kada su usvojeni relevantni zakoni o spoljnoj politici. Ovaj zakon je obezbijedio carinsku zaštitu za poljoprivredne proizvode

putem četiri ad valorem carinske stope koje iznose 0%, 5%, 10% i 15%. Nekad kasnije, kao posljedica pritisaka, takse za neke poljoprivredne proizvode su dodate ad valorem pristojbama. Međutim, uloga taksi je izgubljena zbog transformacije istih u fiksne iznose kao rezultat međunarodnih pritisaka (WTO - Svjetske trgovinske organizacije i Evropske unije).

Bilans trgovine žitaricama

Tokom godina Bosna i Hercegovina nikad nije bila proizvodila dovoljno poljoprivrednih proizvoda za vlastite potrebe (sa izuzetkom šljiva). Velike količine poljoprivredno-prehrambenih proizvoda (npr. hrana, prehrambeni proizvodi, pića, primarna poljoprivredna roba i njene prerađevine) su se uvozili i još uvijek predstavljaju težak teret za trgovinsku bilansu. Tokom 2006. godine razlika između poljoprivrednog i prehrambenog uvoza i izvoza je iznosila oko 1.700 miliona KM, što je jednako 870 miliona eura.

Godine 2010. vrijednost izvoza poljoprivrednih proizvoda je dostigla 250 miliona eura dok je vrijednost uvoza poljoprivrednih proizvoda iznosila 1.485 miliona eura.

Oba proizvoda pokazuju da je došlo do smanjenja u količini, kukuruz je u 2010. dostigao tek 68% količine uvoza od prije 5 godina dok je pšenica dostigla tek 73%; međutim, troškovi uvezene pšenice se nisu smanjili!

Iznosi uvoza – izvoza jasno pokazuju da BiH ne može proizvesti dovoljno pšenice a donekle ni dovoljno kukuruza. Kako je prosječna potrošnja pšenice po glavi stanovnika 135 kg u razvijenim zemljama, Bosna i Hercegovina će trebati 623,992 tona godišnje za 4,622,163 stanovnika (procjene od jula 2011.).

Postoji nekoliko nejasnoća; prvo, nije sigurno da li svi stanovnici žive u Bosni i Hercegovini jer je vjerovatnije da većina radi u inostranstvu, iz kog razloga ne konzumiraju žitarice u svojoj zemlji. Zvanične cifre govore da se potroši 566.000 tona što bi odgovaralo broju od 4,2

miliona žitelja; drugo, Bosanci jedu više hljeba od ostalih naroda. I treće je da stručnjaci govore o značajnom „sivom“ uvozu što je možda i tačno, posebno ako pretpostavimo da su brojke domaće proizvodnje previsoke (kao što je prethodno objašnjeno).

Robne rezerve

Bosna i Hercegovina nema jasnu strategiju za rezerve žitarica. Nakon šokantne zabrane izvoza pšenice iz Srbije i Hrvatske 2008. godine, Vlada BiH vodi više računa o rezervama pšenice jer svake godina je velika potražnja za uvoz. Trenutno se vodi nekoliko rasprava o važnosti strateških rezervi i dobre „pšenice“. Nažalost, BiH ne razdvaja važnost trajnih rezervi koje se mogu koristiti u slučajevima nepogoda i važnost komercijalnih rezervi koje se mogu koristiti na tržištu.

Situacija je detaljno izanalizirana u nedavnoj studiji FAO koju je napisao A.CERNE: „Policy options and recommendations for food commodity reserve in BiH“ (Političke opcije i preporuke za robne rezerve hrane u BiH). Zaključak ove studije je da je svrha robnih rezervi da omogući osnovne prehrambene proizvode za stanovništvo u kriznim vremenima. Takođe, bitno je osigurati robne rezerve kroz partnerstvo između javnih i privatnih sfera jer nije prihvatljivo da nacionalne robne rezerve imaju ulogu najvećeg trgovca u zemlji. I na kraju, stvaranje i održavanje robnih rezervi ne bi trebalo da utiče na trenutne zalihe na tržištu da ne bi narušile funkcionisanje tržišta.

Nažalost, ono što se ustvari dešava jeste da vlada manipuliše tržišnom cijenom, a s druge strane ne obezbjeđuje dovoljno sredstava u budžetu da kupi velike količine pšenice za rezervu; entitetski budžeti su zapravo između 2 i 4 miliona KM godišnje. Da bi se održale rezerve od 50.000 tona, vlasti bi trebale obezbijediti oko 10 miliona eura.

Bitno je spomenuti i da EU ne traži da država ima robne rezerve ali to traži NATO. EU učestvuje na tržištu tako što određuje minimalnu cijenu, tj. cijenu posredovanja za pšenicu koja je zapravo 101,31 eura po toni.

Minimalna cijena u BiH je dva puta veća nego ta cijena koja će biti obavezna kada BiH pristupi EU.

Usklađenost sa EU standardima

U kontekstu pritiska da se integrišu zahtjevi i standardi EU u poljoprivredi, politički instrument „međusobne usaglašenosti“ se sve više koristi kako bi se poboljšali okolišni uticaji poljoprivrednog upravljanja. Međusobno usaglašavanje u okviru Zajedničke poljoprivredne politike (CAP) uspostavlja okolišne i druge standarde koje poljoprivrednici moraju ispoštovati kako bi primili subvencije. Sve zemlje članice EU uspostavljaju poljoprivredne standarde u vezi sa 18 EU propisa i direktiva, definisanim Dobrim poljoprivrednim i okolišnim uslovima (GAEC) i usklađenost sa tim standardima na poljoprivrednim dobrima po primitku CAP subvencija.

Kao potencijalni kandidat Bosna i Hercegovina će morati usvoji tih 18 propisa i direktiva EU. Sljedeći paragrafi se bave propisima i direktivama koje će biti od važnosti za biljnu proizvodnju.

BiH pokušava da harmonizuje fitosanitarne usluge i politiku sa EU zakonima, međunarodnim obavezama i standardima u tom području; to uključuje zdravlje biljaka, proizvoda za zaštitu biljaka i sjemena i biljnog materijala. Poseban naglasak je na izradi nacrtu, usvajanju i sprovođenju pravila usklađenih sa EU standardima, jačanjem inspekcijskih usluga i kapaciteta laboratorija, podizanje svijesti rukovodilaca o radu poboljšanog sistema. Čak je i EU istakla u zadnjem izvještaju da je postignut određeni napredak u fitosanitarnom sektoru poput usvajanja zakona vezanih za osnivanje fitosanitarnog registra i biljnih pasoša, mjera za kontrolu štetnih orgnizama u biljkama, biljnim proizvodima u određenim ustanovama a usvojeni su i pravilnici vezani za fito-farmaceutske proizvode.

Da sažmemo, BiH vlasti imaju nekoliko zadataka pred sobom kako bi obimnu legislativu prilagodili standardima EU, dok se

odobreni zakoni nakon toga trebaju provesti. Trenutni status ne predstavlja veliku prepreku bosanskim proizvođačima žitarica jer izvoz žitarica nije značajan.

Investicije

Analiza prethodnih i planiranih investicija u sektor je zasnovana na studijama slučaja i upitniku kako i na intervjuu sa zainteresovanim stranama i izjavama eksperata.

Osam studija slučaja na farmama u FBiH je investiralo u granici od BAM 575,000 tokom zadnjih pet godina. Prosječna investicija je BAM 71,500 po farmi. U RS, pet studija slučaja je predstavilo ukupnu investiciju od BAM 873,000 sa prosjekom od BAM 175,000, ali jedna farma je računala i glavnu dobit. Bez toga, te farme, prosjek se smanjuje na BAM 30,000.

Farme bez silosa na farmi, planiraju investiciju u silos u cilju izbjegavanja prodaje žitarica po smanjenoj cijeni, tj. prodaje na njivi odmah nakon žetve. Važnost povećanja skladišnih kapaciteta na farmama je potvrđeno tokom posjeta farmama kao i tokom posjete sajmu INTERAGRO Bijeljina u Septembru 2011. Prosječna investicija u studijama slučaja je procijenjena na BAM 100,000 po farmi uključujući investicije u skladišta, kombajne, traktore i ostalu opremu na farmi.

Upitnik na farmi je potvrdio investicione planove. U prosjeku anketirani farmeri će uložiti BAM 32,600 u dolazećem periodu u mašineriju za proizvodnju pšenice i kukuruza kao prioritet. Ovo potvrđuje potrebu za obnovom tehnološkog nivoa na farmama u BiH.

Investicije u primarnu proizvodnju će biti zahtjevne u rasponu od BAM 40 to 50 miliona. Posebno manji tek uspostavljeni mlinovi sa kapacitetom do 10,000 tona godišnje nisu uložili u dovoljne skladišne kapacitete, uključujući silose, i oni planiraju da povećaju skladišne kapacitete. Proizvođači će takođe ulagati u linije za pakovanje brašna i to u pakete od 5, 10 i 25 kg. Još jedno pitanje koje brine mlinare je ulaganju u laboratorijsku opremu.

POTREBA ZA OBUKOM

Nivo znanja kod proizvođača, naročito onih malih, je relativno nizak. Proizvodnja na malim poljoprivrednim dobrima se zasniva na tradicionalnoj i ektenzivnoj proizvodnji, uz minimalne troškove i investicije. Interes ovih proizvođača da steknu novo znanje je minimalna i tek nekolicina njih je u redovnom kontaktu sa dodatnom uslugom; njihov glavni izvor informacija su mediji, susjedi i veterinari koji njihovoj stoci pružaju usluge vještačke oplodnje i zdravstvene njege.

Znanje proizvođača na srednjim i velikim poljoprivrednim dobrima (i među nekolicinom velikih korporativnih poljoprivrednih dobara) je na znatno većem nivou, i njihova proizvodnja je polu-intenzivna ili intenzivna. Ova poljoprivredna dobra su više uložila u unapređenje i kvalitet proizvodnje.

Analiza ratarskog sektora u Bosni i Hercegovini pokazuje da Bosna i Hercegovina ima niz prilika, na primjer povećanje ukupnih prinosa pšenice i kukuruza takođe povećanjem područja i prinosa po hektaru, poboljšanjem kvaliteta kako bi bila u skladu sa uslovima prerađivačke industrije i kako bi se zadovoljili kriteriji EU i sve jača konkurencija u okviru liberalnijeg tržišta. Seminari prilagođeni ovim potrebama bi pomogli da se otklone ovi nedostaci. S obzirom da se svaka zainteresovana strana u ratarskom sektoru mora suočiti sa različitim uslovima, potrebe za obukom se moraju grupisati na sljedeći način:

- Potrebe za obukom za proizvođače, tj. poljoprivrednike,
- Potrebe za obukom za prerađivače; odnosno mlinove za brašno i stočnu hranu, industriju proizvodnje hljeba, kolača i piva
- Potrebe za obukom za javnu upravu .

SWOT analiza

Ova SWOT analiza se zasniva na činjeničnoj procjeni poljoprivrednog sektora, pri čemu je kao krajnji cilj u obzir uzeta priprema ovog sektora za učešće na tržištu EU. U ovoj studiji se takođe analiziraju radnje koje bi

u budućnosti trebalo poduzeti kako bi se proizvodnja žitarica učinila profitabilnijom, te koje su to investicije za koje je neophodno izdvojiti finansijsku podršku, naročito u smislu nošenja sa postojećim pritiskom konkurencije.

Dugoročno gledajući, izdvajanja EU po gospodarstvu bi mogla biti na istom nivou za sve zemlje članice; trenutno je iznos potpore za pšenicu i kukuruz po hektaru 2,055 HRK (oko 275 EUR) u Hrvatskoj (koja još nije članica EU), ali su političari već počeli da obavještavaju poljoprivrednike da će iznos ove premije po hektaru porasti na 380 EUR, što još uvijek nije potvrđeno iz EU; nadalje, zemlje poput Poljske, ali isto tako i Rumunija i Bugarska, koje imaju ratarske usjeve veće od 1,000 ha postaviti će određene standarde u odnosu na koje će se vršiti nadmetanje. U budućnosti jedina razlika u ponudi za Bosnu i Hercegovinu može biti ta da će porasti troškovi prevoza za žitarice koje se uvoze.

Uprkos činjenici da putevi i željeznice postaju kvalitetniji, glavna prednost lokalnih proizvođača žitarica je da mogu snabdjeti svoja udaljena okolna područja. Ako se ovo ne pokaže kao ispravna alternativa onda proizvodnja za upotrebu na gazdinstvu, naročito za ishranu životinja, predstavlja posljednju mogućnost.

Nadalje, poljoprivrednici vjeruju da lokalni usjevi ne zaostaju za drugim u smislu traženog kvaliteta, te da lokalna prerađivačka industrija nema razloga da ih ne kupuje, naročito zbog toga što je količina koju nude domaći proizvođači relativno mala. S druge strane, iz prerađivačke industrije je više puta naglašeno da domaći usjevi nemaju traženi kvalitet i jednostavno ne mogu biti korišteni kao sirovinski material za dalju preradu.

Druga tačka je bila vezana za ulogu države u jačanju i davanju potpore ovom sektoru. Učesnici debate smatraju da je ovo osjetljiv sektor (potreba za usjevima i npr. paradajz nije sav isti), te da bi se podrška države trebala prilagoditi sektoru. Ta podrška mora biti adekvatna kako bi se osigurao dovoljan

Tabela 1.1: SWOT proizvođači

SWOT analiza za proizvođače ratarskih kultura u BiH, s naglaskom na pšenicu i kukuruz	
S- snage	W- slabosti
Iskustvo i tradicija u biljnoj proizvodnji	Mala i rascjepkana gazdinstva (2 ha i 6 parcela u prosjeku)
Pšenica kao dio rotacije usjeva sa kukuruzom pospješuje zdravlje usjeva	Slaba poljoprivredna mehanizacija (između ostalog 30,000 zastarjelih traktora)
Jeftina porodična radna snaga	Prodaja na samim poljoprivrednim dobrima, naročito pšenice
Nezagađeno zemljište pogodno za organsku proizvodnju žitarica	Neefikasna proizvodnja, visoki troškovi proizvodnje (kapital i zvanični rad) a samim time i niska profitabilnost
Postojanje domaće prerađivačke industrije (mlinovi za bras.i st.hranu	Nedostatak obrazovanja naročito kada se radi o korištenju agro-inputa poput sjemena i đubriva ali isto tako i kada se radi o poznavanju agro-ekonomije
Postojanje institucija za naučno istraživanje	Mali broj specijalizovanih proizvođača
O – mogućnosti	T- prijetnje
Usaglašene subvencije unutar BiH	Daljne propadanje neobrađenih poljoprivrednih površina
Subvencije BiH približno jednake onima u Hrvatskoj, tj. 275 EUR / ha (2011)	Neadekvatne smjernice vlasti naročito kada ogłase finansijsku potporu po završetku sezone sjetve
Uređeni zemljišno vlasništvo a time i zemljišno tržište	Komplikovane i neusaglašene prijavne procedure
Velike površine neiskorištenog i neobrađenog zemljišta - do 500,000 ha, koje je dijelom pogodno za uzgajanje žitarica	Nedostatak kontrole (izvoz, uvoz, kvalitet, sadnice)
Postojanje većih parcela (konsolidovanih i pregrupisanih) obradivih površina u ravničarskim dijelovima FBiH (Sava kanton –opštine Odžak, Šamac, Domaljevac i Orašje i u sjevernom dijelu Kantona Tuzla opština Kalesija	Nepotpune cjenovne transmisije; rast cijena na svjetskom tržištu nije uvijek oslikan na lokalnom nivou.
Diversifikacija proizvoda, na primjer, potencijal za durum pšenicu	Veliki uvoz žitarica, naročito pšenice, djelimično zbog lošeg kvaliteta domaće proizvodnje (asortiman), nepovoljni trgovinski ugovori i nepovoljna klima.
Unaprijeđene dodatne usluge i usluge mehanizacije i programi obuke ciljano prilagođeni potrebama poljoprivrednih proizvođača (u stvari 10,000 ha / 1) po ektenzivnom proizvođaču.	Nekoliko pružalaca poljoprivrednih usluga kao što su kombajni
Povećana potpora za kapitalne investicije kroz državne programe potpore i predstojeći IPARD program	Visoke cijene ulaznog materijala dodatno smanjuju profitabilnost, naročito pšenice
Značajan udio stočarstva u poljoprivredi i potrebe korištenja ratarskih usjeva kao stočne hrane	Zemlja kontaminirana minama
Poboljšati poslovno okruženje (manje formalnosti, birokratije)	
Organizacije proizvođača da smanje ulazne troškove i da pojačaju proizvodnju pšenice kako bi postali ozbiljan pandan industriji	
Povoljna klima i zemljišni uslovi u sjevernim dijelovima BiH	
Umijeće domaće proizvodnje sjemena (uzgoj i multiplikacija)	
Raspoloživost jeftine radne snage zbog visoke stope nezaposlenosti	
Gledajući dugoročno, svjetska nestašica žitarica i povećani troškovi prevoza	

prihod od proizvodnje), te bi se zasigurno trebala obznaniti prije sjetvene sezone. Trendovi stalnog pada, kako u proizvodnji tako i u gospodarstvima sa usjevima, prije svega onima sa zasijanom pšenicom, pokazuju da je politika podrške poljoprivrednom sektoru neadekvatna, te da nije u skladu sa interesima poljoprivrednih proizvođača u sektoru. Na kraju, jedan poljoprivrednik je iznio mišljenje da bi se u budućnosti moglo više orijentisati ka sektoru proizvodnje kukuruza, koji je trenutno manje ili skoro nikako podržan od strane države a ima objektivne uslove za poboljšanje. Prosječni prinosi od kukuruza

govore u prilog tome, s obzirom da polako dosežu nivoe ostvarene u susjednim zemljama (Srbiji i Hrvatskoj).

Tabele koje slijede daju detaljan prikaz snaga, slabosti, mogućnosti i prijetnji.

Sljedeća SWOT analiza za proizvođačku industriju je napravljena na sličan način i pokazuje šta je potrebno učiniti kako bi prerada žitarica bila sigurnija, bolja i profitabilnija; dodatni naglasak je stavljen na procesuiranje obimnijih količina domaćih sirovina umjesto uvezene pšenice.

Tabela 1.2: SWOT prerađivači

SWOT analiza za prerađivačku industriju	
S – Snage	W – Slabosti
Postojanje konkurentnih objekata za preradu (npr. KLAS i ZITOPROMET)	Ograničeni izvori kapitala (izuzev lidera na tržištu)
Blizina potrošačima, veoma bitno za proizvode koji ne trpe dug transport (npr. pekarski proizvodi)	Zastarjela tehnologija (izuzev tržišnih lidera) koja nije u skladu sa relevantnim standardima kvaliteta
Dovoljni skladišni kapaciteti (silosi), naročito u okviru bivših državnih preduzeća	Višak kapaciteta u prim. prerađivačkoj industriji, 5 mlinova poput KLAS-ovih mogu zadovoljiti potr. u praksi ima oko 60 mlinova za brašno plus 20 čistih mlinova za stočnu hranu
	Nedostatak stručne radne snage plus visoke fluktuacije
	Neodgovarajuća stručna obuka (pekari, mlinari)
	Naglasak gotovo isključivo na BiH tržištu
	Zastarjele marketinške aktivnosti
	Skup transport pšenice do mlinova
	Nedostatak saradnje između poljoprivrednika i prerađivača
O – Mogućnosti	T – Prijetnje
Domaće tržište od 4.6. miliona potrošača	Neadekvatne politike i strategije Ministarstva poljoprivrede
Razvoj proizvoda uključujući posebnosti za usko-spec. tržišta	Liberalizacija tržišta kroz CEFTA-u, WTO (u toku) i dolazeće članstvo u EU
Uvozne supstitucije - vezano za sirovine ukoliko su cijena i kvalitet konkurentni	Veliki uvoz žitarica, naročito pšenice
Pristup međunarodnim tržištima preko dijaspor	Prerada nezakonito uvezene pšenice zbog slabe kontrole granica
	Privatna preduzeća možda ne mogu upravljati strateškim rez. pšenice
	Nepotpuna privatizacija bivših državnih preduzeća
	Potrošače značajno privlače uvezeni proizvodi
	Nedostatak akreditovanih institucija za kvalitet kontrole

Izvor: Samostalno prikupljeni podaci u sklopu SWOT radionica, razgovora, terenskih posjeta analiza slučaja i ankete, 2011.god.

Prikazane SWOT analize su detaljno obrazložene u sklopu razgovora sa ključnim učesnicima u cilju prepoznavanja važnih izazova i potreba u lancima nabavke koji su specifični za ovaj sektor. SWOT analize mogu sada poslužiti kao ulazne informacije za Ministarstvo vanjske trgovine i ekonomskih odnosa pri izradi programa.

Na osnovu goreprikazanih SWOT tabela preporuke za strategije mogu biti da proizvodnja žitarica odgovara samo za poljoprivredna dobra sa više od 20 ha usjeva u ravninama sa povoljnom klimom. Danas BiH ima samo nekolicinu poljoprivrednih dobara ove veličine a za proširenje poljoprivrednih dobara neophodno je poboljšanje zemljišnog tržišta. Poljoprivrednicima se mora omogućiti pristup ulaznim materijalima po povoljnim cijenama, što djelimično zavisi od poreza koji su veći nego u susjednoj Srbiji. Takođe se moraju poboljšati dodatne usluge. Što se tiče investicija neophodna je moderna poljoprivredna tehnologija i povoljnije cijene za domaće proizvođače što je jedino moguće postići ako poljoprivrednici imaju sušare i silose tako da ne moraju vršiti prodaju direktno sa polja nakon žetve.

Preporuka intervencije

Preporuke koje slijede su date u cilju postizanje veće profitabilnosti u proizvodnji pšenice i kukuruza u Bosni i Hercegovini. Za budući razvoj proizvodnog sektora je bitno da se osiguraju strukturalne promjene, naročito u smislu uspostavljanja specijalizovanih ratarskih poljoprivrednih dobara, kroz programe potpore koji će biti usmjereni na ekonomski isplative poljoprivredne strukture uključujući uspostavljanje grupa proizvođača.

Ukupna efikasnost proizvodnje i konkurentnosti se mora povećati upotrebom certificiranog sjemena i uvođenjem modernih proizvodnih tehnika i tehnologija. Takođe se mora značajno povećati cjelokupna usaglašenost proizvodnje i prerade sa

državnim i standardima EU vezano za sigurnost hrane i zaštitu okoline.

Naročito je u proizvodnom sektoru potrebna tehnička pomoć i obuka kako bi se podigao nivo razumijevanja i kapaciteta vezano za moderne proizvodne tehnike i tehnologije i ispunjenje domaćih i standarda EU.

Uzimajući u obzir cjelokupnu situaciju u sektoru, buduće intervencije trebaju biti orijentisane na:

Vlada Bosne i Hercegovine, Entiteti i Brčko Distrikt

- Usaglasiti sve subvencije za proizvođače i prerađivače na nivou RS, FBiH i Distrikta Brčko
- Uvesti minimalnu cijenu u skladu sa EU interventnom cijenom koja je u stvari 101,31 EUR / t
- Dati poljoprivrednicima potporu samo u vidu premije po hektaru (plaćanja), što bi se onda brzo moglo podijeliti na pšenicu i kukuruz kako bi se promovisala pšenica; nakon pristupa radiće se o istoj premiji; nadalje, premije po hektaru bi se trebale najaviti prije nego se usjevi posiju kako bi se proizvođačima dala neka sigurnost u smislu planiranja; sada zapravo poljoprivrednici moraju sami da odluče a ne znaju koliki će biti iznos potpore, što nije dobar znak za planiranje. Premije po hektaru će takođe doći do proizvođača koji ne prodaju registrovanim trgovcima ili prerađivačima kao što je sada slučaj; zapravo oko 70% proizvedenih žitarica se ne subvencioniraju jer se koriste na gazdinstvu
- Unaprijediti poljoprivredne strukture omogućujući zemljišnom tržištu (ubrzavajući zemljišnu konsolidaciju boljim zemljišnim knjigama i katastrima) da bude funkcionalno, te kao takvo pomogne komercijalnim poljoprivrednicima da brže napreduju i razmisle o potpori za iznajmljivanje zemljišta, uključujući premije za iznajmljenu zemlju
- Iznajmiti svu državnu zemlju koja se ne koristi u sklopu javne prodaje/ otvorenog tenderskog nadmetanja; onaj koji ponudi

najveći iznos, dobiće zemlju uz potpisivanje ugovora o iznajmljivanju

- Unaprijediti dodatne usluge i s tim u vezi izdvojiti više sredstava u budžetu
- Omogućiti usluge mehanizacije uspostavljanjem grupe proizvođača (zakonska legislativa i ciljani program potpore u skladu sa IPARD-om)
- Oživiti domaće zavode za istraživanje i razvoj i centre za uzgoj žita
- Podstaknuti javno-privatno partnerstvo da bolje poveže postojeće tehnologije, znanje i iskustvo (tzv. know-how) državnih instituta za istraživanje sa tržištem
- Upisati više sorti sjemena u državnu listu kako bi se omogućio veći izbor, a istovremeno se zadovoljila potražnja i potrebe prerađivača
- Pomoći oko specijalizovanih usluga poput poslovnog plana i proizvodnog razvoja, arhitektonskih planova za objekte, software, obuka,
- Ažurirati pravni okvir i poboljšati provedbu zakona
- Redovno izvještavati o tržišnim cijenama (Tržišni informacioni sistem dostupan poljoprivrednicima) jer što je tržište transparentnije to će biti bolje za poljoprivrednike
- Unaprijediti i uspostaviti dodatne stručne škole za poljoprivredu i takođe bolju obuku za uposlenike prerađivačke industrije
- Unaprijediti ruralnu infrastrukturu poput putne i komunikacione (čak i ako to nije poseban preduslov za ratarske usjeve)
- Pojednostaviti postupak prijave za kredit

Proizvođači

- Povećati ukupnu konkurentnost, uvodeći nove sorte sjemena, tehnike proizvodnje i žetve
- Unaprijediti opremu i mehanizaciju za rad sa žitaricama na gazdinstvu (kombajni, sijačice, štrcaljke, plugovi, prikolice ...) ali takođe i opremu za čišćenje zemljišta (na privremeno napuštenim obradivim površinama)

- Izgraditi i namjestiti objekte za skladištenje (silosi, uključujući sušilice), spremišta za mašine i teretne mostove, promovišući kad god je moguće kolektivno vlasništvo i upravljanje, uključujući elemente sistema priznanica za uskladištene žitarice
- Povećati veličinu poljoprivrednog dobra

Prerađivači

- Razmisliti o ugovornoj proizvodnji tako da poljoprivrednici unaprijed znaju kakav će se kvalitet tražiti u industriji
- Unaprijediti laboratorijske usluge unutar firmi ali takođe i u okviru BiH

Glavni nalazi za IPARD

Ovdje bi trebalo napomenuti da bi obuka mogla biti sponzorirana u sklopu IPARD-a, ali za potvrdu te mogućnosti potrebno je izvršiti detaljnije dodatno istraživanje.

Imajući u vidu buduću IPARD, preduslov će za podnosioca zahtjeva biti da je registrovani poljoprivrednik; u stvari postoji oko 100.000 poljoprivrednika upisanih u registar. Pretpostavka je da će IPARD privući više podnosilaca zahtjeva, te bi u skladu s tim moglo biti 150.000 registrovanih poljoprivrednika.

Da bi se dobilo sufinansiranje u iznosu od 50%, investicija mora biti opravdana poslovnim planom (investicioni plan), a korisnik mora unaprijed finansirati investiciju.

Procjenjuje se da je BDP Bosne i Hercegovine 6.600 USD / po stanovniku 2010. godine; to odgovara iznosu od 5.080 EUR. Ako pretpostavimo da je dobit po hektaru pšenice 150 EUR godišnje, poljoprivrednik bi trebao da zasije 33 ha pšenice da bi se uklopio u BDP; ako pretpostavimo da je profit po hektaru kukuruza 450 EUR godišnje, poljoprivrednik bi trebao obraditi 11 ha.

Ukupna površina oranica je 1.009.474 ha i ako pretpostavimo da će biti poljoprivredna dobra sa samo 15 ha, BiH bi imala 67.000 poljoprivrednih dobara; pretpostavimo da danas BiH ima manje od polovine pomenutog broja i ako još pretpostavimo da neće svaki

Tabela 1.3: Osa 1 – Unapređenje efikasnosti tržišta i implementacija standarda zajednice, IPARD mjere 101 i 103

Prioritetna osovina 1: Poboljšanje tržišne efikasnosti i provedba standarda zajednice					
Potencijalne investicije u sklopu IPARD mjere 101					
Investicije u poljoprivredna imanja - ratarski sektor	Korisnici	Investicija/ Korisnik	Ukupan iznos investicionog finansiranja u EUR	Javno finansiranje, EUR, 50%	Privatno finansiranje, EUR, 50%
Oprema i mehanizacija za rad sa žitaricama (kombajni, sadilice, štrcaljke, plugovi, prikolice ...) ali i mašine za uklanjanje mina	5.000	20.000	100.000.000	50.000.000	50.000.000
Izgradnja odnosno renoviranje skladišnih objekata (silosa i sušilica), ostava za mašine i teretnih mostova	3.000	45.000	135.000.000	67.500.000	67.500.000
Secijalizovane usluge poput poslovnog plana i razvoja proizvoda, arhitektonskih planova za objekte, software, obuka,	1.000	5.000	5.000.000	2.500.000	2.500.000
Potencijalne investicije u sklopu IPARD mjere 102					
Potpورا proizvodnim grupama	Korisnici	Investicija/ Korisnik	Ukupan iznos investicionog finansiranja u EUR	Javno finansiranje, EUR, 50%	Privatno finansiranje, EUR, 50%
Potpura proizvodnim grupama tržišno utrživim žitaricama	5	50.000	250.000	250.000	0
Potencijalna ulaganja po IPARD mjeri 103					
Ulaganja u preradu i marketing poljoprivrednih proizvoda	Korisnici	Investicija/ Korisnik	Ukupan iznos investicionog finansiranja u EUR	Javno finansiranje, EUR, 50%	Privatno finansiranje, EUR, 50%
Renoviranje mlinova (zgrade i oprema; npr. rampe za istovaranje bez prašine)	20	500.000	10.000.000	5.000.000	5.000.000
Izgradnja odnosno renoviranje silosa, teretnih mostova i dr.	20	500.000	10.000.000	5.000.000	5.000.000
Oprema za poboljšanje higijene i kvaliteta proizvoda, potpuna usklađenost sa standardima Zajednice (HACCP, ISO, IFS ...)	20	25.000	500.000	250.000	250.000
Ulaganja u laboratorijsku opremu poput farinografa, ekstenziografa, alveografa	40	50.000	2.000.000	1.000.000	1.000.000
Kupovina opreme za pakovanje	20	40.000	800.000	400.000	400.000
Specijalizovane usluge kao što su poslovni plan i razvoj proizvoda, arhitektonski planovi za objekte, software, obuka	40	10.000	400.000	200.000	200.000
UKUPNO			263.950.000	132.100.000	131.850.000

poljoprivrednik podnijeti zahtjev za potporu, autor izračunava da će prema postojećoj strukturi biti do 20.000 potencijalnih podnosilaca zahtjeva za dolazeću potporu u sklopu IPARD-a.

- Potencijalna ciljana grupa: 20.000
- Prosječni iznos investicionog projekta : 10.000 EUR
- Investicijski budžet: 200 miliona EUR (50% od države BiH: 100 miliona EUR!)

Predloženi okviri projekata za proizvođače

Maksimalni i minimalni iznos po dozvoljenom investicionom projektu:

Minimum 5.000 EUR

Maksimum 50.000 EUR

Predloženi okviri projekata za prerađivače

Maksimalni i minimalni iznos po dozvoljenom investicionom projektu:

Minimum 10.000 EUR

Maksimum 500.000 EUR

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Abbreviations and Acronyms

BAM	BiH currency; 1 EUR = 1.9558 BAM
BD	Brčko District
BHAS	Bosnia and Herzegovina Agency for Statistics
BHMAC	Bosnia and Herzegovina Mine Action Centre
BiH	Bosnia and Herzegovina
CAP	Common Agriculture Policy
CEFTA	Central European Free Trade Agreement
EU	European Union
EUR	Euro
FADN	Farm Accountancy Data Network
FAO	Food and Agriculture Organization of the United Nations
FBiH	Federation of Bosnia and Herzegovina
FSA	Food Safety Agency
GAECs	Good Agricultural and Environmental Conditions
GAEP	Good Agricultural and Environmental Practice
GAP	Good Agricultural Practice
GDP	Gross Domestic Product
GoBiH	Government of BiH
GVA	Gross Value Added
Ha	Hectare
HACCP	Hazard Analysis Critical Control Points
IDB	Investment Development Bank
IFAD	International Fund for Agricultural Development
IFS	International Food Standard
IPARD	Instrument for Pre-Accession Assistance for Rural Development
IPHC	International Plant Health Convention
ISO	International Organization for Standardization
Kg	Kilogram
MoFTER	Ministry of Foreign Trade and Economic Relations
NGO	Non-Governmental Organization
NVA	Net Value Added
PPP	Power Point Presentation
PHPA	Plant Health Protection Administration
RASFF	Rapid Alert System for Food and Feed
RS	Republika Srpska
SAFFRD	Sector for Agriculture, Food, Forestry and Rural Development
SAPARD	Special Accession Programme for Agriculture and Rural Development
SESMARD	Support for Establishment of the State Ministry of Agriculture and Rural Development
SIDA	Swedish International Development Cooperation Agency
SWOT	Strengths, Weaknesses, Opportunities and Threats (analysis)
UNDP	United Nations Development Programme
UPOV	International Union for the Protection of New Varieties of Plants
VAT	Value Added Tax
WB	World Bank
WTO	World Trade Organization

Currency Equivalents

Exchange rates

USD for 1 EUR
2005- 2009 1.3483

BAM for 1 USD
2012 1.58557

BAM for 1 EUR
Since 2002 – 1.95583

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

Introduction

This is one of five sector analyses (Meat and Dairy; Fruit and Vegetables; Cereals; Wine; Diversification) prepared in the period from April 2011 to June 2012 for the agricultural authorities in Bosnia and Herzegovina (BiH) at state, entity and Brčko District level. The sector analyses are input 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:

Besides this introduction, the report contains an Executive Summary presenting the conclusions and recommendations from the analysis. Chapter 2 presents context, objectives and methodology of the analysis as well as the background data and key figures for BiH and for the agriculture sector specifically. Chapter 3 presents the analysis of the production of cereals in BiH, while Chapter 4 presents the cereals processing industry. Chapter 5 outlines the government policies for the sector, at entity and state level, including presentations of the support schemes under implementation, as well as the general regulatory framework. Trade and markets are analysed in Chapter 6, with focus on the international trends in

trade, and the position of BiH cereals in the international markets. The domestic market is analysed as well.

Chapter 7 describes the level of attainment of relevant EU standards, while Chapter 8 analyses the past trends and future developments of investments in the sector. Chapter 9 describes challenges and potentials of the cereals sector with regard to international competition with the help of the SWOT analysis, while Chapter 10 sets out the training needs and the need for competence development. Chapter 11 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:
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 - Ms Vesna Mrdalj, PhD, Faculty of Agriculture, University of Banja Luka
 - Professor Dr Sabahudin Bajramovic, Faculty of Agriculture and Food Sciences, University of Sarajevo
 - Mr Morten Kvistgaard, MA Economics, FAO Consultant
- Support:
 - Dr Željko Vaško, Faculty of Agriculture, Banja Luka, background papers
 - Ms Vesna Mrdalj, Faculty of Agriculture, Banja Luka, background papers
 - Mr Vlado Pijunović, FAO Consultant, coordination, support and background papers
 - Mr Vlado Čirko, logistics and other important types of support

The report was reviewed by Gerold Boedeker, Raimund Jehle, Tomasz Lonc and Dmitry

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 in the sector analyses.

Zvyagintsev, (all FAO). Valuable support regarding language editing was provided by Tom Hunter and Valerie Guidi.

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The FAO team would like to extend its sincere thanks for the assistance and close collaboration in the implementation of the project to the following organizations and individuals:

- BiH 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 Prorok, Expert Advisor
- Federation of BiH (FBiH), Ministry of Agriculture, Water Management and Forestry
- Republika Srpska (RS), Ministry of Agriculture, Forestry and Water Management
- Brčko District (BD) Department for Agriculture, Water Management and Forestry
- BiH, Agency for Statistics
- FBiH, Federal Office of Statistics
- RS, Institute of Statistics
- EU-funded project “Strengthening and harmonization of the BiH agriculture and rural sectors information systems (AIS)” led by Mr Colin Scott
- Several key interviewees representing the cereals sector

1. Executive Summary

1.1 Objectives of the report

The cereals sector analysis is one of five sector studies prepared from April 2011 to June 2012 as a basis for the design of the EU Instrument for Pre-accession Assistance in Rural Development (IPARD).²

The main objective of the report is to provide an analysis of the current state of the cereals sector in BiH, focusing on the two main cereals: wheat and maize, but also addressing to some extent other cereals: barley, oats and rye. 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 the formulation of a number of possible policy interventions for the agriculture and rural development policy in line with the needs for the development of the sector.

1.2 Methodology

This study provides an overview of cereal production and processing in BiH. The analysis is based on the following activities:

1.2.1 Desk research and statistics

The study started by reviewing existing reports on the BiH agricultural sector with a focus on the cereals sector. This study relies to some extent on established data, for which the main sources were:

- The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development (MoFTER/SAFFRD);
- FBiH Ministry of Agriculture, Water Management and Forestry;

- RS Ministry of Agriculture, Forestry and Water Management;
- The Department for Agriculture, Water Management and Forestry, Brčko District;
- Faculty of Agriculture, University of Banja Luka
- Faculty of Agriculture and Food Sciences, University of Sarajevo;
- BiH Agency for Statistics;
- Eurostat
- FAOSTAT
- United Nations trade statistics

1.2.2 Surveys

Data collection was also effected as part of the survey conducted for the preparation of the sector analysis for the meat and dairy sector. The purpose of this was to provide a realistic picture of the cereals sector to supplement existing statistics and official reports. A number of questions related to crop production, costs and mechanization were put to 121 farmers identified for the meat and dairy sector survey and covering more than 2,500 ha of arable land and pastures. Of the 121 farmers, 46 farmers produced wheat and/or maize, and an additional 33 produced barley. These farmers focus their production on keeping animals and could provide good insights into cereal production.

1.2.3 Case studies

The Faculty of Agriculture at the University of Banja Luka and the Faculty of Agriculture and Food Sciences at the University of Sarajevo have made a total of 13 carefully selected case studies based on personal expert interviews. Eight of these were in FBiH and five were in RS and BD. These case studies include detailed descriptions of production characteristics regarding technology levels, facilities, know-how, quality standards, bottlenecks and weak

² 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.

points in the value chain of various types of producers (semi-subsistence producers, commercial holdings and large-scale corporate producers) with attention to compliance to EU standards. Each of the case studies is reported and attached as Annex 3 to this report.

1.2.4 Consultations with key stakeholders

Discussions with key stakeholders were carried out with, among others, the following institutions:

- Ministry of Foreign Trade and Economic Relations, Sector for Agriculture, Food, Forestry and Rural Development (MoFTER/SAFFRD),
- FBiH Ministry of Agriculture, Water Management and Forestry (FBiH MoA),³
- RS Ministry of Agriculture, Forestry and Water Management (RS MoA),
- Department for Agriculture, Water Management, Forestry and Veterinary from the Brčko District
- Agricultural Faculty in Banja Luka
- Agricultural Faculty in Sarajevo
- Agency for Statistics of BiH
- Agricultural Institute in Banja Luka
- Federal Institute for Seed and Plant Propagation Material

It should be noted that meetings with the official focal points at the two Entity Ministries in Banja Luka⁴ and Sarajevo⁵ and the Department for Agriculture, Water Management, Forestry and Veterinary from the Brčko District⁶ were arranged at the very beginning and at the end of the analysis.

1.2.5 Workshops

Considerable emphasis was placed on obtaining the opinion of a wide range of

stakeholders. To this end, four workshops were organized, two each in Banja Luka and Sarajevo. The first two *SWOT workshops* were held in Banja Luka (30 May 2011) and Sarajevo (31 May 2011). The agenda was to discuss the different aspects of the cereals sector with a broader public, to discuss the current state of the sector regarding production and trade, and to discuss the internal strengths and weaknesses as well as the external threats and opportunities for the sector. In Banja Luka, 35 participants contributed to the discussion, and of these 20 represented the sector as producers or processors. In Sarajevo, 26 participants were present and among them 15 were producers and processors from the sector. The results from the workshops are utilized in the SWOT section, later in this report.

A second round of two *verification workshops* took place at the same premises on 20 October 2011 in Banja Luka and 21 October in Sarajevo. 24 participants in Banja Luka and 23 in Sarajevo attended the workshops. Again, the producers and the processors were well represented. The aim of the workshops was to present the conclusions from the sector analysis and the preliminary recommendations for possible policy interventions, and to receive qualified feedback from the stakeholders about these conclusions and recommendations. It was considered essential to ensure that stakeholders have the chance to comment.

Stakeholders raised questions about the reliability of official data reflecting the real picture of cereals production in BiH, resulting in discussions about how the official data should be used. The decision by the expert team was to report official statistics and to comment on them, based on the assessments

³ To make the reading of the text easier we use the FBiH MoA for FBiH Ministry of Agriculture, Water Management and Forestry and RS MoA for RS Ministry of Agriculture, Forestry and Water Management.

⁴ RS Ministry of Agriculture, Forestry and Water Management; Mr Zoran KOVACEVIC, Assistant Minister of Agriculture, 9 June 2011.

⁵ FBiH Ministry of Agriculture, Water Management and Forestry; Mr Hanefija TOPUZ, B.Se.Agr., Head of Department for Agricultural Policy, 8 June 2011

⁶ Brčko District of BH Government, Department for Agriculture, Water Management, Forestry and Veterinary, Mr Dr.sc. Ferhat CEJVANOVIC, 21 September 2011

provided by other stakeholders. This approach was later agreed with representatives from entity ministries and MoFTER.

The workshop also agreed upon the conclusions from the SWOT analysis as well as the proposed actions for interventions in the sector.

1.2.6 Field visits to selected sites where measures will impact strongly

The sector expert and the national coordinator undertook a field trip in September 2011 to the most important areas in BiH, from Banja Luka to Brčko and Bijeljina. During this field trip five farmers and five processors were visited and interviews conducted along the lines of the template for the case studies. Direct meetings with institutions, producers and processors were also arranged. In total the study team met over 100 farmers, processors, institutions and other stakeholders.

1.3 General findings for cereals sector development

1.3.1 Producers of cereals

The most suitable areas of Bosnia and Herzegovina to grow cereals are located along the country's northern border close to the Sava and Drina, where the arable land is flat; farms are larger and have the potential for expanding the area further. For historic reasons the average farm in BiH is very small and fragmented and to enable a maximum return of the investments, farmers (with the exception of vegetable and fruit farmers) also keep animals for which fodder is needed. Although the majority of farms are mixed farms, there are a small number of specialized cereal producers.

Production structure

Cereals are produced in BiH on most types of farms: subsistence and semi-subsistence farms, commercial family farms and corporate farms. The precise number of farms with cereals is not known from official statistics. The scale of production varies considerably from only 1 ha per farm

to hundreds of hectares per farm, but **the most frequent type of farm only has a few (2–5) hectares distributed on several (6–8) parcels.** However, the farm survey conducted as a part of this sector analysis showed that the median number of hectares for wheat and maize producers in FBiH was 3.6 hectares and 6 hectares respectively, while the median in RS/BD for the same two crops was 2.5 hectares and 5 hectares respectively. If these medians are used together with the official data for sown areas with wheat and maize, the number of farms producing wheat and maize can be estimated.

In FBiH 18,100 hectares were sown with wheat and 48,100 hectares with maize. This gives 5,030 farms producing wheat and 8,020 farms producing maize, and a total for FBiH of 13,050 farms. In RS and BD, 33,600 hectares was sown with wheat in RS and 3,700 hectares in BD. Maize was sown on 138,400 hectares in RS and 5,200 hectares in BD. This gives a total of 14,920 wheat farms and 28,770 maize farms. The total for RS and BD was about 43,700 farms producing the two cereal crops. **In BiH the total number of wheat farmers is estimated to be 20,000, while there are 37,000 farms producing maize.**

Volume of production

At the BiH level, the number of hectares sown with cereals decreased by 8 percent from 318,000 hectares in 2006 to 293,000 hectares in 2010. The number of hectares has been constant in FBiH with a five-year average of 83,400 hectares, while RS has experienced a reduction of 12 percent from 225,000 hectares in 2006 to 199,000 hectares in 2010. The situation in BD has been constant at 10,000 hectares.

The area under wheat in RS decreased by 32 percent from 49,700 hectares in 2006 to 33,600 hectares in 2010. FBiH has also seen a decrease of 10 percent from 20,100 hectares to 18,100 hectares. At BiH level the total reduction of area under wheat was 25 percent. For maize grain the area sown in FBiH went down from 48,400 hectares to 48,100

(-0.6 percent), in RS from 142,600 hectares to 138,400 hectares (-3 percent) and in BD from 5,500 to 5,200 hectares (-5 percent).

The yield measured in tonne per hectare fluctuates for both wheat and for maize. **For BiH the average five-year yield for wheat was 3.3 tonne/ha and 4.7 tonne/ha for maize.** The five-year average for wheat in FBiH is 3.5 tonne/ha, due to a poor year in 2010. For maize the five-year average is 4.5 tonne/ha in FBiH. In RS, the five-year average for wheat is 3.3 tonne/ha with a poor year in 2010. For maize the five-year average in RS is 4.6 tonne/ha, which also was the yield in 2010, but the average is reduced due to a very poor yield in 2007 with only 3 tonne/ha, just two-thirds of the average. In BD 2010 was also poor with yields of wheat of 2.8 tonne/ha and of maize of 4.5 tonne/ha. Both results are below the respective five-year averages of 3.6 tonne/ha for wheat and 4.6 tonne/ha for maize.

The total area harvested with barley, oats and rye was 31,500 hectares in 2010. It was a reduction from 39,400 hectares in 2009, or 20 percent down. Of the three small cereals, barley is by far the most important with a five-year average of 65,500 tonnes of production, while the production of oats is 35,000 tonnes and rye 10,000 tonnes on average. Also for these three cereals the yields were low in 2010, and this is reflected in a relatively low production in 2010 compared to the previous years. Rye production went down by 38 percent, barley by 35 percent and oats by 43 percent.

Value of production

The value of wheat in BiH declined from BAM 71 million in 2009 to BAM 45 million in 2010. The RS is particularly hard hit with a reduction from BAM 46 million to BAM 26 million, or a decrease of 42 percent, but also FBiH and BD are suffering from lower production and yields.

With regard to maize, the total value in BiH was BAM 259 million in 2010, which is a small increase from 2009, when the value was BAM 235 million. FBiH, RS and BD have all experienced an increase in the value,

primarily due to higher prices in 2010, and in spite of lower yields and a reduction in the sown and harvested areas.

In total the value of the two most important cereals (wheat and maize) was BAM 305 million for BiH in 2010, distributed as follows: BAM 77.6 million in FBiH, BAM 217 million in RS and BAM 10.3 million in BD. The total value of the five main cereals (wheat, maize, rye, barley and oats) in BiH in 2010 was **BAM 332 million, with a five-year average of BAM 338 million.**

Maize grain had the highest relative importance of all the cereals in 2010 with 78 percent of total cereals production; wheat in the same year had the lowest share with only 14 percent. The total value of the three smaller cereals was only 8 percent in 2010.

- **The value of the production of the five main cereals was 1.4 percent of total Gross Domestic Product (GDP) in 2010 (BAM 24,484 million)**
- **The five main cereals contributed 14.3 percent of agricultural GDP in 2009 (BAM 1,817 million)**

Profitability of wheat and maize production

The farm surveys and case studies, which were conducted as part of this sector analysis, show **that wheat production on average in 2011 generated a Gross Value Added (GVA) of BAM 578 per hectare including subsidies, while maize production on average generated a GVA of BAM 933 per hectare.** It is more economically attractive for farmers to produce maize instead of wheat, and this is also reflected in the importance of maize as a crop in BiH compared to wheat and other cereals. These results are in line with pilot Farm Accountancy Data Network (FADN) estimates, which also indicate that the profitability of barley, oats and rye is lower than the profitability of maize.

Central European Free Trade Agreement (CEFTA) and EU comparison

With an average yield of wheat of 3,317 kg/ha, BiH is lagging behind Albania (3,625 kg/ha),

Kosovo (3,735 kg/ha), Serbia (3,605 kg/ha) and Croatia (4,681 kg/ha), while the BiH yield is higher than in Montenegro, Republic of Moldova and The Former Yugoslav Republic of Macedonia. The wheat yields vary from year to year depending on climatic conditions, and in BiH ranged from 2,662 kg/ha (2010) to 3,775 kg/ha (2009). **The five-year average wheat yield for the period from 2006 to 2010 in the EU was 4,880 kg/ha, equal to 147 percent of the yield in BiH.** However, the variation among EU member countries is large: From 8,670 kg/ha in Ireland, Belgium and the Netherlands down to 2,110 kg/ha in Portugal and 2,590 kg/ha in Romania, equal to 78 percent of the BiH average.

With regard to average yields of maize, BiH with 4,655 kg/ha in the period 2005–2010 was lagging behind Albania (5,276 kg/ha), Serbia (5,032 kg/ha) and Croatia (6,802 kg/ha), but yields were higher than in Kosovo, Montenegro and the Republic of Moldova (2,747 kg/ha). As in all other CEFTA countries, the average yields of maize vary from year to year and in BiH ranged from 3,218 kg/ha (2007) to 5,134 kg/ha (2005). **The five-year average yield for maize for the period from 2006 to 2010 in the EU was 7,720 kg/ha, equal to 166 percent of the yield in BiH.** However, the variation among EU member countries was also large for maize production: From 11,860 kg/ha in Belgium and the Netherlands down to 3,250 kg/ha in Romania and 3,790 kg/ha in Bulgaria, equal to 70 percent of the BiH average.

There are several reasons for the lower yield per hectare in BiH compared to most CEFTA and EU countries. One of the most important is the small scale and fragmentation of farms giving only limited scope for modernization of equipment. This leads to low productivity as well.

Furthermore, stakeholders in the sector in BiH point to the low quality of seeds as another major factor. Inputs are generally used in small quantities, which also puts limitations on yields, even though the use per ha of fertilizers and pesticides has been increasing recently.

Finally, the level of education and training related to modern high-yield production methods among farmers is low. Here it is also relevant to refer to the status of the extension services in BiH. Experiences from many other countries, both in the region and in the EU show that good extension services are of paramount importance in the modernization of agriculture, particularly in countries where the share of small-scale farms is relatively high, as in BiH. Extension services in BiH, as in many transition countries, are the weakest link in the chain, particularly in FBiH, and most farmers lack education, training, information and advice. Therefore, farmers tend to have a limited understanding of agricultural economics, of how to optimize their factor input strategy, the use of certified quality seeds, etc. In addition, fertilizers and agro-chemicals are not used according to professional standards and good agricultural and environmental practice.

1.3.2 Processing industry

Processing of cereals includes primary processing of cereals into flour of different types and secondary processing into fresh bread and various types of baked products, cakes, etc.

Volume of primary processing

The production of flour in BiH is taking place in 10 major mills in FBiH excluding a large number of small-scale mills and in 36 mills of various capacities in RS/BD.

In FBiH wheat is by far the most important grain used in processing accounting for 99.6 percent of the flour production in 2010 (138,144 tonnes) and 99.7 percent in 2011 (124,876 tonnes). However the overall production of flour declined in 2011. The annual capacity in the sector is 533,000 tonnes, and the utilization of capacity in the FBiH primary processing sector in 2011 was 23.5 percent.

As was the situation in FBiH, wheat flour in RS was the major product with 90,816 tonnes in 2009, or 94 percent of total production of

flour of 96,438 tonnes. The capacity utilization was estimated to be 30 percent, and the full capacity of the RS mills was 320,000 tonnes.

The total capacity of the FBiH and RS mills was estimated to be 854,000 tonnes, and the utilization rate was 26 percent.

The production of 222,000 tonnes of various products, with wheat flour as the major product, requires 296,000 tonnes of cereals, if the utilization rate (1 kg cereals produces 0.75 kg flour) is 75 percent. 66,000 ha to 70,000 ha, depending on the average yield, would be required to produce this amount of wheat. However, **many mills rely on imported cereals, in particular from Hungary, because the processing industry considers imported wheat to be of better quality. In addition, imported wheat can be bought at lower prices (BAM 230 per tonne for imported wheat in 2010 compared to BAM 330 per tonne in BiH), posing a major challenge for BiH farmers to compete with the imported wheat, both in terms of price and in terms of quality.**

Value of the production of milled cereal products

In order to estimate the value of the production of milled cereal products, the average price for wheat flour on the domestic market in 2010 was used (BAM 530 per tonne), because no production statistics broken down by type of product were available. In total 230,000 tonnes of milled cereals were produced with 125,500 tonnes in FBiH and 96,500 tonnes in RS. An additional 8,000 tonnes were produced in BD. **The total production of milled cereals in BiH was valued at 122 BAM million in 2010** distributed between entities and BD as follows: FBiH: BAM 66.5 million; RS: BAM 55.1 million and BD: BAM 4.2 million

Secondary processing

The secondary processing industry in BiH consists of 15 major bread-baking companies and 12 major confectionery companies and several smaller companies.

The most important product category under secondary processing in FBiH was “fresh wheat

bread” with almost 18,000 tonnes produced in 2011, down by 16 percent from 2010. The second largest product category was “sweet cookies (sweet biscuits)” with 4,700 tonnes in 2011, which was twice the production of 2010, and the category including “all types of pastries” with 3,276 tonnes. Besides sweet cookies, the “rising stars” in FBiH secondary production are the categories “confectionery and daily cakes” up by 212 percent, “fresh rye bread” up by 138 percent, and “toast breads” up by 136 percent, but these categories are still relatively small.

Unfortunately there is no information with regard to the value of the production available, but it is clear that the value added of the main product category – fresh wheat bread – is lower than what can be expected from other more processed categories, such as sweet cookies and other products. The increase in these categories might therefore also represent a relatively strong increase in the value of the production, since the weight of fresh wheat bread is diminishing. This tendency is positive from an economic point of view.

In RS it was also wheat bread which was dominating production in the secondary processing industry with a production of 10,526 tonnes in 2009. This figure represents a decline in production from 2006, when production was 13,461 tonnes of bread. This is a reduction of 23 percent.

As in FBiH, in RS there was an increase in the share of products with an expected higher value added on the expense of wheat bread.

Product quality

Many millers and other stakeholders interviewed, stated that the quality of locally produced cereals does not meet market requirements regarding moisture, hectolitre weight and maximum amount of foreign materials (admixture) as well as other quality requirements. **To deliver the quality demanded by the bread-baking industry, mills in BiH have to blend wheat.** All millers met during site visits mentioned that the quality of local wheat is too low and as a result they have

to import better quality wheat for blending purposes. **The blending ratio between local to imported wheat is 10–20 percent local and 80–90 percent imported wheat.**

It was also mentioned by a few processors that often they are confronted with domestic (not imported) cereals with some content of agrochemicals. Lack of appropriate control by inspectors on the farms was inferred as the reason.

However, the situation is blurred in the sector: In 2009 and 2010 the quality of wheat was good and corresponded in general to the mentioned requirements of processors, but there were also some millers who claimed that the moisture content was too high.

1.3.3 Current state and entity/district policies

At state level, as well as at entity and district level, **policies are being prepared along the lines of EU regulations.** Institutions relevant for the cereals sector, such as the Food Safety Agency and the Plant Health Protection Agency are preparing for EU candidate status and are aligning their organization, their activities and their regulations to EU requirements.

However, the autonomy of the entities and BD creates many variations in the practical implementation of the policies within the framework of agricultural and rural development strategies and action plans.

With regard to cereals, there is no harmonized policy across the entities and BD for providing subsidies, and there are currently, among others, a mixture of area payments of different magnitudes and for different crops, product support and in-kind contributions of blue diesel and fertilizers. The subsidies are not aligned with the EU agricultural policy measures, which favour area payments on the one hand and modernization support on the other.

The budget for agriculture and rural development in the entities remains low and tends to be oriented towards Common Agricultural Policy (CAP) pillar 1 support and

not CAP pillar 2 support. The lack of an efficient administration at all levels is impeding the competitiveness of farmers and the agri-processing industry throughout the country. **Also due to the lack of harmonization and coordination between entity and district ministries, the environment for the farmers in the country lacks transparency and creates different conditions for production from one area to another. There is a clear need for harmonization and alignment of subsidies and enforcement of legislation across the different entity and district borders.** This is the case not only for cereals production but for agriculture in general.

1.3.4 Trade policy

BiH is following its path towards EU candidate status, and by 2013 BiH will have a fully liberal trade partnership with the EU, under the circumstances that BiH fulfils the requirements, and that the companies wishing to export to the EU comply with the requirements in the Acquis.

Trade balance in cereals

The total trade deficit in cereals in 2010 was BAM 166.2 million, due to imports of BAM 194.3 million and exports of BAM 28.1 million. It was a minor increase from 2009, but the level was still lower than in the years 2007 and 2008, when the deficit was just below BAM 200 million. Exports were increasing and showed their highest level in 2010 with BAM 28.1 million.

For wheat and maize there was a very small export boom in 2009 and 2010, but the mainstream tendency was for import of both cereals. **The trade deficit was BAM 100 million for wheat in 2010 and BAM 53.5 million for maize.**

The total import of cereals from CEFTA countries in 2010 was BAM 102.3 million, while exports to the CEFTA countries were as low as BAM 3.8 million. The trade deficit was BAM 98.4 million in 2010. There has been a slow increase over the last two years, but still not at the level of 2007, when the deficit was BAM 147 million.

Import prices

The import price of wheat in 2011 was on average BAM 330 per tonne, but the import price from Hungary was only BAM 231 per tonne (domestic price was BAM 330 per tonne), while the modest exports of wheat were sold at BAM 568 per tonne in 2011. Hungary is Bosnia and Herzegovina's most important trading partner in terms of cereals, closely followed by Serbia and Croatia. During the period 2005–2009 wheat imports from Hungary were always more than 50 percent of total wheat imports (with the exception of 2007). In 2008, out of the total of 326,800 tonnes of imported wheat, 274,200 tonnes or (84 percent) was imported from Hungary.

Production balances

The domestic production of wheat has covered a stable share of the domestic market with 40 percent for the years 2006 to 2008, and 43 percent in 2009. In 2010 the share dropped dramatically to only 22 percent. This was due to a decrease in domestic production caused by weather and flooding problems. Domestic consumption also fell, but imports increased to capture the share of the market left open due to the low production in BiH.

For maize the picture is different. The share of domestic consumption satisfied by domestic production has been rather stable over the five years, with an average of 82.5 percent. From 2009 to 2010 a slightly reduced share from 85.4 percent to 81.7 percent was observed, but it is not a dramatic reduction, and the market share signals a relatively high level of competitiveness at the local market for maize grain.

Import substitution

Current production of wheat and maize in BiH can theoretically be based on 255 wheat producers and 909 maize producers with optimal yields generating a four family

member income at the average BiH level per capita (EUR 3,300 per capita). These farms will need 27 hectares for maize and 44 hectares for wheat production. If the reference income level is reduced, the number of new farms will increase since the number of hectares needed to generate the relevant income level will go down.

If the current import of wheat and maize can be substituted by more competitive domestic producers BiH will need 609 new or extra wheat farmers for every 25 percent of import substitution, and 354 new maize grain farmers for every 25 percent of import substitution. An import substitution strategy enhancing the framework conditions for the sector could benefit the farmers considerably.

Commodity reserve

In order to cover also a commodity reserve as expressed in the action plan for a commodity reserve under negotiation in BiH, additional numbers of hectares are required. The need will be in the range of 100,000 tonnes of wheat and 10,000 tonnes of maize according to the action plan. This amount of wheat produced with 4.5 tonnes/ha requires 22,222 ha. If it is furthermore assumed that the required number of hectares for a viable farm⁷ is estimated to be 44 ha, additional production from 505 farmers is required to contribute to the reserve stocks of wheat. With regard to maize, 45 farms with 1,250 hectares with an 8 tonnes per hectare yield are needed.

Trade with processed products

With respect to exports of milled products, the general picture was an increase in exports from 2007 to 2011 in the range of BAM 3.6 million or 123 percent. In the same period imports have however also increased, and **the trade deficit has as a consequence increased with BAM 29 million or 39 percent.** The increase in imports was not as large as the

⁷ The calculation of the "viable farm" is based on the average GDP per capita. In the absence of any reliable information to calculate average income in rural areas it was felt that this is the best proxy for an economically attractive income for farmers which would be an incentive to stay in full-time farming rather than pursuing other rural off-farm incomes or moving to the cities.

increase in exports, but the point of departure for exports is relatively modest compared to the import level.

The price per tonne of wheat flour exported during the whole period covered is higher than the import price per tonne. In 2011, the export price per tonne was 49 percent higher than the import price, and during the period the average difference was 86 percent in favour of the export price. In 2011, the export price was BAM 973 per tonne and the import price was BAM 654 per tonne, the difference therefore being BAM 318 per tonne.

The situation for processed products such as sweet biscuits, waffles, etc. is more blurred than that for milled cereal products. Exports here are also fluctuating with an increasing tendency in 2011, where the level of exports was BAM 27.6 million. This was an increase of 14 percent, which was far below the increase in exports of the milled products. **The trade deficit is also increasing for these products, with BAM 10 million or 23 percent in the period from 2007 to 2011.** For these products the increase in imports was greater than the increase in exports, leading to an increase in the gap over time.

1.3.5 Compliance with EU standards

BiH authorities at all levels are facing several tasks in order to finalize the adaptation of existing legislation to EU standards and in particular to enforce approved legislation. However, the actual status is not a substantial obstacle to BiH cereals farmers, as cereal exports are not significant.

Production of cereals on farms in BiH is typically conventional, in the sense that traditional production principles are used. Certification systems, such as certification for Global Good Agricultural Practice (GAP) standards and Quality Management Systems of safe food production, quality management and environmental protection are not used. The arguments of farmers are that there is currently no need for applying any standard, since the production is directed towards the domestic market, and in BiH it is not a

market requirement. As a consequence the production does not typically follow the formal principles of good agricultural practice, and the farmers do typically not meet the agri-environmental and quality standards of the production and of the products.

However, among farmers there is a growing understanding of the need to improve the standards of production and management. Furthermore, the farmers are willing to take these steps the day they are forced to take them. That day may come sooner than they expect, if the EU negotiations move along faster than what has been seen in previous years. If this happens, the IPARD programme, with its support to increased competitiveness and modernization of production standards in line with the *acquis*, will be very relevant.

Hazard Analysis Critical Control Points (HACCP) for BiH mills is not mandatory yet. Overall it is not surprising that just a few agro-processing companies have EU approval for exports (EU export certificates). **Due to non-compliance with EU standards and regulations, the existing export markets for cereals and flour are primarily CEFTA countries and Turkey.**

1.3.6 Investments

The analysis of previous and planned investments in the sector is based on case studies and surveys as well as on stakeholder interviews and expert statements.

The eight case study farms in FBiH have invested in the range of BAM 575,000 over the last five years. The average investment is BAM 71,500 per farm. In RS, the five case study farms represent a total investment of BAM 873,000 with an average of BAM 175,000, but one farm counts for the main share. Without that particular farm included in the sample, the average is reduced to BAM 30,000.

The farms without on-farm silos, plan in the future to invest in silos to avoid having to sell at low prices immediately after the harvest. The increasing importance of on-farm storage

facilities was confirmed during field visits and the visit to the INTERAGRO Bijeljina Fair in September 2011. The average investment among the case study farms is estimated to be BAM 100,000 per farm including investments in storage, combines, tractors and other farm equipment.

The farm survey confirms the investment plans. **On average the surveyed farmers will invest BAM 32,600 in the coming years as a priority for machinery to wheat and/or maize production. This confirms the need to upgrade the technological level of the farmers in BiH.** Other investments might add to this figure.

The investments in the primary processing sector will also be demanding and of the scale of BAM 40 to 50 million. Especially the smaller newly established mills with up to 10,000 tonnes annual capacity have not invested in sufficient storage facilities, including silos, and they plan to increase their storage facilities. Besides additional silo capacities, more and better driers are needed. Manufacturers also want to invest in packing lines for wheat flour and packages of 5, 10 and 25 kg. The more concerned millers also see a permanent need to invest in laboratory equipment.

The reactions to the announced possible IPARD programme, with co-financing support to farmers and millers, during field visits and workshops were very positive from those producers that are already doing well, but were rather reluctant from those who are performing less well. The expected requirement of a 50 percent private co-financing makes the expectations somehow modest among the processors of this last group.

1.3.7 Training needs

Based on this analysis, the cereals sector in Bosnia and Herzegovina is facing a number of opportunities such as increasing total production of wheat and maize, partly by increasing the area under cultivation and partly the yield per hectare. Furthermore, improvement of quality to be in line with the processing industry's requirements and with EU requirements will also increase competitiveness within a more liberalized

market. Tailor-made training courses could facilitate these opportunities.

In order to focus the training effort, it must primarily be training related to the EU acquis topics, which should come first. Here training of farmers/producers in Good Agricultural and Environmental Practice (GAEP), and of staff in the primary and secondary processing industry regarding HACCP and other quality control topics related to food safety, the environment and hygiene should have priority.

1.3.8 Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis

This SWOT analysis is based on the analysis of the current state of the cereals sector in BiH and provides input to the strategy formulation process. The SWOT tables give a comprehensive picture of the strengths, weaknesses, opportunities and threats for the producers and processors of cereals. The topics presented reflect the input from the participants in the SWOT workshops, even though some topics were excluded due to lack of relevance and factual support.

With regard to the cereal producers, their main strengths are related to their production of cereals primarily as animal feed. Furthermore, they also often have access to relatively cheap labour from family members. All family farms visited in the case studies rely on family members as labour force in the production of cereals. Due to a relatively low but increasing use of fertilizers and pesticides, the land is generally in environmentally good condition and is to some extent suitable for niche products and for organic production. Close access to processors is another positive condition for the farmers.

On the other hand, the producers are suffering from small-scale and fragmented farming making it difficult to take advantage of economics of scale in production and of new expensive machines. This is reflected in the low degree of mechanization, low productivity and low profitability, which is typical for the small-scale family farms dominating the landscape with their mixed production.

Table 1.1: SWOT analysis for BiH cereals producers

S – Strengths	W – Weaknesses
Experience and tradition in crop production, where wheat as part of crop rotation with maize improves plant health	Small and fragmented holdings (2 hectares and 6 parcels on average)
Cheap family workforce	Poor farm mechanization
Unpolluted land suitable for organic production of cereals	Lack of on-farm storage facilities, especially for wheat
Existence of a local processing industry (flour and feed mills)	Inefficient production and high production costs (capital and hired labour) and therefore limited profitability
Existence of scientific research institutions	Lack of education (especially related to the use of agroinputs like seeds and fertilizers), but also with regard to agricultural economics
	Small number of specialized producers
O – Opportunities	T – Threats
Harmonized subsidies within BiH	Continued degradation of non-cultivated agricultural land
BiH subsidies close to Croatian level; i.e. EUR 275 per hectare (2011) equal to BAM 550 per hectare	Limited guidance by the authorities, especially when announcing the level of financial support and minimum prices only after the start of the sowing season
Improved regulation of land ownership and land market	Complicated and not harmonized application procedures for farmers
Large fallow and non-cultivated areas – up to 500,000 hectares, which partly fits for cereals	Lack of enforcement of authority control (export, import, quality, seedlings)
Existence of larger tracts (consolidated and regrouped) of arable land in the lowlands in the FBiH (Sava canton – municipalities Odzak, Samac Domaljevac and Orasje and in north part of Tuzla canton – Kalesija municipality)	Incomplete price transmission; rising world market prices not always reflected at local price level
Diversification of products, for example potential for durum wheat on specific areas and organic production on others	Large imports of cereals, especially wheat, partly due to low quality of local production (assortment), unfavourable trade agreements and unfavourable climate
Improved extension and machinery services and tailor-made training programmes for producers (actually 10,000 hectares per 1 advisor)	Few agricultural service providers
Increased support for capital investments through national support programmes and the upcoming IPARD programme	High prices of inputs further reducing the profitability, especially of wheat
Considerable share of cattle breeding in the agriculture sector and the need for arable crops for animal feed	Land to some extent contaminated with mines
Favourable climate and land conditions in the northern parts of BiH	
Know-how of local seed production (breeding and multiplication)	
In the long run: worldwide shortage of cereals and increased transport costs	

Source: Own data collection through SWOT workshop, interviews, field trips, case studies and survey, 2011

Table 1.2: SWOT analysis for BiH processing industry

S – Strengths	W – Weaknesses
Existence of competitive processing facilities (for example KLAS and ZITOPROMET)	Limited capital resources (apart from market leaders)
Vicinity to consumers, which is relevant for products not suited for long transportation (e.g. bakery products)	Outdated technology (apart from the market leaders) often not in line with relevant quality standards
Sufficient storage capacity (silos), especially within the former state-owned enterprises	Overcapacities in the primary processing industry
	Lack of skilled labour, high fluctuations rate of labour
	Inadequate vocational training, particularly in the smallscale baking and confectionery industry
	Focus is almost exclusively on BiH market
	Outdated marketing activities
	Expensive transport of wheat to mills
	Weak cooperation between farmers and processors
O – Opportunities	T – Threats
Domestic market of 3.8 million customers	Inadequate sector policies and strategies at entity and state level
Product development, including specialities for niche markets	Market liberalization through CEFTA and upcoming EU membership
Import substitutions – concerning raw materials if price and quality is competitive	Imports of cereals, especially wheat
Access to international markets via diaspora	Processing of illegally imported wheat, due to weak border control
	Strategic wheat reserves might not be handled by private enterprises
	Incomplete privatization of former state-owned enterprises
	Consumers highly attracted by import products

Source: Own data collection through SWOT workshop, interviews, field trips, case studies and survey, 2011

The producers face several opportunities, which can be utilized, if circumstances are in favour of the farmers. First of all, there are 500,000 hectares of non-utilized land available for cereal production (and for other types of agricultural production), if these hectares can be mobilized for productive purposes. A number of preconditions must be fulfilled, before producers can and will take steps to expand production in a period, where production is going down and competition is going up. A harmonized support regime in BiH is one precondition, eliminating internal unfair competition and making the national playing field even, where support rates are competitive with support rates

(area payments) in neighbouring countries. Another regulatory-based topic is related to the need for appropriate structures for land consolidation, land property/ownership rights and trade. For the farm restructuring process to take off, it is urgently needed that these regulatory and administrative structures are in place and agreed upon among the relevant political actors.

One important point in the discussion of the competitiveness of the cereal sector is the issue of product quality. Farmers have stated during workshops and interviews that local crops do not fall below the required quality compared with imported foreign products,

and that the local processing industry has no reason not to buy them, particularly since local producers offer relatively small quantities. On the other hand, representatives from the processing industry pointed out several times at workshops and during interviews that local crops are not of the required quality and simply cannot be used as a raw material for further processing.

Based on the SWOT tables above, one strategy could focus on improved framework conditions facilitating import substitution, and here one recommendation could be that cereal production is only suitable for farms with more than 25 hectares of maize and 45 hectares of wheat. Farms of this size will be able to produce sufficient amounts of cereals to generate an average income for a family of four persons. These types of viable and competitive farms will be the only farms being eligible under IPARD. Today BiH has few farms of this size and to enlarge farms the land market must be improved. Furthermore, inputs must be made available to farmers at competitive prices.

For processors, the upgrading of technologies and qualifications of the labour force is needed, particularly for the smaller mills and for the secondary processing firms. The mills will need these investments in order to be competitive on price with the cheaper imported flour. Better organization of cooperation between producers and processors is needed to achieve the required product quality of all products along the value chain from seed via harvested cereals to flour and processed products.

1.4 Recommendations for interventions

The following recommendations could contribute to make wheat and maize production more profitable in Bosnia and Herzegovina. An overall strategy for the development of the cereal sector in BiH can focus on import substitution as the primary market incentives. Import substitution has a potential to be achieved, if the competitiveness of the producers is enhanced, and if the

regulatory environment is harmonized and able to facilitate the strengthening of the competitiveness of the farmers, but an import substitution strategy is only feasible if the competitiveness of the BiH cereals sector is increased with higher yields, higher productivity and better quality for price at the same level as the main competitors.

It is important to facilitate the structural changes of the sector. These changes should address the major problems leading to the relatively low competitiveness of the sector as it is today. These difficulties are low yields, low productivity and low quality.

Land consolidation is required and must be facilitated by the needed regulatory framework in order to make the land market work. Only in this way will it be possible for farmers to expand their land and increase the economies of scale of production.

Larger areas for cereals production and development of specialized cereal farms makes it possible to invest in better and more productive technologies in the production of cereals. Support programmes focused on economically viable farms, where investment support is targeting productivity as well as product quality, supplemented with support to competence build-up of the farmers and the processors is one side of the overall strategy. A harmonized regulatory environment including homogeneous support rates per hectare and per crop, enforced regulation and control, appropriate extension services and linkages to the research and development sector is the other.

Furthermore, the overall efficiency of production and competitiveness has to be increased through the use of certified seeds. Also, overall compliance with national and EU food safety and environmental protection standards has to be improved considerably.

Technical assistance and training is needed – especially in the production sector – to increase awareness and capacity regarding modern production techniques and technologies and attainment of national and EU standards.

Taking into consideration the overall situation in the sector and the analysis of the current situation presented in this report, it is recommended that future interventions be oriented towards the following topics:

State/entity/BD level

- Harmonizing all subsidies for producers and processors between RS, FBiH and the BD, including cantons and municipalities. Harmonization will contribute to creating a homogeneous market without distortions of the competitive environment;
- Harmonizing farm registers and agricultural information systems will improve the statistical data and make it possible for the authorities to take decisions against an updated background, and will contribute to the professionalism of the sector, linking support and subsidies to registration of the farmers in the farm registers;
- Introducing a minimum price in line with the EU intervention price, which is EUR 101,31 per tonne in 2011 in order to contribute to the balancing of the competition between BiH producers and their international colleagues;
- Supporting farmers with per hectare payments. Hectare payments should be announced before the crop is sown to give the producers some planning security. Hectare payments would also reach producers who do not sell to registered traders or processors, as is the case now. Around 70 percent of cereals that are produced are not subsidized as they are produced on land not registered in the farm registers;
- Improving farm structures by enabling a land market by speeding up land consolidation. A functional land market will help commercial farmers to expand their farms faster and consider support to land renting systems, including payments given to rented land;
- Improving extension services and providing an increased budget, particularly in FBiH, where the need for a stronger organization of the extension service is needed.

Cooperation with the national research and development institutes can be enhanced through better mutual cooperation between the two links in the chain. Competence build-up of the extension services could focus on good agricultural and environmental practice, optimal resource utilization and energy efficiency in production. They can also facilitate specialized services like business plans and product development, architectural building plans, software and training;

- Encouraging public-private partnerships to link the existing know-how of the governmental research institutes better with the market;
- Registering more cereal varieties in the national List of Varieties to have a broader choice, also reflecting the demand and needs from the processing side;
- Enforcing the implementation of laws, such as controls at all levels;
- Reporting regularly about market prices (Market Information System accessible to farmers) as the more transparent the market is, the better it will be for the farmers.

Producers

- Increasing overall competitiveness by providing financial support for the introduction of new seeds and investments in production and harvesting techniques;
- Improving on farm cereal handling equipment and machinery (combines, seed machinery, sprayers, ploughs and trailers) but also equipment for land clearance (of temporarily abandoned arable land) through financial support to the investments in these technologies and through support via the extension service to the utilization of the technologies;
- Providing support to the investments in the construction and refurbishment of storage buildings (silos including driers), machine sheds and weight-bridges, where possible promoting collective ownership and management, including elements of a grain warehouses receipts system.

Table 1.3: Priority Axis 1 – Improving market efficiency and implementing community standards, IPARD measures 101 and 103

Potential Investments under IPARD Measure 101					
Investments in Agricultural Holdings – Arable Crops Sector	Beneficiaries (numbers)	Investment / Beneficiary EUR	Total investment funding in EUR	Public funding (EU = 37.5% + BiH state = 12.5%), EUR, 50%	Private funding, EUR, 50%
Cereal handling equipment and machinery (tractors, seeding machines, sprayers, ploughs, trailers)	5,000	40,000	200,000,000	100,000,000	100,000,000
Combines	2,000	70,000	140,000,000	70,000,000	70,000,000
Construction and/or renovation of storage buildings (silos incl. driers), machine sheds, etc.	3,000	45,000	135,000,000	67,500,000	67,500,000
Potential Investments under IPARD Measure 103					
Investments in Processing and Marketing of Agricultural Products	Beneficiaries (numbers)	Investment / Beneficiary EUR	Total investment funding in EUR	Public funding (EU = 37.5% + BiH state = 12.5%), EUR, 50%	Private funding, EUR, 50%
Renovation of mills (buildings and equipment)	20	500,000	10,000,000	5,000,000	5,000,000
Construction and/or renovation of silos	20	500,000	10,000,000	5,000,000	5,000,000
Equipment for improvement of hygiene and product quality, in compliance with Community standards (HACCP, International Organization for Standardization (ISO), International Food Standard (IFS))	20	25,000	500,000	250,000	250,000
Investments in laboratory equipment	40	50,000	2,000,000	1,000,000	1,000,000
TOTAL	10,100	n.a.	497,500,000	248,750,000	248,750,000

Processors

- Investment support to investments in various technologies needed and planned by the processors, including additional silo capacities, more and better driers, packing lines for wheat flour and packages of 5, 10 and 25 kg;
- Investments in improved laboratory services within the companies.

1.5 Main findings for IPARD

The following recommendations are given for interventions under IPARD:

It should also be mentioned here that training could also be supported by IPARD, although detailed research and training needs assessments might be needed upfront. The establishment of producer groups and producer organizations could also be

included, since this type of support is also eligible under IPARD.

The total investment under IPARD for the development of the cereals sector is estimated to be a maximum of EUR 500 million, financed with 50 percent from the private sector and 50 percent from BiH and the EU. The unit costs of investments are calculated based on information from case studies, survey data, expert data and market prices collected.

Assuming that only viable farms proving to be feasible in the short term will be eligible, the number of potential beneficiaries for measure 101 will be 5,000–10,000 farms, while there will be only 100 potential beneficiaries under measure 103 for processing.

- Potential target group, farmers: 10,000
- Average investment project: EUR 50,000
- Potential target group, processors: 100

- Average investment project: EUR 500,000 for technologies and EUR 50,000 for laboratory equipment

- Investment budget: EUR 500 million (50 percent from the private sector, 50 percent from BiH (12.5 percent) and the EU (37.5 percent)

Proposed size of projects for producers

The maximum and minimum limits of total value of eligible investments per project are:

Minimum	EUR	10,000
Maximum	EUR	100,000

Proposed size of projects for processors

The maximum and minimum limits of total value of eligible investments per project are:

Minimum	EUR	25,000
Maximum	EUR	500,000

2. Background and Context for the Sector Analyses in BiH

2.1 General information about BiH

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 km². In 1990, Bosnia and Herzegovina held its first democratic multiparty elections and in early 1992 it became an independent country.

FBiH 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, Bosnian 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 Brčko District (BD). The Federation of Bosnia and Herzegovina (FBiH) covers about 50 percent of the territory and the Republic of Srpska covers about 49 percent of the territory. Brčko District covers the remaining one percent of the total territory.

The current administrative divisions (Figure 2.2) are based on the lines drawn up as part of the 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 FBiH is decentralized. It is divided into 10 Cantons (each with its own government) and 79 municipalities. The Government of FBiH shares and delegates some of its competencies with the Cantonal

Fact box 1

<ul style="list-style-type: none"> • Population: 3.839.737 (BHAS*, 2011) • GDP per capita: Euro 3,300 (2010) 	<ul style="list-style-type: none"> • Capital: Sarajevo • Major languages: Bosnian, Croatian and Serbian
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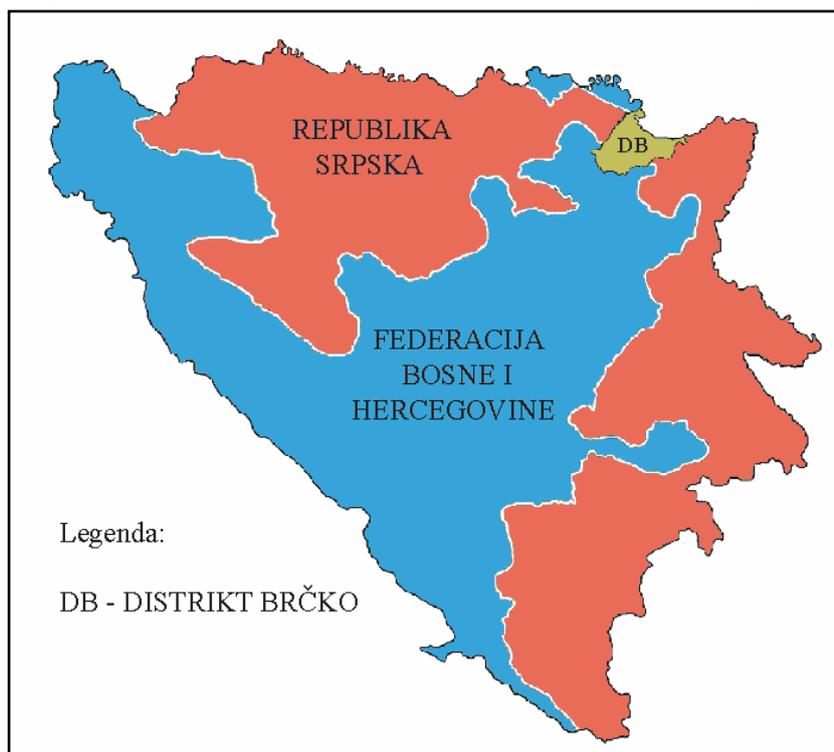
* Bosnia and Herzegovina Agency for Statistics

Figure 2.1: Map of BiH cities



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

Figure 2.2: Administrative division of Bosnia and Herzegovina



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 BiH.

2.2 Context and objective of the sector analyses

2.2.1 Preparation for EU accession

Bosnia and Herzegovina (BiH) 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 Stabilization and Association

Agreement (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 2008.⁸

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.

BiH and the EC signed the Financing Agreement for the Instrument for Pre-accession Assistance (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 BiH

⁸ See EU Delegation Web site for Bosnia and Herzegovina: <http://www.delBIH.ec.europa.eu/>

becomes an EU candidate country, and when the implementation of the IPARD supports 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 management decisions 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 rural areas and on in-depth analysis of the sectors concerned.⁹ 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 the 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 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 based on 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

The sector analyses provide a comprehensive analysis of the current state of the sectors. They identify the weaknesses and sector concerns to be addressed by the IPARD intervention and by other state, entity and district level interventions. Where appropriate the sector analyses take into account specific regional development needs.

2.2.3 Objectives of the report

The cereal 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 an analysis of the current state of the cereals

⁹ 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, and the new regulation might differ from the current IPA Implementing Regulation (718/2007). As a matter of simplicity reference is made to IPARD in the sector analyses.

sector in BiH, focusing on the two main cereals: wheat and maize, but also addressing to some extent other cereals, such as barley. Therefore the report contributes to the analysis of the internal strengths and weaknesses as well as on 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 the formulation of a number of possible policy interventions for the agriculture and rural development policy in line with the needs for the development of the sector.

The objectives of the sector analysis are to provide:

- Background and key figures for the cereals sector
- Structural characteristics of the sector: Producers/farmers and processing industry
- Government policy for the sector at state and entity/district level
- Market and trade
- Level of attainment of relevant EU standards
- Past trends and future developments in terms of investment
- Identifying the needs and potential of the sector
- Identifying training needs in the sector
- Outcome: As an outcome, the analysis of the cereals sector provides:
 - A transparent overview of the sector containing a quantitative and qualitative description of the current situation.
 - A detailed analysis of the greatest potential and obstacles (weakest links in the supply and value chains) to realize this potential in production and marketing, for the measures identified in the current (2012) IPARD regulation.
 - Recommendations for targeting the specific investments (segment/area/ beneficiary), primarily focusing on the weakest links in the supply chain.

2.3 METHODOLOGY

2.3.1 Desk research and statistics

The study started by reviewing existing reports on the BiH agricultural sector with a focus on the cereals sector (see Chapter Literature and Web sites Consulted).

This study relies heavily on established datasets, for which the main sources were:

- The Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina, Sector for Agriculture, Food, Forestry and Rural Development (MoFTER/SAFFRD);
- FBiH Ministry of Agriculture, Water Management and Forestry;
- RS Ministry of Agriculture, Forestry and Water Management;
- The Department for Agriculture, Water Management and Forestry, Brčko District;
- Faculty of Agriculture, University of Banja Luka;
- Faculty of Agriculture and Food Sciences, University of Sarajevo;
- The Agency for Statistics of BiH;
- Eurostat
- FAO
- United Nations trade statistics

2.3.2 Surveys

Data collection was also accomplished as part of the survey conducted for the preparation of the sector analysis for the meat and dairy sector. The purpose of this was also to provide a realistic picture of the cereals sector to supplement existing statistics and official reports. A number of questions related to crop production, costs and mechanization were asked to 121 farmers identified for the meat and dairy sector survey and covering more than 2,500 ha of arable land and pastures. Out of these 121 farmers, 46 farmers did produce wheat and/or maize, and an additional 33 did produce barley. The field survey provided useful results reported later in this report. These farmers focus their production on keeping animals and could provide good

insights into cereal production. Experts have made estimations whenever needed.

2.3.3 Case studies

The Faculty of Agriculture of the University of Banja Luka and the Faculty of Agriculture and Food Sciences of the University of Sarajevo have made a total of 13 carefully selected case studies based on personal expert interviews. Eight of these were in FBiH and 5 were in RS and BD. These case studies include detailed descriptions of production characteristics regarding technology levels, facilities, know-how, quality standards, bottlenecks and weak points in the value chain of various types of producers (semi-subsistence producers, commercial holdings and large-scale corporate producers) with attention to compliance with EU standards.

Each of the case studies is reported and is attached as Annex 3 to this report.

2.3.4 Consultations with key stakeholders

Discussions with key stakeholders were carried out with, among others, the following institutions:

- Ministry of Foreign Trade and Economic Relations, Sector for Agriculture, Food, Forestry and Rural Development (MoFTER/SAFFRD),
- FBiH Ministry of Agriculture, Water Management and Forestry (FBiH MoA),¹⁰
- RS Ministry of Agriculture, Forestry and Water Management (RS MoA),
- Department for Agriculture, Water Management and Forestry from the Brčko District
- Agricultural Faculty in Banja Luka
- Agricultural Faculty in Sarajevo

- Agency for Statistics of BiH
- Agricultural Institute in Banja Luka
- Federal Institute for Seed and Plant Propagation Material

It should be noted that meetings with the official focal points at the two Entity Ministries in Banja Luka¹¹ and Sarajevo¹² and the Department for Agriculture, Water Management, Forestry and Veterinary from the Brčko District¹³ were arranged at the very beginning. These meetings were aimed at gaining some insights into the rather complex political situation in BiH.

2.3.5 Workshops

Considerable emphasis was placed on obtaining the opinion of a wide range of stakeholders. To this end, four workshops were organized, two each in Banja Luka and Sarajevo. Direct meetings with institutions, producers and processors were also arranged. In total, the study team met over 100 farmers, processors, institutions and other stakeholders. The first two SWOT workshops were held in Banja Luka (30 May 2011) and Sarajevo (31 May 2011). The agenda was to discuss the different aspects of the cereals sector with a broader public, to discuss the current state of the sector regarding production and trade, and to discuss the internal strengths and weaknesses as well as the external threats and opportunities for the sector. In Banja Luka, 35 participants contributed to the discussions, and of these 20 represented the sector as producers or processors. In Sarajevo, 26 participants were present and among them 15 were producers and processors from the sector. The results from the workshops are utilized in the SWOT section later in this report.

A second round of two verification workshops took place at the same premises on

¹⁰To make the reading of the text easier the following names are used: FBiH MoA for FBiH Ministry of Agriculture, Water Management and Forestry and RS MoA for RS Ministry of Agriculture, Forestry and Water Management.

¹¹RS Ministry of Agriculture, Forestry and Water Management; Mr Zoran KOVACEVIC, Assistant Minister of Agriculture, 9 June 2011

¹²FBiH Ministry of Agriculture, Water Management and Forestry; Mr Hanefija TOPUZ, B.Se. Agr., Head of Department for Agricultural Policy, 8 June 2011

¹³Brčko District of BH Government, Department for Agriculture, Water Management, Forestry and Veterinary, Mr Dr.sc. Ferhat CEJVANOVIC, 21 September 2011

20 October 2011 in Banja Luka and 21 October 2011 in Sarajevo. 24 participants in Banja Luka and 23 in Sarajevo attended the workshops. Again producers and processors were well represented. The aim of the workshops was to present the conclusions from the sector analysis and the preliminary recommendations for possible policy interventions, and to receive qualified feedback from the stakeholders about these conclusions and recommendations. It was considered essential to ensure that stakeholders have the chance to comment, and on the whole they participated actively.

Stakeholders raised questions about the reliability of official data reflecting the real picture of cereals production in BiH, and it provided for some discussions. The decision by the expert team was to report official statistics and to comment on them, based on the assessments provided by other stakeholders. This approach was later agreed with representatives from entity ministries and MoFTER.

The workshop also agreed on the conclusions from the SWOT analysis as well as the proposed actions for interventions in the sector.

2.3.6 Other activities implemented

Field visits to selected sites where measures will impact strongly

The sector expert and the national coordinator undertook a field trip in September 2011 to the most important areas in BiH, from Banja Luka to Brčko and Bijeljina. During this field trip five farmers and five processors were visited and interviews conducted along the lines of the template for the case studies.

Contacts with other donors and non-governmental organizations (NGOs)

Finally, interviews were held with donors and NGOs. The interviews had only an informative and illustrative purpose and did not as such reflect a scientific selection of donors and NGOs among all these types of institutions. The donors and NGOs were:

- USAID and the Swedish International Development Cooperation Agency (SIDA); Fostering Agricultural Markets Activity (FARMA), Mr Bruce BROWER, CoP.
- Urduzenja Gradana za Razvoj Ruraine Informatičke Zajednice u BiH (UGRRIZ), (Association of citizens for development of the rural information community in BiH)
- Agr. Ing.ba, Mr Besim TABAKOVIC, dipl. ing.

2.4 Key figures on the BiH economy

2.4.1 General economic indicators for BiH

This section of the report provides basic economic information about the development of the BiH economy to be used as reference data in the specific sector analysis. The development from 2004 to 2010 in Gross Domestic Product (GDP) is presented in the table below. The economy demonstrates very positive performance from 2004 to 2008 with an average yearly growth of 13 percent (in current prices), until the international financial crises changed the scene dramatically. The year 2009 was one of decline, while 2010 brought the economy back on a positive track at the same level as in 2008.

The contribution of each entity to state level GDP is quite stable over the period, even though an increase in the share of RS is observed from 32 percent in 2004 to 34 percent in 2009. FBiH and BD have both experienced a decrease in their contribution to the overall economy from 2004 to 2009.

Table 2.1: Development of GDP in BiH from 2004 to 2010

Item	2004	2005	2006	2007	2008	2009	2010
GDP BiH, million BAM	15,946	17,157	19,272	21,778	24,718	24,004	24,484
GDP BiH, million EUR	8,136	8,754	9,833	11,111	12,611	12,247	12,678
GDP BiH per capita, BAM	4,150	4,464	5,015	5,668	6,433	6,246	6,371
Population, BiH, million	3.842	3.843	3.843	3.842	3.842	3.843	3.843

Source: Agency for Statistics, BiH, own calculations, exchange rate BAM to EUR = 1.9558 all years.

The following table gives a breakdown of Gross Domestic Product by entity:

Table 2.2: Gross Domestic Product by entity, 2004–2009 million BAM and percent

Item	2004	2005	2006	2007	2008	2009
GDP FBiH, million BAM	10,350	10,945	12,261	13,879	15,647	15,231
GDP RS, million BAM	5,116	5,763	6,544	7,351	8,489	8,233
GDP BD, million BAM	480	449	467	548	581	550
FBiH share of total GDP	64.9%	63.8%	63.6%	63.7%	63.3%	63.5%
RS share of total GDP	32.1%	33.6%	34.0%	33.8%	34.3%	34.3%
BD share of Total GDP	3.0%	2.6%	2.4%	2.5%	2.4%	2.3%

Source: Agency for Statistics, BiH

2.4.2 Agricultural indicators

A key constraint to improvement of the agriculture sector management in BiH 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 BiH agriculture based on available statistics.

Agricultural land in Bosnia and Herzegovina

BiH has a total area of 51,209 km², of which lakes and rivers cover 12 km² and land 51,197 km².¹⁴ Of the total land area, plains cover 5 percent, hills 24 percent, mountains 42 percent and karsts 29 percent. Forests

and woodlands cover about 50 percent of BiH territory, and agricultural land totals 2.5 million ha or 0.7 ha per capita.¹⁵

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

As with other data for BiH, data on agricultural land are not always consistent. Depending on the source, this figure varies and differs considerably, for example Jaksic.¹⁶ According to official statistics, agricultural land in BiH 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 BiH and Brčko District, according to data of the entity and state agencies for statistics, which is shown in the detailed table that follows.

BiH has 2.16 million hectares of agricultural land. In this structure a little less than a half is arable land and gardens (1.023 million hectares or 47.3 percent of total agricultural land). The

¹⁴A report of the Agriculture Sector in Bosnia and Herzegovina 2007, Ministry of Foreign Trade and Economic Relations. 2008. p. 6

¹⁵Action Plan for Environmental Protection BiH (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

¹⁶Jakšić Duško, Postdejtonska stvarnost i perspektiva, Atlantik, Banja Luka. 1997. p. 95

Table 2.3: Agricultural areas in BiH, 2005–2009

Total BiH	2005	2006	2007	2008	2009	Av. 2005–2009
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
<i>Total arable land ('000 ha)</i>	<i>1,585</i>	<i>1,586</i>	<i>1,563</i>	<i>1,547</i>	<i>1,544</i>	<i>1,565</i>
Pastures, 000 ha	586	585	592	590	611	593
Wetlands, reeds and fishponds, 000 ha	5	6	6	4	3	5
Total agricultural land, 000 ha	2,176	2,177	2,161	2,141	2,160	2,163
Federation of BiH	2005	2006	2007	2008	2009	Av. 2005–2009
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
<i>Total arable land, 000 ha</i>	<i>719</i>	<i>719</i>	<i>703</i>	<i>712</i>	<i>692</i>	<i>709</i>
Pastures, 000 ha	419	418	427	441	442	429
Wetlands, reeds and fishponds, 000 ha	2	2	2	2	2	2
Total agricultural land, 000 ha	1,140	1,139	1,132	1,155	1,137	1,141
Republika Srpska	2005	2006	2007	2008	2009	Av. 2005–2009
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
<i>Total arable land, 000 ha</i>	<i>832</i>	<i>834</i>	<i>827</i>	<i>802</i>	<i>818</i>	<i>823</i>
Pastures, 000 ha	166	166	164	148	168	162
Wetlands, reeds and fishponds, 000 ha	3	4	4	2	1	3
Total agricultural land, 000 ha	1,001	1004	995	952	988	988
Brčko District	2005	2006	2007	2008	2009	Av. 2005–2009
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
<i>Total arable land, 000 ha</i>	<i>34</i>	<i>33</i>	<i>33</i>	<i>33</i>	<i>34</i>	<i>33</i>
Pastures, 000 ha	1	1	1	1	1	1
Wetlands, reeds and fishponds, 000 ha	0	0	0	0	0	0
Total agricultural land, 000 ha	35	34	34	34	35	34

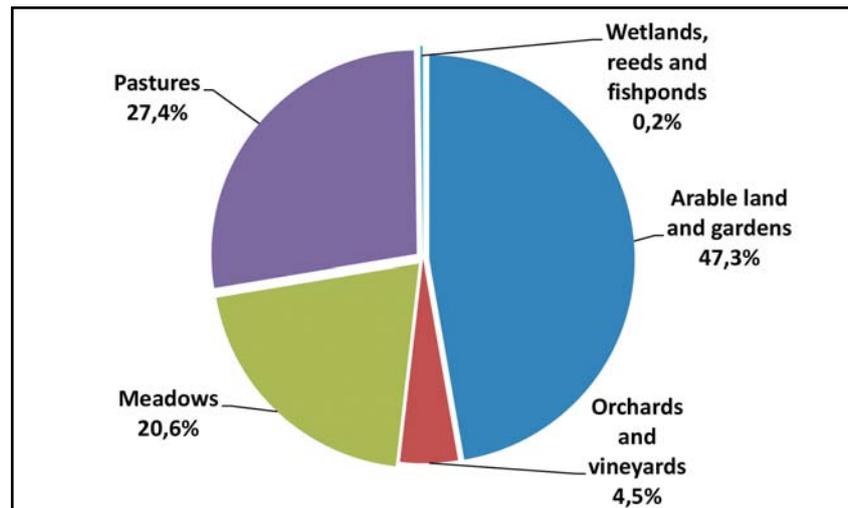
Source: Agency for Statistics BiH, FBiH, RS and BD

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). The fruit orchards and vineyards (3,500 ha) cover 98,000 hectares (4.5 percent of total agricultural land).

Although both entities occupy roughly the same area, Republika Srpska has a higher

share of total arable land (58 percent), and the Federation of BiH more of the total meadows (59 percent) and pastures (72 percent). This is the consequence of the natural geography of each entity, and as a result there is significant production of crops in RS, whilst in the Federation greater importance is given to livestock.

Figure 2.3: Structure of agricultural land of BiH (average 2005–2009)



Agricultural land use

Most of the agricultural land in BiH is used for the production of grain (58 percent; 319,000 ha), where this production is more significant in RS (65 percent) than in FBiH (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 the whole of BiH (1.7 percent of agricultural land). The detailed structure of agricultural land use is shown in the following table:

Close to half of the arable land in BiH is not cultivated (450,000–480,000 hectares). There are many contributing factors, including the presence of mines,¹⁷ the absence of economic incentives 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 during that time, and full attention was paid only to state farms, which accounted for about 5 percent of all agricultural land.¹⁸

In 2006, it was estimated that there were over 500,000 agricultural holdings in BiH. 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 the sector analyses indicate that subsistence and semi-subsistence farms, which consume the majority of their production and produce only little marketable surplus, remain

¹⁷ According to the BiH Mine Action Strategy (2009–2019), the Council of Ministers BiH, 2008, pg. 6, BiH at the end of 2008, had suspected 1,573 km² (mined) areas, which is slightly more than 3 percent of the territory. According to the Managing Director of the Bosnia and Herzegovina Mine Action Center (BHMIC), the suspected area is today (June 2012) 1,544 km², equal to 3.04 percent of the territory, see Atlantic Initiative Newsletter, June 2012. The capacity of demining is 35–40 km² per year from 2012 to 2019, if fully operational. Recent data from EUD indicate a suspected area of 1,442 km² equal to 2.81 percent of the BiH territory.

¹⁸ Čustović Hamid and Ljuša Melisa. Participatory Land Use Development in Bosnia and Herzegovina. p. 1

Table 2.4: Structure of use of agricultural land in Bosnia and Herzegovina, '000 ha and percent

Total BiH	2005	2006	2007	2008	2009	Av. 2005–2009
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
Federation of BiH	2005	2006	2007	2008	2009	Av. 2005–2009
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
Republika Srpska	2005	2006	2007	2008	2009	Av. 2005–2009
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
Brčko District	2005	2006	2007	2008	2009	Av. 2005–2009
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

Source: Agency for Statistics BiH, FBiH, RS and BD

the dominant form of farm structure in BiH. 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 BiH today.

The general problem of inadequate and uncoordinated data extends also to cadastral and land ownership data, much of which has not been updated since the war and therefore does not reflect the current situation. There is as yet no comprehensive farm or statistical register, so no official data are available on the numbers 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;¹⁹ 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.

Agricultural GDP

The recent development of agricultural GDP is presented in the following table:

The share of agriculture in overall GDP has decreased steadily from 2004 to 2009, and is relatively low compared with other counties in the region. In 2004, FBiH generated 43 percent of agricultural GDP, RS 49 percent and BD the remaining 8 percent. In 2009, FBiH generated 43.5 percent, RS 50.7 percent and BD 5.8 percent, representing a relatively stable distribution. The value of wine production is presented in the final table of this section, and it is compared with BiH GDP and agricultural GDP of BiH in 2010.

2.5 Key definitions

Primary and secondary processing industry:

The mills for flour and feed products are defined as primary processing industries, whereas the secondary processing industry includes bakeries and breweries, as these produce final products.

Small and medium-sized enterprises:

According to the Commission Recommendation 2003/361/EC small and medium-sized enterprises are characterized as having between 10 and 250 employees and by an annual turnover and/or annual balance sheet of more than EUR 2 million but not exceeding EUR 50 million.

Table 2.5: Agricultural GDP, 2004–2009

Item	2004	2005	2006	2007	2008	2009
BiH GDP of agriculture and related services, million BAM of which:	1,425	1,524	1,664	1,784	1,895	1,817
– FBiH	618	639	703	763	813	791
– RS	698	768	859	918	978	921
– DB	109	118	103	103	105	105
Agriculture, share of total GDP, %	8.9	8.8	8.6	8.2	7.7	7.6
Previous year = 100	107.6	107	109.2	107.2	106.2	95.9

Source: Agency for Statistics BiH, Agency for Statistics RS (Statistical Yearbook 2010, Agency for Statistics FBiH, own research, exchange rate BAM to EUR = 1.9558 all years. Data for 2010 not available

¹⁹ Čustović Hamid and Ljuša Melisa. Participatory Land Use Development in Bosnia and Herzegovina. p. 3

3. Cereals production in BiH

This section of the report provides actual information about the production of cereals in BiH. As was explained in Chapters 1 and 2, focus is on wheat and maize, but some data will also be provided regarding other smaller (in volume and value) cereals in the country. These are rye, barley and oats. 90 percent of maize is planted in the north-eastern part of Bosnia and Herzegovina, whereas 30 percent of the wheat is found in other areas apart from the northeastern part, for example around Ozak, Oracje, Bihac, Cazin, and Livno.

3.1 Trends in production of cereals

The following table provides an overview of the development of the area sown with cereals in BiH, entities and in BD for the period 2006 to 2010.

The situation is relatively stable, although the area with sown crops in BiH has diminished from 2008 with 557,000 ha through 525,000 hectares in 2009 to 512,000 hectares in 2010. The 2011 figures (not included in the table) show an increase to the 2009 level of 527,000 hectares. The share of the area sown with cereals has been constant during this period. At BiH level, the share is 57.2 percent in 2010 and 57.5 percent in 2011.

For FBiH there has been a slight decrease in the total sown area from the 2006 level of 197,000 ha to the level in 2010 of 189,000 hectares, while the share with cereals has been rather stable with 43.4 percent in

2010. FBiH is the part of the country with the smallest relative share sown with cereals of the total area, equal to two-thirds of the area in RS, and half the share of the area in BD.

In RS a decrease in the total sown area from around 350,000 hectares in the years 2006, 2007 and 2008 is observed, a slight decrease in 2009 to 323,000 hectares and a further decrease in 2010 to 311,000 hectares. The reduction was 11 percent from 2006 to 2010. As the area with cereals has followed this downward trend the share remained constant.

In BD the situation is stable with regard to the sown area and the area with cereals: 12,000 hectares are sown every year in the period, and cereals constitute 83.3 percent of this area. The tendencies are illustrated in the figure below.

The absolute and relative importance of the areas with cereals is presented in the table 3.2, where a breakdown for wheat and maize is also presented.

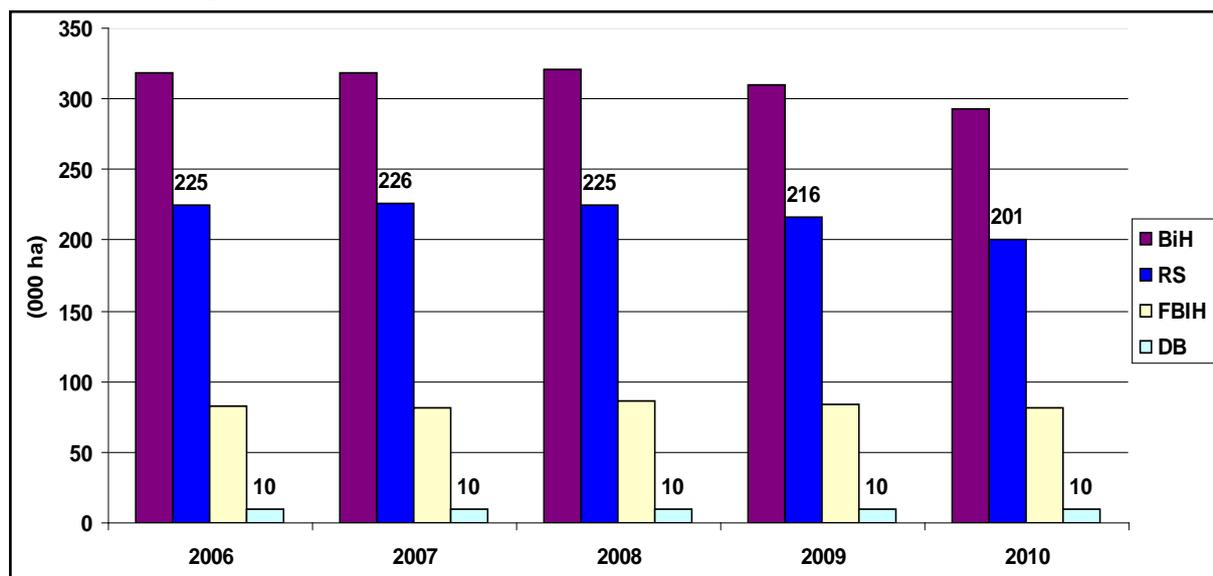
At the level of BiH a modest reduction in the number of hectares with cereals can be noted, down from 318,000 hectares in 2006 to 293,000 hectares in 2010, which is a reduction of 8 percent. The number of hectares has been constant in FBiH with a five-year average of 83,400 hectares, while RS has experienced a reduction from 225,000 hectares in 2006 to 199,000 hectares in 2010. This reduction covers the reduction at state

Table 3.1: Total sown area, 000 ha, and area sown with cereals as percent, 2006–2010

Area	2006	2007	2008	2009	2010
BiH, total sown area, 000 ha	557	556	557	525	512
% with cereals	57.1	57.2	57.6	59.0	57.2
FBiH, total sown area, 000 ha	197	193	196	190	189
% with cereals	42.1	42.5	43.9	44.2	43.4
RS, total sown area, 000 ha	348	351	349	323	311
% with cereals	64.7	64.4	64.5	66.9	64.6
BD, total sown area, 000 ha	10	10	10	10	10
% with cereals	83.3	83.3	83.3	83.3	83.3

Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; Power Point Presentation, 30 May, 2011, and BiH Agency for Statistics, various years

Figure 3.1: Total area sown with cereals, 000 hectares, 2006–2010



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011; and BiH Agency for Statistics, various years

level, but is of course more important for RS in relative terms. The reduction represents a decrease of the area with cereals of 12 percent. In BD the situation is constant, as inferred above.

The table presents a breakdown of the main cereals wheat and maize. The share with

wheat is diminishing in RS, particularly from 22.1 percent in 2006 to 16.7 percent in 2010. This is a reduction of almost 25 percent. FBiH has also experienced a decrease but not that large, only 9 percent. At BiH level the total reduction is 19 percent due to the impact of the share of wheat in RS.

Table 3.2: Land sown with all cereals, wheat and maize, 000 hectares, percent, BiH, entities and BD, 2006–2010

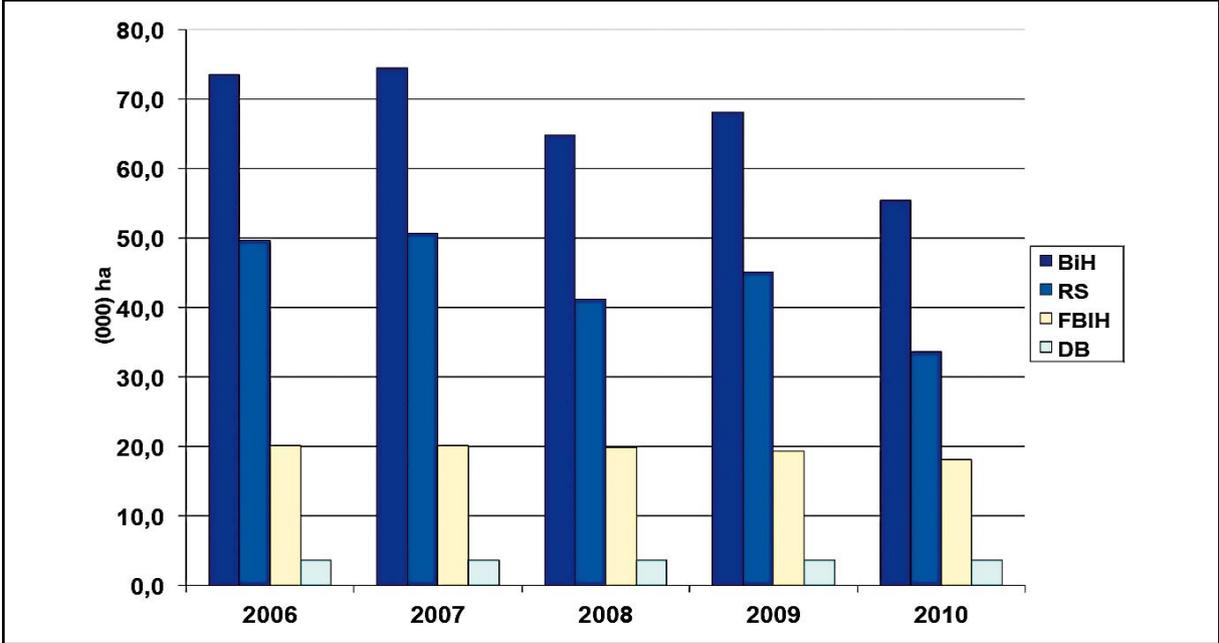
	2006	2007	2008	2009	2010
Cereals, all					
BiH, 000 ha	318	318	321	310	293
FBiH, 000 ha	83	82	86	84	82
RS, 000 ha	225	226	225	215	199
BD, 000 ha	10	10	10	10	10
Wheat					
BiH, %	23.1	23.4	20.2	22.0	18.0
FBiH, %	24.2	24.5	23.1	23.0	22.1
RS, %	22.1	22.4	18.3	20.9	16.7
DB, %	37.0	37.0	37.0	37.0	37.0
Maize					
BiH, %	61.8	62.5	63.7	61.2	65.4
FBiH, %	58.3	59.0	58.3	58.3	58.7
RS, %	63.4	64.0	66.1	62.4	68.9
DB, %	55.0	55.0	57.0	59.0	52.0

Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011; and BiH Agency for Statistics, various years

With regard to maize the development is different. Farmers have increased the relative share of the area with maize from 61.8 percent in 2006 to 65.4 percent in 2010. It is exclusively the farmers in RS that have generated this increase. Their share has grown from 63.4 percent in 2006 to 68.9 percent in 2010, or almost 9 percent, but in absolute figures it is

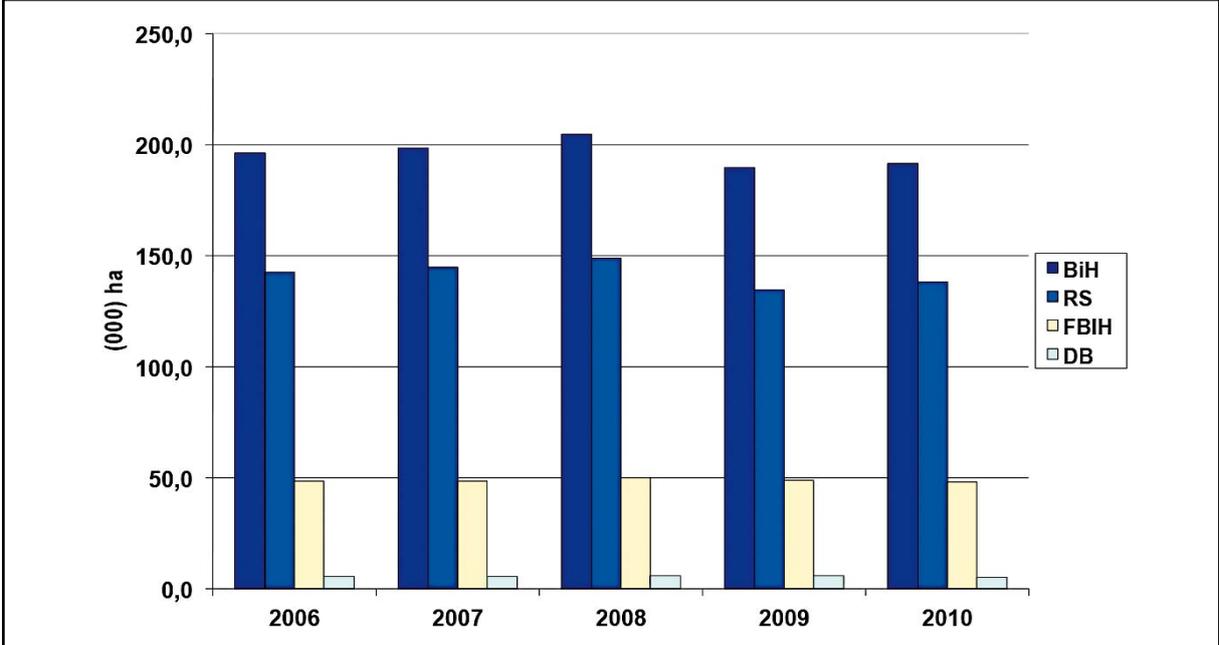
however a decrease from 142,650 hectares in 2006 to 137,111 hectares in 2010. This is due to the reduction in the overall area sown with cereals in BiH. FBiH has seen a constant level of 58.5 percent, while BD has seen a decrease from 55 percent in 2006 to 52 percent in 2010. The trends in absolute figures are shown in the figures below for wheat and maize.

Figure 3.2: Wheat, sown area, BiH, entities and BD, 2006–2010, 000 hectares



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011, and BiH Agency for Statistics, various years

Figure 3.3: Maize, sown area, BiH, entities and BD, 2006–2010, 000 hectares



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011, and BiH Agency for Statistics, various years

The complete data regarding sown area (hectare), harvested area (hectare), production (tonne) and yield (tonne/hectare) are presented for the state level, entities and BD in the next two tables for the years 2006–2010. Furthermore, the data are broken down for cereals in total, wheat and maize.

Table 3.3: Arable land, sown land, harvested land, cereals, wheat and maize, 2006–2010, 000 hectares, BiH and entities/BD

Bosnia and Herzegovina											
Year	Arable land and gardens total, 000 ha	Sown area		Harvested area	Sown area		Harvested area		Share, %		
		Total	Cereals	Cereals	Wheat	Maize-grain	Wheat	Maize-grain	Cereals	Wheat	Maize-grain
2006	1029	557	318	317	73.5	196.5	73.3	196.2	57.1%	23.1%	61.8%
2007	1025	556	318	316	74.5	198.6	74.0	197.4	57.2%	23.4%	62.5%
2008	1010	557	321	320	64.8	204.6	64.4	204.3	57.6%	20.2%	63.7%
2009	999	525	310	308	68.1	189.6	67.8	188.7	59.0%	22.0%	61.2%
2010	1007	512	293	286	55.4	191.7	54.6	188.8	57.2%	18.9%	65.4%
Federation of BiH											
Year	Arable land and gardens total	Sown area		Harvested area	Sown area		Harvested area		Share, %		
		Total	Cereals	Cereals	Wheat	Maize-grain	Wheat	Maize-grain	Cereals	Wheat	Maize-grain
2006	408	197	83	82	20.1	48.4	20.0	48.4	42.1%	24.2%	58.3%
2007	404	193	82	80	20.1	48.4	19.6	47.5	42.5%	24.5%	59.0%
2008	398	196	86	85	19.9	50.1	19.6	50.1	43.9%	23.1%	58.3%
2009	390	190	84	83	19.3	49.0	19.0	48.3	44.2%	23.0%	58.3%
2010	398	189	82	77	18.1	48.1	17.3	46.7	43.4%	22.1%	58.7%
Republika Srpska											
Year	Arable land and gardens total	Sown area		Harvested area	Sown area		Harvested area		Share, %		
		Total	Cereals	Cereals	Wheat	Maize-grain	Wheat	Maize-grain	Cereals	Wheat	Maize-grain
2006	596	348	225	225	49.7	142.6	49.6	142.3	64.7%	22.1%	63.4%
2007	596	351	226	226	50.7	144.7	50.7	144,4	64.4%	22.4%	64.0%
2008	587	349	225	225	41.2	148.8	41.2	148,6	64.5%	18.3%	66.1%
2009	584	323	216	215	45.1	134.7	45.1	134,7	66.9%	20.9%	62.4%
2010	584	311	201	199	33.6	138.4	33.6	137,0	64.6%	16.7%	68.9%
Brčko District											
Year	Arable land and gardens total	Sown area		Harvested area	Sown area		Harvested area		Share, %		
		Total	Cereals	Cereals	Wheat	Maize-grain	Wheat	Maize-grain	Cereals	Wheat	Maize-grain
2006	25	12	10	10	3.7	5.5	3.7	5.5	83.3%	37.0%	55.0%
2007	25	12	10	10	3.7	5.5	3.7	5.5	83.3%	37.0%	55.0%
2008	25	12	10	10	3.7	5.7	3.6	5.6	83.3%	37.0%	57.0%
2009	25	12	10	10	3.7	5.9	3.7	5.7	83.3%	37.0%	59.0%
2010	25	12	10	10	3.7	5.2	3.7	5.1	83.3%	37.0%	52.0%

Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011, and BiH Agency for Statistics, various years

Table 3.4: Production of cereals, wheat and maize, tonnes, 2006–2010, BiH and entities/BD

Bosnia and Herzegovina					
Year	Total production in 000 tonnes			Yield per hectare, tonnes	
	Cereals	Wheat	Maize-grain	Wheat	Maize-grain
2006	1,341.0	232.5	993.9	3.2	5.1
2007	1,000.5	257.1	635.3	3.5	3.2
2008	1,374.7	240.5	1,004.3	3.7	4.9
2009	1,390.7	255.8	962.9	3.8	5.1
2010	1,104.0	145.4	853.4	2.7	4.5
Federation of BiH					
Year	Total production in 000 tonnes			Yield per hectare, tonnes	
	Cereals	Wheat	Maize-grain	Wheat	Maize-grain
2006	326.5	65.5	226.0	3.3	4.7
2007	288.0	71.7	181.6	3.7	3.8
2008	350.0	75.1	231.8	3.8	4.6
2009	359.8	75.0	238.6	3.9	4.9
2010	288.8	50.4	203.6	2.9	4.4
Republika Srpska					
Year	Total production in 000 tonnes			Yield per hectare, tonnes	
	Cereals	Wheat	Maize-grain	Wheat	Maize-grain
2006	970.8	154.0	740.2	3.1	5.2
2007	677.4	172.5	434.5	3.4	3.0
2008	979.3	150.9	744.3	3.7	5.0
2009	984.2	165.9	695.5	3.7	5.2
2010	779.5	84.6	626.5	2.5	4.6
Brčko District					
Year	Total production in 000 tonnes			Yield per hectare, tonnes	
	Cereals	Wheat	Maize-grain	Wheat	Maize-grain
2006	43.7	13.0	27.7	3.5	5.0
2007	35.1	12.9	19.2	3.5	3.5
2008	45.4	14.5	28.2	4.0	5.0
2009	46.7	14.9	28.8	4.0	5.1
2010	35.7	10.4	23.3	2.8	4.5

Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May, 2011, and BiH Agency for Statistics, various years

The yield measured in tonnes per hectare fluctuates for both wheat and maize in all geographical areas. The five-year average for wheat in FBiH is 3.5 tonnes/hectare, due to a poor year in 2010, which followed four years with increasing yields from 3.3 tonnes/hectare in 2006 to 3.9 tonnes/hectare in 2009. For maize the five-year average is 4.5 tonnes/hectare in FBiH.

In RS we find a five-year average for wheat of 3.3 tonnes/hectare and also here with a poor year in 2010. For maize, the five-year average is 4.6 tonnes/hectare, which also was

the yield in 2010, but the average is pulled down due to a very poor yield in 2007 with only 3 tonnes/hectare, just two-thirds of the average.

In BD, 2010 yields are low with 2.8 tonnes/hectare for wheat and 4.5 tonnes/hectare for maize. Both results are below the respective five-year averages of 3.6 tonnes/hectare for wheat and 4.6 tonnes/hectare for maize.

There are no updated figures with regard to the numbers of farmers producing wheat and maize in BiH. However, the farm survey

conducted in the sector analysis shows that the median number of hectares for wheat and maize producers in FBiH is 3.6 hectares and 6 hectares, while the median in RS/BD for the same two crops is 2.5 hectares and 5 hectares. If these medians are used together with the data for sown areas with wheat and maize presented in Table 3.3, the number of farms producing wheat and maize can be estimated.

In FBiH, 18,100 hectares are sown with wheat and 48,100 hectares with maize on 5,030 farms producing wheat and 8,020 farms producing maize, or a total of 13,050 farms in FBiH.

33,600 hectares are sown with wheat in RS and 3,700 hectare in BD. With regard to maize, 138,400 hectares are sown in RS and 5,200 hectares in BD. In terms of number of farms there are 14,920 wheat farms and 28,770 maize farms. The total for RS and BD is 43,700 farms producing the two cereals. In BiH the total number of wheat farmers is estimated to be 20,000, while there are 37,000 farms

producing maize. Although wheat and maize are the two most important cereals measured in volume and value, some production of other cereals also takes place. These include rye, barley and oats. The table below presents the production of these three cereals for the period 2006–2010 distributed by sown area, harvested area, production and yield per hectare.²⁰

The total area harvested with these three cereals was 31,500 hectares in 2010, a reduction from 39,400 hectares in 2009, or by 20 percent.

Of the three small cereals, barley is by far the most important with a five-year average from 2006 to 2010 of 65,500 tonnes of production, while the production of oats is 35,000 tonnes and rye 10,000 tonnes on average. The yields for these three cereals were also low in 2010 as shown by the relatively low production in 2010 compared to the previous years. Production (tonnes) of rye is down by 38 percent, barley by 35 percent and oats by 43 percent in 2010 compared to 2009.

Table 3.5: Production of Rye, Barley and Oats, BiH, 2006–2010, sown and harvested, hectares

Bosnia and Herzegovina						
Year	Area sown			Area harvested		
	Rye	Barley	Oats	Rye	Barley	Oats
2006	4,207	21,968	17,455	3,990	21,546	17,399
2007	3,332	20,959	15,378	3,161	20,701	15,167
2008	3,791	23,440	15,541	3,723	23,323	15,416
2009	4,148	22,619	13,097	3,863	22,471	13,040
2010	3,052	20,754	10,231	2,947	18,637	9,958

Source: BiH Agency for Statistics, various years

Table 3.6: Production of Rye, Barley and Oats, BiH, 2006–2010, tonnes and tonnes/hectare

Bosnia and Herzegovina						
Year	Total production in tonnes			Yield per hectare, tonnes		
	Rye	Barley	Oats	Rye	Barley	Oats
2006	10,740	62,437	41,472	2.7	2.9	2.4
2007	8,856	60,748	38,516	2.8	2.9	2.5
2008	11,087	77,821	40,901	3.0	3.3	2.6
2009	12,192	77,222	34,632	3.2	3.4	2.7
2010	7,424	50,183	19,843	2.5	2.7	2.0

Source: BiH Agency for Statistics, various years

²⁰Data has only been available at state level (BiH-level), so no breakdown by entity and district level has been made.

3.2 Value of cereals production

The physical production presented in the tables and figures above is converted into the value of production of wheat and maize measured in BAM in the next tables based on the official prices as presented in Table 3.8 below. The breakdown of data is made based on area (state, entities and BD) and the same years as above: 2006 to 2010.

The prices from Table 3.8 are used in the calculation of the value of the cereals in Table 3.9 next pages.

After a four-year period with relatively large variations up and down in the value of production of wheat, we saw in 2010 a dramatic reduction of 36 percent. This was due to a reduction in the sown area and in the yield per hectare. The price was also low

Table 3.7: Prices, selected cereals, 2006–2010, BiH, BAM /tonne

Cereal	2006	2007	2008	2009	2010	5-year average
Wheat	259.65	327.72	480.82	275.85	312.39	331.28
Maize grain	198.53	398.42	395.16	243.79	303.97	307.97
Barley	200.21	375.99	379.52	264.66	316.13	307.30
Oats	213.81	440.9	686.22	479.13	418.24	447.66
Rye	344.33	361.82	450.23	386.43	412.95	391.15

Source: RS and BiH Agency for Statistics, various years

Table 3.8: Value of production of wheat and maize in BiH, entities and district, 2006-2010, BAM

Area	Year	Production, tonnes		BAM	
		Wheat	Maize-grain	Wheat	Maize-grain
BiH	2006	232,500	993,900	60,368,625	197,318,967
	2007	257,100	635,300	84,256,812	253,116,226
	2008	240,500	1,004,300	115,637,210	396,859,188
	2009	255,800	962,900	70,562,430	234,745,391
	2010	145,400	853,400	45,421,506	259,407,998
FBiH	2006	65,500	226,000	17,007,075	44,867,780
	2007	71,700	181,600	23,497,524	72,353,072
	2008	75,100	231,800	36,109,582	91,598,088
	2009	75,000	238,600	20,688,750	58,168,294
	2010	50,400	203,600	15,744,456	61,888,292
RS	2006	154,000	740,200	39,986,100	146,951,906
	2007	172,500	434,500	56,531,700	173,113,490
	2008	150,900	744,300	72,555,738	294,117,588
	2009	165,900	695,500	45,763,515	169,555,945
	2010	84,600	626,500	26,428,194	190,437,205
BD	2006	13,000	27,700	3,375,450	5,499,281
	2007	12,900	19,200	4,227,588	7,649,664
	2008	14,500	28,200	6,971,890	11,143,512
	2009	14,900	28,800	4,110,165	7,021,152
	2010	10,400	23,300	3,248,856	7,082,501

BiH Agency for Statistics, various years, RS Agency for statistics, various years

in 2009 following the high price year of 2008, and this has probably influenced the decisions to sow wheat in 2010. As a consequence, the value of wheat goes down from BAM 71 million in 2009 to BAM 45 million in 2010. In particular, RS is hard hit with a reduction from BAM 46 million to BAM 26 million, or a decrease of 42 percent, but also FBiH and BD suffered from lower production and yields.

With regard to maize, the total value was BAM 259 million in 2010, which was a small increase from 2009, when the value was BAM 235 million. FBiH, RS and BD have all experienced an increase in the value, primarily due to higher prices in 2010, and in spite of lower yields and a reduction in the sown and harvested areas.

In total, the value of the two most important cereals is BAM 305 million for BiH in 2010: BAM 77.6 million for FBiH, BAM 217 million for RS and BAM 10.3 million for BD.

Below wheat and maize values are presented together with values for rye, barley and oats at BiH level. The total value of these five cereals in 2010 was BAM 332 million with a five-year average of BAM 338 million.

The relative importance of maize grain is the most substantial of all the cereals and in 2010

was the highest with 78 percent of production, when wheat in the same year faced its lowest share with only 14 percent of production. The total value of the three smaller cereals was only 8 percent of production in 2010.

The total GDP of BiH was BAM 24,484 million in 2010, see Chapter 2. The value of cereals production is 1.4 percent of total GDP. The agricultural GDP was BAM 1,817 million in 2009, and the five main cereals contributed 14.3 percent to this value.²¹

With regard to statistics for cereals, RS and FBiH data also shows fodder crops and green maize for fodder. The area planted with green maize was 4,453 hectares in RS and 16,717 hectares in FBiH, Production was 128,848 tonnes and 340,081 tonnes respectively and the average yields were 28.34 tonnes per hectare and 20.34 tonnes per hectare respectively. No figures are available for the BD in this regard.

3.3 Data reliability

The presentation of production volumes and hence the estimations of the value of production is based on official statistics provided by the BiH Agency for Statistics and statistical departments for entities and BD.

Table 3.9: Value of cereals production, BiH, 2006–2010, BAM

Year	Rye	Barley	Oats	Wheat	Maize grain	Total, BAM
2006	3,698,095	12,500,512	8,867,128	60,368,625	197,318,967	282,753,327
% of total	1.3	4.4	3.2	21.4	69.8	100
2007	3,204,271	22,840,641	16,981,704	84,256,812	253,116,226	380,399,654
% of total	0.8	6.0	4.5	22.2	66.5	100
2008	4,991,661	29,534,626	28,067,084	115,637,210	244,838,297	423,068,878
% of total	1.2	7.0	6.6	27.3	57.9	100
2009	4,711,296	20,437,575	16,593,230	70,562,430	234,745,391	347,049,921
% of total	1.4	5.9	4.8	20.4	67.6	100
2010	3,065,741	15,864,352	8,299,136	45,421,506	259,407,998	332,058,733
% of total	0.9	4.8	2.5	13.7	78.1	100
5-year average	2,903,898	15,421,336	8,882,917	48,168,984	262,825,012	338,202,147
% of total	0.9	4.6	2.6	14.3	77.7	100

Source: BiH Agency for Statistics, various years, RS Agency for Statistics

²¹Other small cereals such as buckwheat are not included and cereals exclusively grown for fodder are not included either.

According to information from the BiH Agency for Statistics data are collected as follows:

“Sources and collection methods: Data on the sown area are aggregated from the regular statistical surveys conducted by the Statistical Institutes at the level of Entities and Brčko District. The data on Individual Producers Farms are estimated. These estimations were made by the experts from the field of agriculture at the Municipality level.”²²

It is obvious that data collection is based on estimations undertaken by individual experts at local level and aggregated to higher levels in the BiH Agency for Statistics. Ministry staff at entity level articulated concerns regarding this approach due to the subjectivity-oriented character of this, and have questioned the official statistics, at entity and district level as well as at BiH level. It is the assessment made by these experts that the figures for sown and harvested area probably are too high leading to an overestimation of the production value. This picture is seen in other sectors and in other countries as well.

This is cross-checked in various ways. Sector experts interviewed during the preparation of this report state that the production in 2009 was between 5,000 and 10,000 tonnes, far below the official figures. A private seed dealer stated that 90 percent of maize and 70 percent of wheat acreage is located in the north of Bosnia and Herzegovina next to the river Sava. This is because the rest of BiH is made up of hilly regions and is unsuitable for growing cereals. The same dealer estimated the maize acreage to be 120,000 hectares and the wheat acreage to be 50,000 hectares.²³ Another seed dealer mentioned that there are around 150,000 hectares of maize and 60,000 hectares of wheat.²⁴ This is considerably less than the total official figures for Bosnia and Herzegovina.

It is however questionable, if individual experts, even with experience from the field, are reliable, and statements from these experts can be considered unreliable, since they are based on subjective assessments.

Another approach is to take as a point of departure the subsidies paid to wheat producers. The official statistics are five times higher than what sector experts and data regarding the subsidies indicate. One reason is that official production figures include data from farmers who are not registered in the farm registers or in the VAT system and not supported with subsidies of any kind. They represent a subsistence and semi-subsistence type of producer not participating in the white market economy, but included in the official statistics due to the way data are collected by the local level agricultural experts in municipalities and cantons.

In order to avoid too much confusion between data sources it was agreed with ministry representatives from state and entity level to use the official statistics as the reference data, even though entity level representatives doubt that the official data are correct.

Efforts are being made at state level with the Automatic Identification System (AIS)-project funded by the EU in order to improve the agricultural information system, and farm registers are under development at entity level and in BD. The number of farmers registered at the farm registers is increasing year by year and these registers will eventually record all professional fulltime farmers in the country, since registration in this register and in the VAT system will be a precondition for having access to subsidies. A farm register and a parallel registration of the farmers in the VAT system will provide the authorities with the databases for mapping and monitoring the precise agricultural production, the areas and their utilization with various types of agricultural

²²See any document from the BiH Agency for Statistics, where this statement is inserted as a standard methodological comment.

²³Pioneer sjeme d.o.o., Marko JUKIC, Field Sales Operation Manager Cro and BiH, 15 September 2011

²⁴ZP/Zemun Polje – Maize Research Institute, Mr Dragisa LOGANCIC, INTERAGRO Fair Banja Luka, 22 September 2011

production and the structure of farms (size measured in hectares and fragmentation measured in number of parcels). This information is urgently needed, since no agricultural census has been prepared on a full scale since 1991, and no reliable data are available on farm structure today.

3.4 Agricultural holdings in cereals production

As inferred in Chapter 2, in Bosnia and Herzegovina there are more than 500,000 agricultural holdings, 50 percent of which are smaller than 2 hectares and 80 percent of which are smaller than 5 hectares. Approximately 4 percent of holdings are larger than 10 hectares.²⁵ However, there is no comprehensive reliable new data available regarding the number of cereal producers and their distribution with size categories measured in area.

Producers of cereals in Bosnia and Herzegovina are generally small-scale farmers with mixed production and to a limited extent, agricultural cooperatives and enterprises.

Small farms – with the exception of intensive vegetable and orchard production – are always mixed farms (livestock and plant production) as their small size does not allow them to make large profits from individual production. Many of these farms are subsistence or semisubsistence farms, which bring surplus production to the market, if anything is available. Therefore, they often do not grow maize and wheat for the market but for fodder purposes and also for own human consumption.

To make the situation for smallholders even more difficult, the average sized farm (2 hectares) is subdivided into six to eight plots.²⁶ The average farm in Bosnia and Herzegovina is

smaller than in Croatia, The Former Yugoslav Republic of Macedonia, Serbia and even Montenegro and only slightly larger than in Albania.²⁷

A few larger agricultural cooperatives operate in BiH and due to the topography they are more common in RS than in FBiH. In RS, less than 4 percent of the sown land is managed by agricultural enterprises and cooperatives. The remaining 96 percent is private family farms.²⁸ Most of the agricultural cooperatives emerged from former state-owned cooperatives but have since been privatized.

3.4.1 Farm survey among cereals producers

Commercial farmers rent land but as there are no official figures about operational farm size, the analysis carried out a survey to obtain more realistic information. The farm survey included 133 farmers (two-thirds from RS and BD and one-third from FBiH) with an average farm size of 30 hectares, ranging from 0.1 hectare up to 475 hectares. The area owned by the farmers is on average 7.75 ha or 25 percent of the total farmed area; rented area is therefore consequently 23 hectares. The average farm has slightly more than 19 hectares of arable area and more than 9 hectares of meadows and pastures.

Furthermore, the survey shows that average farmers cultivated 2.88 hectares of winter wheat, 0.59 hectares of barley, 0.64 hectares of triticale, 4.03 hectares of maize, 1.27 hectares of soya and 0.04 hectares of sunflower. The fact that triticale is more popular than wheat is due to the fact that triticale is used for feed. Only 16 farmers produce maize silage, having between 230 hectares and 1 hectare of silage, whereas some have between 230 and 15 hectares and the other group between

²⁵ European Union Support for Establishment of the State Ministry of Agriculture and Rural Development (SESMARD) Working document: BiH Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). 2008. p 36

²⁶The World Bank: Agricultural Sector Policy Note for Bosnia and Herzegovina, 2010. p 2. However the cultivated land by farm might be higher as very often there are no formal rental agreements in place.

²⁷The World Bank: Agricultural Sector Policy Note for Bosnia and Herzegovina, 2010. p 14

²⁸Statistical Yearbook Republika Srpska 2010. p 150

Table 3.10: Number of farms with wheat and maize in FBiH and RS/BD

Cereal	FBiH	RS/BD	Total
Wheat	16	13	29
Maize	15	22	37
Total	31	35	66

Source: Own survey, 2011

7 hectares and 1 hectare. This shows that maize silage is not yet widespread, partly due to a lack of know-how and partly due to a lack of heavy machinery for compressing the silo. With regard to the cereals, the data for wheat, maize and barley is extracted from the number of farmers in the survey. A total of 46 farmers produce wheat and/or maize. If a farmer is producing both wheat and maize, he/she is registered twice in the table below. Therefore the total is 66 and not 46 farms, since 20 farms produce both cereals. Their distribution on entity level is presented in the next table.

The surveyed farms cover 382.4 hectares in total for maize for FBiH and RS/BD and 276.8 hectares in total for wheat.²⁹

Survey results for wheat production

The results from our survey regarding wheat production are presented in the next two tables. The first of these shows the number of sown hectares per farm, the production measured in kilograms and the yield (kg/hectare), for farms in FBiH and in RS/BD.

In FBiH, the average area sown with wheat is 14.2 hectares/farm, but the median is

Table 3.11: Survey results for wheat production (area, tonnes and yield)

FBiH wheat			RS/BD wheat		
Number of sown ha per farm	Wheat production	Yield	Number of sown ha per farm	Wheat production	Yield
3.6 ha	16,200 kg	4,500 kg/ha	1.0 ha	5,000 kg	5,000 kg/ha
7.0 ha	31,500 kg	4,500 kg/ha	1.0 ha	6,000 kg	6,000 kg/ha
3.0 ha	10,500 kg	3,500 kg/ha	1.0 ha	6,000 kg	6,000 kg/ha
1.0 ha	6,000 kg	6,000 kg/ha	2.5 ha	12,500 kg	5,000 kg/ha
28.0 ha	112,000 kg	4,000 kg/ha	5.0 ha	22,500 kg	4,500 kg/ha
0.6 ha	0 kg	5 kg/ha	3.0 ha	12,000 kg	4,000 kg/ha
16.0 ha	104,000 kg	6,500 kg/ha	1.7 ha	5,100 kg	3,000 kg/ha
120.0 ha	720,000 kg	6,000 kg/ha	3.5 ha	14,000 kg	4,000 kg/ha
5.3 ha	19,610 kg	3,700 kg/ha	1.1 ha	5,800 kg	5,300 kg/ha
20.0 ha	100,000 kg	5,000 kg/ha	1.5 ha	7,500 kg	5,000 kg/ha
1.0 ha	3,500 kg	3,500 kg/ha	4.0 ha	20,000 kg	5,000 kg/ha
3.0 ha	13,500 kg	4,500 kg/ha	3.0 ha	15,000 kg	5,000 kg/ha
2.0 ha	6,000 kg	3,000 kg/ha	20.0 ha	100,000 kg	5,000 kg/ha
2.0 ha	11,000 kg	5,500 kg/ha			
5.0 ha	31,500 kg	6,300 kg/ha			
10.0 ha	50,000 kg	5,000 kg/ha			
227.5 ha in total	1,235,310 kg in total	n.a.	48.3 ha in total	231,400 kg in total	
14.2 ha/farm	65,016 kg/farm	4,573 kg/ha	3.7 ha/farm	17,800 kg/farm	4,788 kg/ha

Source: Own survey, 2011

²⁹33 farms in the survey produce barley on a total of 62.6 ha. The average area with barley is 1.9 ha. 11 farms produce triticale on a total of 67.2 ha with an average of 6.1 ha per farm.

only 3.6 hectares/farm, since one farm has a relatively large area sown with wheat (120 hectares). The average yield is 4,573 kg/hectare, which is considerably more than the five-year average for FBiH of 3,500 kg/hectare. The variation is from 3,000 kg/hectare at the low end up to 6,500 kg/hectare at the top. There is a tendency in the figures that larger areas produce higher yields, but there are also examples of small areas with high yields, so the results are ambivalent in this regard.

The farms in the RS/BD survey sample have an average of 3.7 hectares sown with wheat and a median of 2.5 hectares/farm, with one farm sowing 20 hectares. The average yield is 4,788 kg/hectare, also more than the five-

year average of RS of 3,300 kg/hectare. Also here the variation is large, from 3,000 kg/hectare to 6,000 kg/hectare, but the typical result is approximately 5,000 kg/hectare.

Even though many of the farms in the survey have relatively few hectares with wheat, their production and the yield per hectare is far above the average of FBiH and RS respectively.

The value of the production as reported from the survey is presented in the table below. Farm income from wheat production is divided between value from contract sales, value from free sales on the market, and value of the share of the production kept on the farm for own purposes, either as fodder or for human consumption.

Table 3.12: Value of wheat production, FBiH and RS/BD, sales types, 2010

FBiH			RS/BD		
Contract sales value	Free sales value	Value kept on farm	Contract sales value	Free sales value	Value kept on farm
0 BAM	3,660 BAM	1,200 BAM	0 BAM	2,000 BAM	0 BAM
0 BAM	10,080 BAM	0 BAM	0 BAM	2,400 BAM	0 BAM
0 BAM	3,780 BAM	420 BAM	0 BAM	6,000 BAM	0 BAM
0 BAM	0 BAM	2,100 BAM	0 BAM	0 BAM	4,375 BAM
44,800 BAM	0 BAM	0 BAM	0 BAM	8,550 BAM	0 BAM
0 BAM	0 BAM	0 BAM ³⁰	0 BAM	0 BAM	4,200 BAM
0 BAM	0 BAM	36,400 BAM	0 BAM	0 BAM	1,050 BAM
0 BAM	216,000 BAM	0 BAM	0 BAM	0 BAM	4,900 BAM
0 BAM	10,393 BAM	0 BAM	0 BAM	2,087 BAM	0 BAM
0 BAM	0 BAM	35,000 BAM	0 BAM	2,850 BAM	0 BAM
0 BAM	0 BAM	1,225 BAM	0 BAM	8,000 BAM	0 BAM
0 BAM	585 BAM	5,490 BAM	5,600 BAM	0 BAM	400 BAM
2,580 BAM	0 BAM	0 BAM	0 BAM	40,000 BAM	0 BAM
0 BAM	0 BAM	3,850 BAM			
0 BAM	10,750 BAM	2,795 BAM			
0 BAM	17,500 BAM	0 BAM			
Total value					
47,380 BAM	272,748 BAM	88,480 BAM	5,600 BAM	71,887 BAM	14,925 BAM
Average value per farm					
23,690 BAM	34,094 BAM	9,831 BAM	5,600 BAM	8,986 BAM	2,985 BAM
2	8	9	1	8	5
408,608 BAM total sales	1,796 BAM per ha	21,596 BAM / farm	92,412 BAM total sales value	1,912.1 BAM per ha	6,601 BAM / farm

Source: Own survey, 2011

³⁰Data not recorded in the case study.

Contract based sales are not typical. Only 3 farmers out of 33 sell wheat based on contracts. 16 farms sell the production on the market, and 14 keep the production on the farm. The value per hectare is quite similar between FBiH (1,800 BAM/hectare) and RS/BD (1,900 BAM/hectare). Most farms do either one or the other and only a few use more than one channel for value generation.

Survey results for maize production

Reported here are the results from the survey regarding maize production. It will be done in the same way as for wheat above.

Production volume

In FBiH, the average sown area with maize among the survey farms is 15.4 hectares/farm, with a median of 6 hectares/farm. 113,578 kilograms of maize grain is produced per farm, with an average yield of 7,388 kg/hectare. This is again a relatively high yield compared with the five-year average in FBiH, which is 4,500 kg/hectare. The variation in yield is from 5,000 kg/

hectare to an impressive 10,000 kg/hectare produced by the far largest of the farms with 70 hectares for maize grain production. As with wheat, there is no significant relationship between the number of hectares and the yield. Also small-scale producers (i.e. 2 hectares to 5 hectares) generate high yields between 8,000 and 9,000 kg/hectare.

In RS/BD, the average area sown with maize among the survey farms is 6.9 hectares/farm, with a median of 5 hectares/farm. Almost 60,000 kg of maize grain is produced per farm, with an average yield of 8,600 kg/hectare. This is also a relatively high yield compared with the five-year average in RS, which is 4,600 kg/hectare. The variation in yield is from 5,000 kg/hectare to 10,000 kg/hectare produced by a relatively small farm with only 6 hectares of maize grain production. As with maize production, in FBiH there is no significant relationship between the number of hectares and the yield. Also small-scale producers with 2 hectares to 5 hectares generate high yields between 8,000 and 9,000 kg/hectare.

Table 3.13: Maize production, FBiH, survey results

FBiH Maize				
Number of sown ha per farm	Maize cob production	Maize grain production	Yield cob	Yield
1.1 ha	0 kg	7,700 kg	0 kg/ha	7,000 kg/ha
2.0 ha	0 kg	16,000 kg	0 kg/ha	8,000 kg/ha
18.0 ha	0 kg	90,000 kg	0 kg/ha	5,000 kg/ha
6.0 ha	0 kg	0 kg	0 kg/ha	8,800 kg/ha
70.0 ha	0 kg	59,500 kg	0 kg/ha	8,500 kg/ha
5.0 ha	0 kg	40,000 kg	0 kg/ha	8,000 kg/ha
10.0 ha	130,000 kg	0 kg	13,000 kg/ha	0 kg/ha
10.0 ha	160,000 kg	0 kg	16,000 kg/ha	0 kg/ha
3.5 ha	0 kg	31,500 kg	0 kg/ha	9,000 kg/ha
15.0 ha	180,000 kg	0 kg	12,000 kg/ha	0 kg/ha
5.0 ha	0 kg	35,000 kg	0 kg/ha	7,000 kg/ha
3.0 ha	41,000 kg	0 kg	14,000 kg/ha	0 kg/ha
5.0 ha	0 kg	42,500 kg	0 kg/ha	8,500 kg/ha
70.0 ha	0 kg	700,000 kg	0 kg/ha	10,000 kg/ha
7.0 ha	84,000 kg	0 kg	12,000 kg/ha	0 kg/ha
230.6 ha/farm		1,022,200 kg		n.a
15.4 ha/farm		113,578 kg/farm		7,388 kg/ha

Source: Own survey, 2011

Table 3.14: Maize production, RS/BD, survey results

RS/BD Maize				
Number of sown ha per farm	Maize cob production	Maize grain production	Yield cob	Yield
6.0 ha	0 kg	25,000 kg	0 kg/ha	4,000 kg/ha
3.5 ha	27,000 kg	0 kg	9,000 kg/ha	0 kg/ha
1.5 ha	9,000 kg	0 kg	6,000 kg/ha	0 kg/ha
4.5 ha	26,000 kg	0 kg	6,000 kg/ha	0 kg/ha
1.0 ha	0 kg	6,000 kg	0 kg/ha	6,000 kg/ha
4.0 ha	0 kg	24,000 kg	0 kg/ha	6,000 kg/ha
4.0 ha	0 kg	24,000 kg	0 kg/ha	6,000 kg/ha
14.0 ha	0 kg	105,000 kg	0 kg/ha	7,500 kg/ha
13.0 ha	0 kg	104,000 kg	0 kg/ha	8,000 kg/ha
9.0 ha	0 kg	45,000 kg	0 kg/ha	5,000 kg/ha
15.0 ha	175,500 kg	135,000 kg	11,700 kg/ha	9,000 kg/ha
20.0 ha	202,000 kg	140,000 kg	10,100 kg/ha	7,000 kg/ha
5.0 ha	39,000 kg	30,000 kg	7,000 kg/ha	6,000 kg/ha
1.5 ha	9,750 kg	7,500 kg	6,500 kg/ha	5,000 kg/ha
5.0 ha	40,000 kg	28,000 kg	8,000 kg/ha	5,600 kg/ha
1.5 ha	13,500 kg	10,500 kg	9,000 kg/ha	7,000 kg/ha
8.0 ha	0 kg	72,000 kg	0 kg/ha	9,000 kg/ha
0.0 ha	0 kg	0 kg	0 kg/ha	0 kg/ha
3.3 ha	0 kg	19,500 kg	0 kg/ha	6,000 kg/ha
2.0 ha	20,000 kg	18,000 kg	10,000 kg/ha	9,000 kg/ha
5.0 ha	60,000 kg	50,000 kg	12,000 kg/ha	10,000 kg/ha
3.0 ha	0 kg	24,000 kg	0 kg/ha	8,000 kg/ha
22.0 ha	220,000 kg	200,000 kg	11,000 kg/ha	9,090 kg/ha
151.8 ha in total		1,067,500 kg total production		n.a.
6.9 ha/farm		59,306 kg/farm		8,594 kg/ha

Source: Own survey, 2011

Production value

The value of the maize grain production among the survey farms in FBiH and in RS/BD is presented in the next table, and again the value is divided between three types of value generation channels: contract sales, free market sales and production kept at the farm.

The largest share of the production is not sold on the market. 32 out of 41 surveyed farms use their production for seed and own food and feed consumption. This amounts to BAM 706,000 in FBiH and BAM 379,000 in RS/BD, while only 7 (5 in RS and 2 in FBiH) sell their maize grain on the market for a total value of BAM 24,000 in FBiH and BAM 86,000 in RS/

BD. Only 2 farms engage in contract farming but for very small values of grain, less than BAM 10,000 in total.

3.4.2 Case studies

The accomplished case studies provide a large pool of valuable information, which is reflected in the tables below, and reported in Annex 3. The tables are structured case study by case study, presenting the eight cases from FBiH first, supplemented with a calculation of relevant totals and average values. Next the five cases from RS/BD are presented in the same way. Each case is broken down by type of cereals, and as will be seen, wheat and maize dominate, and only a couple of farmers

Table 3.15: Value of maize production, FBiH and RS/BD, sales types, 2010

FBiH			RS/BD		
Contract sales value	Free sales value	Value kept on farm	Contract sales value	Free sales value	Value kept on farm
0 BAM	0 BAM	3,465 BAM	6 BAM	0 BAM	4,000 BAM
0 BAM	0 BAM	0 BAM ³¹	0 BAM	0 BAM	12,150 BAM
0 BAM	0 BAM	40,500 BAM	3,600 BAM	0 BAM	0 BAM
0 BAM	0 BAM	3,960 BAM	0 BAM	0 BAM	2,700 BAM
0 BAM	0 BAM	26,775 BAM	0 BAM	2,400 BAM	0 BAM
0 BAM	0 BAM	18,000 BAM	0 BAM	0 BAM	10,800 BAM
0 BAM	0 BAM	58,500 BAM	0 BAM	0 BAM	10,800 BAM
0 BAM	0 BAM	72,000 BAM	0 BAM	0 BAM	47,250 BAM
0 BAM	13,545 BAM	0 BAM	0 BAM	0 BAM	46,800 BAM
0 BAM	0 BAM	81,000 BAM	0 BAM	0 BAM	4,500 BAM
0 BAM	10,200 BAM	10,800 BAM	0 BAM	0 BAM	60,750 BAM
0 BAM	0 BAM	18,900 BAM	0 BAM	0 BAM	63,000 BAM
0 BAM	0 BAM	19,125 BAM	0 BAM	0 BAM	13,500 BAM
0 BAM	0 BAM	315,000 BAM	0 BAM	0 BAM	2,925 BAM
0 BAM	0 BAM	37,800 BAM	0 BAM	0 BAM	12,600 BAM
			0 BAM	0 BAM	4,725 BAM
			0 BAM	0 BAM	32,400 BAM
			0 BAM	0 BAM	0 BAM ³²
			0 BAM	8,100 BAM	0 BAM
			6,000 BAM	0 BAM	1,200 BAM
			0 BAM	20,250 BAM	2,250 BAM
			0 BAM	10,000 BAM	2,000 BAM
			0 BAM	45,000 BAM	45,000
Total value					
0	23,745 BAM	705,825 BAM	9,606 BAM	85,750 BAM	379,350 BAM
Average value per farm					
0	11,873 BAM	54,294 BAM	4,803 BAM	17,150 BAM	19,966 BAM
0	2	13	2	5	19
729,570 BAM total production	3,164 BAM /ha	48,638 BAM / farm	474,706 BAM total value	3,127 BAM /ha	18,258 BAM / farm

Source: Own survey, 2011

produce other cereals, which is in line with the general statistics.

Among the eight case study farms in FBiH, the average area grown with wheat is 11.8 hectares or a total of 94.7 hectares for all eight farms. The average yield is 3.9 tonnes/hectare, and the average production is 46.6 tonnes per farm. Sales prices are on average BAM 320

per tonne. The average income per hectare including subsidies is BAM 1,683.

For maize the total area was 93.5 hectares with an average of 11.7 hectares, almost the same average as for wheat. The yield is on average 7.8 tonnes/hectare sold at an average price of BAM 300 per tonne. This price generates an average income of BAM 2,289 per hectare.

³¹No information was recorded for this case study

³²No information was recorded for this case study

Table 3.16: Results from the case studies, FBiH 1, 2010

2010	FBiH 1	FBiH 2	FBiH 3	FBiH 4	FBiH 5
Wheat					
Wheat, ha	4	25	40	12	6
Wheat yield (t/ha)	4.95	4.28	4.15	4.17	3.67
Wheat production, tonnes	19.8	107	166	50	22.02
Sales price, BAM/kg	0.31	0.31	0.28	0.31	0.33
Output value, BAM	6,138	33,170	46,480	15,512	7,266.6
Output value, BAM /ha	1,535	1,326.8	1,162	1,293	1,211.1
Subsidies, BAM	2,376	12,840	19,920	6,000	2,640
Total income, BAM	8,514	46,010	66,400	21,512	9,906.6
Income per ha, BAM	2,129	1,840.4	1,660	1,793	1,651.1
Maize					
Maize, ha	11	15	45	2	6
Maize yield (t/ha)	9.4	9.87	8.07	8.75	7.03
Maize production, tonnes	103.4	148	363	18	42.18
Sales price, BAM /kg	0.25	0.33	0.3	0.27	0.29
Output value, BAM	25,850	48,856.5	108,945	4,725	12,232.2
Output value, BAM /ha	2,350	3,257.1	2,421	2,363	2,038.7
Subsidies, BAM	0	0	0	0	0
Total income, BAM	25,850	48,856.5	108,945	2,363	12,232.2
Income per ha, BAM	2,350	3,257.1	2,421	2,363	2,038.7
Barley					
Barley, ha	1	0	0	0	5
Barley yield (t/ha)	5.3	0	0	0	5.32
Barley production, tonnes	5.3	0	0	0	26.6
Sales price, BAM /kg	0.3	0	0	0	0.27
Output value, BAM	1,590	0	0	0	7,182
Output value, BAM /ha	1,590	0	0	0	1,436.4
Subsidies, BAM	0	0	0	0	0
Total income, BAM	1,590	0	0	0	7,182
Income per ha, BAM	1,590	0	0	0	1,436.4
Labour input	8	5	6	5	4

Source: Own farm survey, 2011

Among the eight farmers, two produce barley and one produces oats. The total area of these two cereals is 6 hectares and 2 hectares respectively. Barley generates an average income per hectare of BAM 1,513, while oats generate an average income of BAM 1,140 per hectare. Both these cereals generate lower income per hectare than wheat (subsidized) and maize.

In RS, the total area with wheat for the five case farms is 1,378 hectares with an average of 275.6 hectares. In particular, it is two farms (RS 1 and RS 2) that contribute to this result with 319 hectares and 934 hectares respectively. The average yield is 3.2 tonnes/hectare, and both the two large farms produce lower yields than the average. The average income per hectare is BAM 1,292.

Table 3.17: Results from the case studies, FBiH 2, 2011

2010	FBiH 6	FBiH 7	FBiH 8	Total	Average
Wheat					
Wheat, ha	0.9	1.8	5	94.7	11.8
Wheat yield (t/ha)	3.95	3.39	2.95	n.a.	3.9
Wheat production, tonnes	3.5	6.1	14.8	373.0	46.6
Sales price, BAM /kg	0.32	0.37	0.31	n.a.	0.32
Output value, BAM	1,137.6	2,240	4,572.5	116,517	14,565
Output value, BAM /ha	1,264.0	1,244.4	914.5	n.a.	1,244
Subsidies, BAM	427	0	1,770	45,973	5,727
Total income, BAM	1,691	2,240	6,343	162,617	20,327
Income per ha, BAM	1,879	1,244	1,269	13,464	1,683
Maize					
Maize, ha	1.9	0.6	12	93.5	11.7
Maize yield (t/ha)	7.4	5.3	6.75	n.a.	7.8
Maize production, tonnes	14.1	3.2	81	731.3	91.4
Sales price, BAM /kg	0.3	0.37	0.25	n.a.	0.30
Output value, BAM	4,218	1,184	20,250	226,261	28,283
Output value, BAM /ha	2,220	1,973	1,688	n.a.	2,289
Subsidies, BAM	0	0	0	0	0
Total income, BAM	4,218	1,184	20,250	223,898	27,987
Income per ha, BAM	2,220	1,973	1,688	18,310	2,289
Barley					
Barley, ha	0	0	0	6	3
Barley yield (t/ha)	0	0	0	n.a.	5.3
Barley production, tonnes	0	0	0	31.8	15.9
Sales price, BAM /kg	0	0	0	0	0.29
Output value, BAM	0	0	0	8,772	4,386
Output value, BAM /ha	0	0	0	n.a.	1,513
Subsidies, BAM	0	0	0	0	0
Total income, BAM	0	0	0	8,772	4,386
Income per ha, BAM	0	0	0	n.a.	1,513
Other cereals, oats					
Other cereals, ha, oats	2	0	0	2	2
Other cereals yield (t/ha), oats	2.85	0	0		2.9
Other cereals production, tonnes, oats	5.7	0	0	5.7	5.7
Sales price, BAM /kg, oats	0.4	0	0	0.4	0.4
Output value, BAM, oats	2,280	0	0	2,280	2,280
Output value, BAM /ha, oats	1,140	0	0	1,140	1,140
Subsidies, BAM, oats	0	0	0	0	0
Total income, BAM, oats	2,280	0	0	2,280	2,280
Income per ha, BAM oats	1,140	0	0	1,140	1,140
Labour input	5	2	6	41	5

Source: Own farm survey, 2011

Table 3.18: Results from the case studies, RS/BD, 2010

2010	RS 1	RS 2	RS 3 (BD)	RS 4	RS 5	Total	Average
Wheat							
Wheat, ha	319	934	9	6	110	1,378	275.6
Wheat yield (t/ha)	3	2.39	4	3	3.7	n.a.	3,218
Wheat production, tonnes	957	2,232.26	36	18	407	3,650.26	730,052
Output value, BAM	466,550	602,640	11,088	5,040	185,592	1,270,910	254,182
Output value, BAM /ha	1,463	645	1,232	840	1,687	n.a.	1173
Subsidies, BAM	94,221	0	2,700	0	0	n.a.	n.a.
Total income, BAM	560,771	602,640	13,788	5,040	185,592	1,367,831	273,566
Income per ha, BAM	1,758	645	1,532	840	1,687	n.a.	1,292
Maize							
Maize, ha	362	550	14	12	130	1,068	213.6
Maize yield (t/ha)	5.5	6.2	8	5	8.5	n.a.	6.64
Maize production, tonnes	1,991	3,410	112	60	1,105	6,678	1,335.6
Output value, BAM	690,920	1,364,000	26,208	14,700	519,350	2,615,178	523,036
Output value, BAM /ha	1,909	2,480	1,872	1,225	3,995	n.a.	2,296
Subsidies, BAM	0	0	3,500	0	0	n.a.	n.a.
Total income, BAM	690,920	1,364,000	29,708	14,700	519,350	2,618,678	523,736
Income per ha, BAM	1,909	2,480	2,122	1,225	3,995	n.a.	2,346
Labour input	32	200	4	8	12	256	51

Source: Own farm survey, 2011

The maize production is presented here as follows. In total 1,068 hectares are used for maize production with an average of 213.6 hectares. Again the farms RS 1 and RS 2 dominate the picture with 363 hectares and 550 hectares of maize respectively. The yield on average is 6.6 tonnes/hectare and the generated income is BAM 2,346 per hectare.

None of the farms in the case study sample in RS produce other cereals than wheat and maize.

Based on interviews with farmers, the following arguments for the production of the two cereals have been collected.

The main reasons that farmers grow wheat are:

- To enable crop rotation thus avoiding maize monocultures
- To avoid labour peaks
- For straw for animals and manure

- For flour production. In the past wheat was given to mills and the farmers received a corresponding amount of flour. Nowadays wheat is usually sold to the mills, and flour is afterwards purchased from the mills, although some farmers produce their own flour on farm.

The main reasons that farmers grow maize are:

- To produce fodder for on-farm consumption. This is true for both large and small farms.
- Because maize is a very popular plant in hilly countries, as it can be used on the farm for human and livestock consumption with minimal processing.
- Smallholders can harvest maize partly by hand

3.5 Agricultural inputs

This section of the report presents data regarding the costs of various types of agricultural input to cereals production.

3.5.1 Seed

Seed quality is determined in the regulation together with the required standards for the chemical and physical characteristics of seed. These standards are aligned with EU standards, but control and inspections may not yet be fully in place.

There is considerable use of uncertified wheat seeds and farm-saved wheat seeds, which can give rise to disease problems, loss of genetic quality, lower yields and other problems. Official control over the use of uncertified seed is apparently poor, particularly among small private farms. However, farmers who apply for subsidies and sell their products to mills have to prove that they use certified seeds.³³ This requirement was introduced recently in both FBiH and RS.

Seed varieties have to be registered on the List of Varieties. A successful two-year test period in BiH enables the seed companies to register their varieties on this list and afterwards the seed variety can be imported and put on the market. During the workshops organized as part of this sector analysis, stakeholders mentioned that the most suitable varieties were not always listed. Also, the capacity of government institutions to research and develop as well as monitor and certify seed production appears to be very limited. Eventually, a public-private partnership might be able to link the existing know-how of the institutes more with the market, and steps to develop such partnerships are observed in the field.

Maize

All the large international seed companies (Dekalb, KWS, LG, NK, Pioneer, Syngenta and others) are present in Bosnia and Herzegovina. However, due to price and locally adopted varieties, the Serbian and Croatian seed companies play a major role in the market, especially AS (Agro Sava Breeding company, part of the Serbian company CHEMICAL AGROSAVA), NS (Novi Sad, Serbia), ZP (Maize Research Institute, Zemun Polje, Serbia), BC (BC Institute for Breeding and Production of Field Crops, Zagreb, Croatia), OS (Agricultural Institute Osijek, Croatia) and others.³⁴

Maize seed is sold in sacks of 25,000 kernels. The retail price varies from BAM 65 to BAM 80. Farmers plant between 65,000 and 85,000 kernels per hectare and their costs are between EUR 94 and EUR 123 per hectare.³⁵ Corresponding prices in Hungary are: EUR 100 for 65,000 kernels and EUR 130 for 85,000 kernels.³⁶ Costs collected by university experts and entity ministry staff show variations from BAM 100 (EUR 50) in the FBiH to BAM 160 (EUR 80) in RS to BAM 260 (EUR 130) in BD per hectare. These prices are generally lower than indicated by the interviews. According to the results from the survey, the average cost for seeds is 129 BAM equal to EUR 65 per hectare; see the table below. This is relatively less than stated by the seed dealers and university experts. However, the cost varies from BAM 2.5 per kg to BAM 10 per kg, so there will always be a large variation in the costs. Only 2 out of 38 maize producers in the

Table 3.19: Seed costs for maize production, BAM per ha and per farm, survey results, 2011

Farms, number	Ha sown with maize, total	Seed, kg used	Seed value, total, BAM	Seed value per ha, BAM	Seed value per farm, BAM
38	397	7,893	456,118	129	1,352

Source: Own survey, 2011

³³ European Union SESMARD Working document: BiH Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). 2008. p 64

³⁴ Interviews with farmers and stakeholders, 2011

³⁵ Interviews with seed dealers in the market, 2011

³⁶ http://www.bazismag.hu/files/download_files/25/MGhibridekhivatalosvegfelhasznaloiarai2011kukNF.pdf

Table 3.20: Seed costs for wheat production, BAM per ha and per farm, survey results, 2011

Farms, number	Ha sown with maize, total	Seed, kg used	Seed value, total, BAM	Seed value per ha, BAM	Seed value per farm, BAM
29	276	66,236	52,258	189	1,802

Source: Own survey, 2011

survey do not buy seed at the market but use their own seed.

As maize is a profitable crop, farmers are looking for the most adequate varieties. In order to attract clients all the companies arrange strip-tests along the main roads where farmers can stop by and see the different varieties in practice.

Almost no non-hybrid maize is used in BiH and farm saved maize is used as a fodder plant only in a very limited way.

Wheat

The situation for wheat is quite different, as it is not as profitable as maize. Farmers do not have to purchase new seeds every year, as wheat can be multiplied on the farm (in contrast to hybrid maize). This is done frequently and the insufficient use of certified seed,³⁷ especially among smallholders who do not bring their wheat to the market as they use it on the farm, results in poor yields and poor quality. It has been reported by stakeholders that since 2002 the quality of the wheat delivered to mills has declined sharply.³⁸

Seed wheat is sold at BAM 0.63 per kg.³⁹ Farmers need between 200 and 250 kg per hectare, sometimes even more. The high input of seeds compared to other countries might be due to the low seed quality.

According to the project survey, 29 wheat farmers buy seed at an average price of BAM 0.79 per kg, and they use 240 kg/hectare.

Seed as a production factor

The general conclusion from the case studies is that the farmers pay specific attention to the seed material as a key factor for the optimization of the production.

The farmers use seed material from various sources, also from abroad including Italy and France. In wheat production the farmers use the varieties Srpanjka, Zitarka, Super Zitarka and Pobeda, Novosadska S-rana, Novosadska S-40 and Marija, while in maize production they use Pioneer hybrids, group 400, KWS hybrids (Klimt variety, 20 kernels in a row), the hybrid NS 640, Novi Sad hybrid – group 500 and Osijek hybrid – 592 and 596.

Some farmers report lack of information about new varieties and hybrids, and this is also the case for information about innovations in technologies for the production of the two crops.

A few farmers seem to be more oriented towards innovation than others. Some of them follow the appearance of new varieties and hybrids on the market, and also the innovations in machinery and technology related to production of the two crops. One farmer also has experimental parcels, where he tests growing of new varieties and hybrids, their productivity, resistance to diseases and adaptability to the climatic and soil conditions of the area.

Also farmers interviewed outside the case studies are interested in participating in

³⁷Central and Eastern European Countries (CEEC) AGRI POLICY: Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. Instrument Specific Support Action. Thematic Priority Scientific Support to Policies. D12-2 Second 6-monthly report. Monitoring of agricultural policy, market and trade developments in Bosnia and Herzegovina, 2006; p 7

³⁸Workshop in Banja Luka, 20 October 2011

³⁹The price range is wide. Between 0.63–0.93 BAM and even up to 1.2 BAM, according to information from stakeholders

experimental trials with new varieties.⁴⁰ However, all varieties must be registered in the national List of Varieties. It is clear that state or entity level institutions should conduct trials and recommend to the farmers which varieties to use, when the new varieties are included on the List of Varieties. Trials conducted by individual farmers can only lead to commercial use of the varieties, if the relevant authorities are involved and the new varieties included in the national List of Varieties. Anything else will be illegal.

One farm among the case studies is involved in a programme of seed production in cooperation with university institutes in Novi Sad and in Belgrade. For each year, the farmer signs a contract for the implementation of seed production for wheat and maize. The farm also produces its own seeds for wheat, barley and soybeans, which are marketed as commercial seeds, while listed companies own the production of maize seed.

3.5.2 Fertilizers and agrochemicals

There are no actual accurate official figures available regarding fertilizer use in Bosnia and Herzegovina. However, it is likely that the high level of fertilizer application in the late 1980s will never again be reached as in fact there was a great wastage of fertilizers due to inefficiency and lack of accountability. The predominant nitrogen fertilizers, as in Western Europe, are ammonium nitrate and calcium ammonium nitrate. The consumption of phosphate has fallen even more than that of nitrogen. However present levels are too low to be sustainable.⁴¹

Wheat yields in neighbouring Serbia are similar to those in BiH. During the 1980s yields were as high as five tonnes per hectare, but in the last decade the wheat yield has

only exceeded four tonnes per hectare on two occasions. Besides uncertified seed, the poor yields are caused by the limited use of fertilizers (one-third of the optimum amount).⁴²

According to data, an average of 64.3 kg of fertilizer was used on each hectare in BiH in 2000. Hungary used on average 98.2 kg and Austria 151.7 kg per hectare for the same year.⁴³ According to the project survey results 270 kg NPK fertilizer was used per hectare for wheat production and 359 kg NPK per hectare for maize production in 2010. These figures indicate a dramatic increase in the use of fertilizer in BiH wheat and maize production since 2000.

In 2009 and 2010, RS supported farmers with in-kind contributions of fertilizers, see details for the support in Chapter 5 of this report. Officials justified this approach, as there is a fertilizer oligopoly (2–3 importers) in BiH, which imports fertilizers from the two neighbouring producers in Serbia and Croatia.

Also, the use of agrochemicals is limited as farmers try to reduce costs wherever possible. Besides pesticides, BiH farmers apply herbicides on 60 percent of the total area under wheat (mostly Secator and Lintur/Iontrel). Fungicides and insecticides are very rarely used (the main fungicide in use is Duet ultra and the main insecticide is Carate and Decis).

The survey provides us with data on the use and the costs of fertilizer and pesticides for the two main cereals.

With regard to maize, the farmers use fertilizers for BAM 615 per hectare on average with NPK fertilizer as the main type of product used, and they use pesticides for BAM 205 per hectare on average. Most farmers use only one pesticide.

⁴⁰Mr Miroslav COSIC from MLIN COSIC in Brčko District informed the author that he imports Austrian and Hungarian varieties for own farm and interested neighbours; 21 September 2011.

⁴¹Isherwood, K.F. Agricultural Sciences – Vol. II. Fertilizer Use in Central and Eastern Europe: Types and Amounts. p 1 ff

⁴²Leibniz Institute of Agricultural Development in Central and Eastern Europe (IAMO). Studies on the Agricultural and Food Sector in Central and Eastern Europe. Volume 57. 2010. p 198

⁴³<http://www.nationmaster.com/country/au-austria/agr-agriculture>

Table 3.21: Fertilizer and pesticide costs, maize grain production, per hectare and per farm, survey results, 2011

Farms, number	Total sown area, ha	Fertilizer value – NPK, BAM	Fertilizer value – UREA, BAM	Fertilizer value – KAN, BAM	Total costs, BAM	Costs per ha, BAM	Costs per farm, BAM
38	397	135,933	51,682	56,728	244,343	615	6,430
		Pesticide value – Pesticide 1, BAM	Pesticide value – Pesticide 2, BAM	Pesticide value – Pesticide 3, BAM	Total costs, BAM	Costs per ha, BAM	Costs per farm, BAM
		65,483	14,340	990	81,457	205	2,144

Source: Own farm survey, 2011

Table 3.22: Fertilizer and pesticide costs, wheat production, per hectare and per farm, survey results, 2011

Farms, number	Total sown area, ha	Fertilizer value – NPK, BAM	Fertilizer value – UREA, BAM	Fertilizer value – KAN, BAM	Total costs, BAM	Costs per ha, BAM	Costs per farm, BAM
27	276	98,143	1,090	32,472	131,794	497	4,878
		Pesticide value – Pesticide 1, BAM	Pesticide value – Pesticide 2, BAM	Pesticide value – Pesticide 3, BAM	Total costs, BAM	Costs per ha, BAM	Costs per farm, BAM
19	276	11,934	840	300	13,074	47	688

Source: Own farm survey, 2011

With regard to wheat, the average cost per hectare for fertilizer is BAM 497 per hectare and for pesticides it is as low as BAM 47 per hectare. Again the main fertilizer is NPK and the farmers typically use only one pesticide.

3.6 Farm mechanization

The World Bank estimated that due to the war (1992–1995) 80 percent of agricultural machinery stock was lost.⁴⁴ An analysis of physical capital thirteen years later showed that individual farms were relatively well equipped in terms of mechanized equipment, especially tractors. There are around 30,000 tractors in operation in BiH many purchased after the war and many as secondhand equipment. However, the machinery is today generally too old, partially depleted and dysfunctional, and tractor-trailers and other

specialized implements (combine harvesters, drilling machines, etc.) as well as covered places to store the equipment are lacking. The state of agricultural machinery is a major cause for the low productivity and poor competitiveness of agriculture in RS.⁴⁵

The situation is similar in the other parts of BiH, since agricultural mechanization is not well developed as family farms are small and fragmented into several plots. Also, equipment from previous state farms does not fit the size of the plots. For these reasons, farm mechanization is outdated. One specific observation is that large numbers of old IMT tractor-pulled single-row maize-harvesters are still in use.

From the project farm survey new information about the age of the main types of equipment

⁴⁴CEEC AGRI POLICY: Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. Task 4–1; Specification for the second rural vitality report, Second report for BiH. 2006. p 4

⁴⁵Republika Srpska: Rural Development Strategy 2009–2015; p 115

Table 3.23: Mechanization age, survey results, selected machines

Tractors: Number < 5 years	Tractors: Number 5–15 years	Tractors: Number > 15 years	Combines: Number < 5 years	Combines: Number 5-15 years	Combines: Number > 15 years	Maize harvester: Number < 5 years -	Maize harvester: Number 5-15 years -	Maize harvester: Number > 15 years -
24	50	56	4	4	10	2	8	3

Source: Own farm survey, 2011

has been collected. The table below presents the results regarding the age of tractors, combine harvesters and maize harvesters.

In the survey farmers have been asked how many tractors they have that are less than 5 years old, between 5 and 15 years old, and older than 15 years. In order to estimate the age of the equipment it is assumed that each piece of equipment less than 5 years old is 2.5 years old, that equipment between 5 and 15 years old is 10 years old and that equipment older than 15 years is, as a minimum, 15 years old.

The average age of 130 tractors in the population is 7.3 years (24 tractors on average 2.5 years old; 50 tractors on average 10 years old and 56 tractors minimum 15 years old).

In the same way the average age of the 18 combines is estimated to be 11.1 years. Finally, the average age of the 13 maize harvesters in the population of maize producers is 10.0 years old.

Based on information from the case studies, farmers purchased the following types of equipment over the past ten years:⁴⁶

- Combination seed harrows
- Disk harrows
- Grain/maize drilling machines
- Harvesters (for wheat and maize)

- Maize pickers (2 rows)
- Pickers
- Planters
- Ploughs
- Rotary cultivators
- Soya drilling machines
- Sprinklers
- Tillers
- Tractors
- Trailers

Due to a lack of own mechanization, contract costs for harvesting are a serious expenditure for the farmers. According to the project survey, the harvesting costs per hectare for these farmers that have no equipment themselves are BAM 208 for maize growers and BAM 130 for wheat growers. See the table below.

In this connection, it was mentioned by stakeholders that a part of the wheat yield is lost due to the grain shattering because of bad timing of the harvest. Owners of combines prefer larger, more accessible and flat areas for grain production. After these areas are harvested, they move to other areas, and provide services for farmers without their own equipment. Farmers with up to 30 hectares and with their own combine harvesters offer

Table 3.24: Harvesting: Contract costs if no equipment, maize and wheat, survey results

Topics	Maize grain	Wheat
Total costs, BAM	23,865	9,260
Costs per hectare, BAM	208	130
Costs per farm, BAM	1,085	579
Number of farms	22	16

Source: Own farm survey, 2011

⁴⁶See also Chapter 7 on previous and future investments

the use of their machinery to the smaller farmers in the neighbourhood. The farmers with contract harvesting tend therefore to have later harvests than farmers with their own equipment, and this causes reduced yields. The average losses are estimated by experts to be 3 percent for wheat and 5 percent for maize due to these reasons.

The number of service providers, such as machinery rings, is limited and EU-funded projects have not been very successful. Setting up management capacities to develop and run “machinery rings” was particularly unsuccessful, and despite the delivery of machinery to associations of farmers, commercial sustainability was never achieved.

Specialized companies for land clearance would face a huge demand as arable land is often not in use (unsown) and bushes do not allow for cultivation. Also, in most cases farmers do not have tractors with 280–360 horsepower, which is the minimum requirement for the use of stone crushers, stump grinders and other multifunctional machinery.

3.7 On-farm storage facilities and transportation

Due to limited space and limited finances, farms usually have no storage facilities for mercantile wheat. According to the case studies, farmers keep a few tonnes (typically 4 to 5 tonnes) for onfarm consumption and as a reserve.

Limited on-farm storage facilities do not as such represent a technical storage problem for the farmer, but rather a problem related to the timing of the sale. Having no storage facilities means that farmers are forced to sell their products directly from the field at harvest time, when most farmers are selling, and

the prices are low. Better and larger storage facilities will make it possible for farmers to sell their products when the supply is lower than immediately after harvest, and when the prices are more attractive in the market.

The transport of cereals, like most other products in Bosnia and Herzegovina is mostly oriented to road transport. Therefore, trucks but also tractors with trailers are the main transport means for transporting cereals. This, of course, increases costs and consequently increases mill, bakery and confectionery prices. According to estimations made by the Grain Association of Federation of Bosnia and Herzegovina, transport costs are between EUR 20 and EUR 40 per tonne of transported grain from the farm to the primary processors (mills) and further on to the secondary processors.⁴⁷

3.8 Profitability of wheat and maize

In this section the report will try to provide an estimate of the average profitability of production of wheat and maize in BiH. Three sources of information are used.

Gross margin calculations were collected by university and ministerial staff in order to present a best practice example of the gross margins of wheat and maize. The examples are presented for the two entities and for BD. Next, the gross margins are estimated based on data collected among the 66 farmers producing wheat and maize and covered by the project farm survey. Finally, data from the 13 detailed expert interviews made for the case studies is used.

Based on these three sources, an average is calculated, and in this way the report endeavours to provide an updated picture of the profitability of the production of wheat and maize in BiH. For the FBiH the following calculations were collected.⁴⁸

⁴⁷ Further analyses of the transportation sector might be considered.

⁴⁸ Data collected by Professor S. Bajramovic, Sarajevo University, 2012.

Table 3.25: Calculation wheat (FBiH, 2011)

CALCULATION WHEAT (1 hectare)			
Item	KG	BAM/Unit	BAM
Wheat yield	4,500	0.45	2,025.00
Straw yield	2,250	0.05	112.50
Subsidies (1 hectare)		550.00	550.00
Production value			2,687.50
Variable costs			
Seed	250	0.97	242.50
Fertilizer			683.00
Agrochemicals/plant protection			122.00
Machinery including harvester			1,110.00
TOTAL			2,407.50
Gross margin (Gross Value Added (GVA))			280.00

Source: Expert (university and ministry) calculations, 2012

Table 3.26: Calculation maize (FBiH, 2011)

CALCULATION MAIZE (1 hectare)			
Item	KG	BAM/Unit	BAM
Maize yield	8,000	0.35	2,800.00
Straw yield	0	0.00	0.00
Subsidies			0.00
Production value			2,800.00
Variable costs			
Seed			200.00
Fertilizer			900.00
Agrochemicals/plant protection			180.00
Machinery including harvester			1,200.00
TOTAL			2,480.00
Gross margin (GVA)			320.00

Source: Expert (university and ministry) calculations, 2012

Table 3.27: Calculation wheat (RS, 2011)

CALCULATION WHEAT (1 hectare)			
Item	KG	BAM/Unit	BAM
Wheat yield	5,000	0.39	1,950.00
Straw yield	2,500	0.03	75.00
Subsidies			250.00
Production value			2,275.00
Variable costs			
Seed	280	0.90	252.00
Fertilizer			495.00
Agrochemicals/plant protection			150.00
Machinery including harvester			820.00
TOTAL			1,717.00
Gross margin (GVA)			558.00

Source: Expert (university and ministry) calculations, 2012

Table 3.28: Calculation maize (RS, 2011)

CALCULATION MAIZE (1 hectare)			
Item	KG	BAM/Unit	BAM
Maize yield	8,000	0.35	2,800.00
Straw yield	0	0.00	0.00
Subsidies			0.00
Production value			2,800.00
Variable costs			
Seed			160.00
Fertilizer			765.00
Agrochemicals/plant protection			157.00
Machinery including harvester			736.00
TOTAL			1,818.00
Gross margin (GVA)			982.00

Source: Expert (university and ministry) calculations, 2012

A detailed calculation from Brčko District, Forestry and Veterinary from 2009⁴⁹ was provided Department for Agriculture, Water Management, and was updated by university experts:

Table 3.29: Calculation wheat (BD, 2011)

CALCULATION WHEAT BD (1 hectare)			
Item	KG	BAM/Unit	BAM
Wheat yield	4,000	0.39	1,560.00
Straw yield	2,000	0.03	66.00
Subsidies			300.00
Production value			1,926.00
Variable costs			
Seed	300	0.90	270.00
Fertilizer			474.00
Agrochemicals/plant protection			60.00
Machinery including harvester			820.00
TOTAL			1,624.00
Gross margin (GVA)			302.00

Source: Expert (university and ministry) calculations, 2012

Table 3.30: Calculation maize (BD, 2011)

CALCULATION MAIZE BD (1 hectare)			
Item	KG	BAM/Unit	BAM
Maize yield	8,000	0.35	2,800.00
Straw yield	0	0.00	0.00
Subsidies			250.00
Production value			3,050.00
Variable costs			
Seed	2.20	125	275.00
Fertilizer			474.00
Agrochemicals/plant protection			70.00
Machinery including harvesters			1,200.00
TOTAL			2,019.00
Gross margin (GVA)			1,031.00

Source: Expert (university and ministry) calculations, 2012

⁴⁹Brčko District of BH Government, Department for Agriculture, Water Management, Forestry and Veterinary: Analiza učinaka – efekata plasiranih podsticajnih sredstva - povratne informacije (izvještaji) - katalog kalkulacija poljoprivrede. 2009. Pages 11 and 19.

Next, the survey results are presented below.

Table 3.31: GVA for wheat and maize production in BiH, 2011, based on survey results

Wheat per hectare		Maize grain per hectare	
Sales value, BAM	1,851	Sales value, BAM	3,033
Subsidies, BAM	300	Subsidies, BAM	0
Income, BAM	2,151	Income, BAM	3,033
Fertilizers, BAM	497	Fertilizers, BAM	615
Pesticides, BAM	48	Pesticides, BAM	205
Seeds, BAM	189	Seeds, BAM	129
Harvesting, BAM	130	Harvesting, BAM	208
Total variable costs, BAM	864	Total variable costs, BAM	1,157
GVA, BAM	1,287	GVA, BAM	1,876

Source: Own farm survey, 2011

The farm survey covers 29 wheat producers with a total of 276 hectares of wheat, and 38 producers of maize with a total of 397 hectares of maize. Lastly, the results from the 6 case studies are presented. Unfortunately,

7 out of 8 case study farms in FBiH did not record their variable costs, so no information could be collected for the gross margin calculations. That results in 6 case farms, of which 5 are in RS/BD and one is in FBiH.

Table 3.32: GVA/hectare, BAM, case studies, 2011

Cases	GVA/hectare, BAM, 2010	
	Wheat	Maize
FBiH 5	50	200
RS 5	40	1,436
RS 4	649	-856
RS 3	281	506
RS 2	1,265	1,034
RS 1	589	402
Total	2,874	2,722
Average	479	454
Subsidies	300	0

Source: Expert interviews in case studies, 2011

Based on these three sources, the report has prepared the synthesis calculation of GVA (Gross margin) for wheat and maize, and these estimations are presented in the next table.

Table 3.33: GVA/hectare, BAM, BiH synthesis, 2011

Cases	GVA/hectare, BAM, 2011	
	Wheat	Maize
FBiH	280	320
RS	543	982
BD	302	1,031
Survey results	1,287	1,876
Case studies	479	454
Average	578	933

Source: Own calculation based on expert data, survey data and data from case studies, 2011

The conclusion about the feasibility of wheat and maize production is summarized below. The survey results collected by RS extension service staff in RS and BD and by a junior researcher from the Faculty of Agriculture and Food Sciences, University of Sarajevo, in FBiH as a part of the data collection for the Meat and Dairy sector analysis, show better economic results for the farmers than the data collected by university/ministry experts and the data collected from case studies through detailed university expert interviews with farmers. From a methodological point of view, the results from the case studies provide the most robust results, also quite close to the results provided from university and ministerial staff. However, the average shows that wheat production generates BAM 578 per hectare including subsidies, while maize grain production generates BAM 933 per hectare. It is more economically attractive for farmers to produce maize instead of wheat, and this is also reflected in the weight of maize as a crop in BiH compared to wheat and other cereals.

These results are also comparable with the results from the Pilot FADN survey,⁵⁰ covering 20 farms with a total of 81.1 hectares for maize and 16 farms with a total of 60.1 hectares for wheat. The results of the Pilot FADN survey show an average GVA of 1,900 BAM / hectare for maize and 1,248 BAM/hectare for wheat without harvesting costs, which are typically 1,000 BAM in case the farmer has no equipment for harvesting himself. The FADN results confirm the profitability of maize compared to wheat, and the level of the GVA estimated in this report, see Table 3.34 above.

3.9 The comparison of cereals production in BiH and the EU and CEFTA (Central European Free Trade Agreement) countries

Benchmark data for CEFTA and EU countries are provided in this section. Priority is given to CEFTA data in agreement with MoFTER and entity ministry representatives in the description.

3.9.1 CEFTA

The production of wheat and maize is compared with production of the same cereals in CEFTA countries in the section below. The idea is to see the BiH production in comparison with CEFTA production and to provide explanations on variations in performance, if relevant.

Bosnia and Herzegovina contributes modestly to the total harvested area under cereals in CEFTA countries. With an average of 310,000 hectares (period 2005–2010) BiH contributes with 7.4 percent, which is higher than Albania, The Former Yugoslav Republic of Macedonia, Kosovo and Montenegro, but significantly less than Croatia, Republic of Moldova and Serbia in particular. Unlike most CEFTA countries, Bosnia and Herzegovina, together with the Former Yugoslav Republic of Macedonia, is characterized by a trend of reducing the total area sown under wheat. With 321,000 hectares in 2005, harvested area in 2010 was reduced by 11 percent and amounted to 286,000 hectares.

With regard to wheat production and the sown area under this crop, the contribution of BiH in the total CEFTA countries area is even less, and expressed as a six-year average (2005–2010) BiH contributes with a modest 68,600 hectares, only 5.1 percent. Generally, the trend is for a reduced area in almost all CEFTA agreement countries, except for Croatia, but in BiH and in TFYR Macedonia, the downward trend is accentuated. BiH reduction in 2010 compared to 2005 is 33 percent, in TFYR Macedonia the reduction is 26.7 percent.

With regard to the harvested areas under maize, Bosnia and Herzegovina contributed with an average of 194,200 hectares to the total CEFTA countries harvested areas under this crop, which amounts to 8.6 percent. These areas are significantly higher than those in Albania, TFYR Macedonia, Kosovo and Montenegro, but significantly less than in Croatia, Republic of Moldova and Serbia in particular. As with most countries of the CEFTA Agreement, Bosnia and Herzegovina is characterized by stability in maize harvested areas measured.

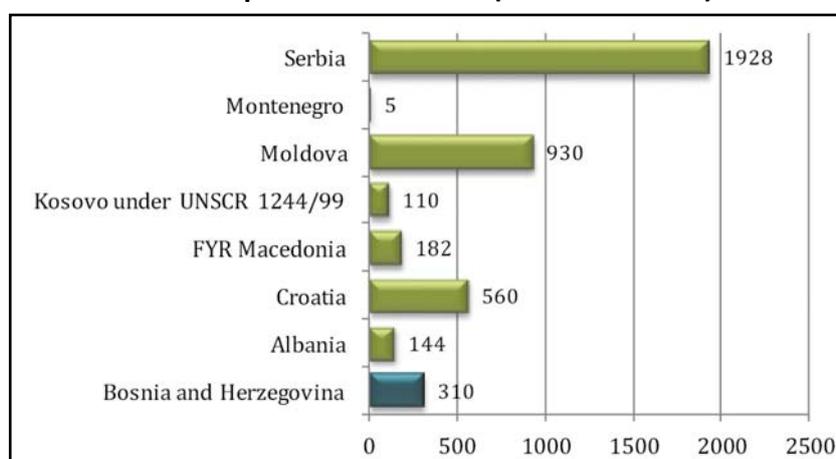
⁵⁰Reports from the Pilot FADN survey prepared under the European Union Funded Project – Strengthening and Harmonization of the BiH Agriculture and Rural Sectors Information Systems. 15 November 2011.

Table 3.34: Harvested area of cereal crops of CEFTA countries; in 000 hectares, 2005–2010

Crop/year	BiH	Albania	Croatia	TFYRM	Kosovo	Rep. Of Moldova	Montenegro	Serbia	CEFTA
Total cereals									
2005	321.0	147.7	557.2	203.2	114.5	993.7	5.0	1,972	4,314.5
2006	316.3	143.1	570.1	188.8	109.8	875.9	5.1	1,889	4,098.0
2007	318.0	132.2	558.6	184.0	102.3	920.4	5.2	1,943	4,163.7
2008	311.0	149.1	562.5	178.1	114.9	981.6	4.7	1,937	4,239.0
2009	308.8	146.2	562.7	178.8	n/a	919.8	4.8	1,956	4,077.2
2010	286.2	145.7	549.7	161.7	n/a	886.0	4.7	1,873	3,907.3
Average (2005–2010)	310.2	144.0	560.1	182.4	110.4	929.5	4.9	1,928.5	4,170.1
Wheat									
2005	81.4	82.4	146.3	108.9	69.3	401.2	0.8	563	1,453.3
2006	73.3	77.2	176.0	99.1	68.6	290.2	0.8	540	1,325.2
2007	74.0	70.2	175.0	90.8	61.2	307.1	0.8	559	1,338.2
2008	60.8	83.4	156.5	98.9	72.1	408.6	0.8	487	1,368.5
2009	67.8	82.8	180.4	88.2	n/a	348.1	0.8	568	1,335.7
2010	54.6	73.9	168.5	79.9	n/a	321.3	0.7	484	1,183.1
Average (2005–2010)	68.6	78.3	167.1	94.3	67.8	346.1	0.8	533.5	1,356.6
Maize									
2005	195.6	48.4	319.0	33.6	36.9	455.9	3.1	1,220	2,312.4
2006	196.4	49.0	296.2	31.9	36.1	459.3	2.8	1,170	2,241.7
2007	197.4	46.2	288.5	30.9	35.2	466.2	2.7	1,202	2,269.1
2008	198.7	49.0	314.1	31.6	36.1	428.0	2.7	1,274	2,334.1
2009	188.7	47.6	296.9	32.5	n/a	401.8	2.7	1,209	2,178.8
2010	188.8	54.2	296.8	28.6	n/a	415.9	2.7	1,224	2,210.6
Average (2005–2010)	194.2	49.1	301.9	31.5	36.1	437.9	2.8	1,216.4	2,269.8

Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.4: Average harvested area of cereal crops by CEFTA countries for the period 2005–2010 (in 000 hectares)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.5: Average harvested area of wheat by CEFTA countries for the period 2005–2010 (in 000 hectares)

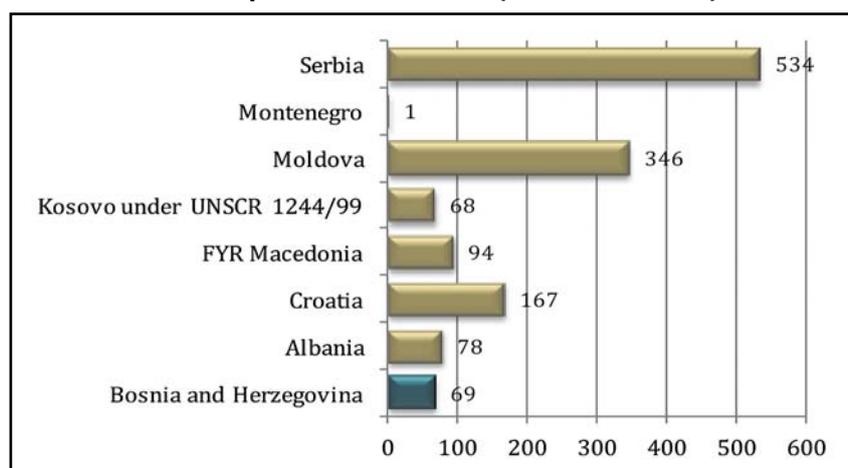
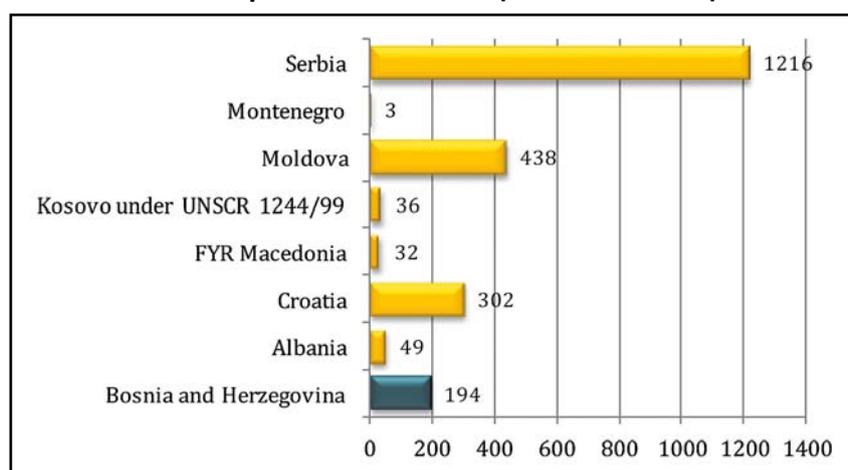
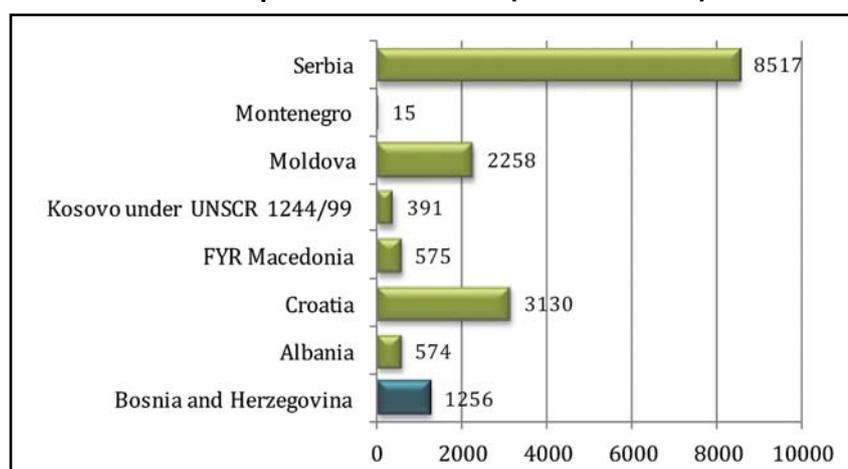


Figure 3.6: Average harvested area of maize by CEFTA countries for the period 2005–2010 (in 000 hectares)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.7: Average total grain production by CEFTA countries for the period 2005–2010 (in 000 tonnes)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Table 3.35 presents the total production of cereals by CEFTA countries and the two most important cereal crops – wheat and maize. On average (period 2005–2010) BiH with 1,256,200 tonnes of grain contributed to the overall production of the CEFTA countries by 7.5 percent. This production is significantly higher than in Albania, TFYR Macedonia, Kosovo and Montenegro, but much smaller in comparison to neighbouring Croatia and Serbia, and Republic of Moldova. This position of the BiH production of all grain among the CEFTA countries is primarily due to relatively high production of maize, not wheat. Specifically, looking at the average amount of wheat produced as one of the most important strategic crops, BiH is at the very bottom among

the CEFTA countries. With an average annual production of wheat of 227,700 tonnes, BiH is just in front of Montenegro, while all other CEFTA countries less (Albania, TFYR Macedonia, and Kosovo) or more (Croatia, Republic of Moldova, Serbia) after BiH.

When it comes to maize production, BiH is in a much better position in relation to the CEFTA countries, with an average annual production of 904,300 tonnes (8.4 percent of total CEFTA production). It is significantly ahead of Montenegro, Albania, TFYR Macedonia and Kosovo, but behind the Republic of Moldova and significantly behind Serbia and Croatia (see Table 3.35 and Figure 3.9).

Table 3.35: Total cereal production of CEFTA countries; in 000 tonnes; Period 2005–2010

Crop/year	BiH	Albania	Croatia	TFYRM	Kosovo	Rep. of Moldova	Montenegro	Serbia	CEFTA
Total grain									
2005	1,358.0	511.2	3,038.8	644.6	440.8	2,774.0	14.6	9,539	18,321.2
2006	1,354.5	507.5	3,034.6	602.1	392.1	2,222.0	14.3	8,357	16,484.2
2007	1,000.6	493.6	2,534.2	446.1	294.8	888.0	10.4	6,219	11,886.8
2008	1,329.3	608.5	3,725.5	613.0	437.4	3,132.0	15.9	8,844	18,705.4
2009	1,390.7	630.9	3,441.8	605.7	n/a	2,149.0	16.8	8,853	17,087.6
2010	1,104.1	693.8	3,007.2	538.5	n/a	2,385.0	16.3	9,291	17,035.7
Average (2005–2010)	1,256.2	574.3	3,130.4	575.0	391.3	2,258.3	14.7	8,517.1	16,717.2
Wheat									
2005	249.0	260.0	6,017.7	333.9	273.4	1,047.0	2.6	2,007	4,774.6
2006	232.5	230.9	8,046.6	293.3	239.5	678.0	2.5	1,875	4,356.6
2007	257.1	249.5	8,123.3	218.1	207.2	402.0	2.0	1,864	4,012.0
2008	226.1	335.0	8,583.3	291.7	293.0	1,277.0	2.9	2,095	5,379.4
2009	255.8	333.1	9,361.1	271.1	n/a	729.0	3.0	2,068	4,595.7
2010	145.4	294.9	6,810.0	243.1	n/a	730.0	2.5	1,630	3,727.3
Average (2005–2010)	227.7	283.9	7,824.4	275.2	253.3	810.5	2.6	1,923.2	4,558.7
Maize									
2005	1,004.2	219.9	2,206.7	148.2	142.1	1,492.0	9.7	7,038	12,261.3
2006	993.8	245.4	1,934.5	147.5	138.3	1,322.0	9.1	6,017	10,807.4
2007	635.3	215.9	1,424.6	118.4	74.5	363.0	6.9	3,905	6,743.3
2008	976.2	245.0	2,504.9	127.1	126.9	1,479.0	9.6	6,158	11,626.9
2009	962.9	265.1	2,182.5	154.2	n/a	1,141.0	10.0	6,396	11,112.0
2010	853.4	362.0	2,067.8	129.0	n/a	1,420.0	10.5	7,207	12,049.9
Average (2005–2010)	904.3	258.9	2,053.5	137.4	120.4	1,202.8	9.3	6,120.3	10,807.0

Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.8: Average total wheat production by CEFTA countries for the period 2005-2010 (in 000 tonnes)

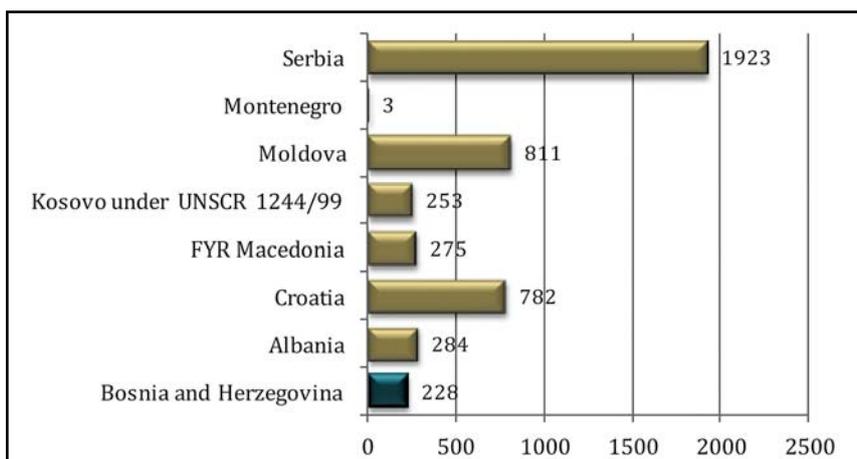
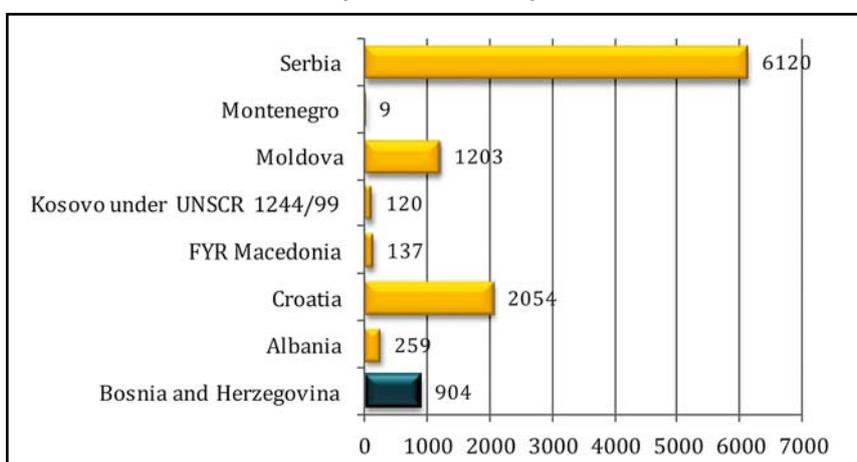
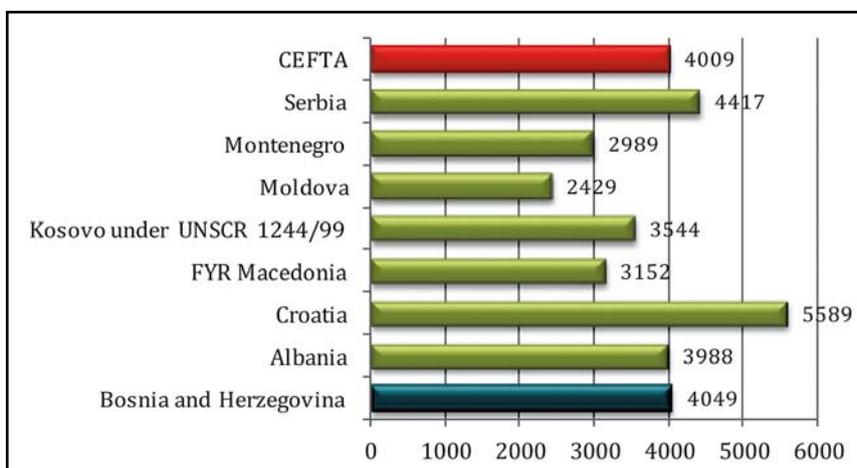


Figure 3.9: Average total corn production by CEFTA countries for the period 2005-2010 (in 000 tonnes)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.10: Average cereals yield by CEFTA countries for period 2005–2010 (in kg/hectare)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for the Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Finally, when it comes to the actual average yield of all cereals and especially wheat and maize, Bosnia and Herzegovina is at the average level achieved by the CEFTA countries as a whole, as can be seen from the following Table 3.36 and Figures 3.10; 3.11 and 3.12.

With an average yield of all cereals of 4,049 kg/hectare, BiH is immediately after Serbia (4,417 kg/hectare) and Croatia (5,589 kg/hectare), and in front of other CEFTA countries. As with all other CEFTA countries, the average yields vary from year to year depending primarily on climatic conditions during the year,

and in BiH ranges from 3,147 kg/hectare (2007) to 4,503 kg/hectare (2009).

With an average yield of wheat of 3,317 kg/hectare, BiH is behind Albania (3,625 kg/hectare), Kosovo (3,735 kg/hectare), Serbia (3,605 kg/hectare) and Croatia (4,681 kg/hectare), and in front of Montenegro, Republic of Moldova and TFYR Macedonia. The production of wheat yields varies from year to year depending on climatic conditions during the year, and in BiH it ranges from 2,662 kg/hectare (2010) to 3,775 kg/hectare (2009).

Table 3.36: Average grain yield of CEFTA countries; in kg/hectare; Period 2005–2010

Crop/year	BiH	Albania	Croatia	TFYRM	Kosovo	Rep. of Moldova	Montenegro	Serbia	CEFTA
Total grain									
2005	4,231	3,461	5,454	3,172	3,850	2,792	2,901	4,837	4,246
2006	4,282	3,546	5,323	3,189	3,571	2,537	2,829	4,424	4,023
2007	3,147	3,734	4,537	2,425	2,881	965	2,000	3,201	2,855
2008	4,274	4,081	6,624	3,443	3,807	3,191	3,356	4,565	4,413
2009	4,503	4,315	6,117	3,388	n/a	2,336	3,464	4,526	4,191
2010	3,858	4,762	5,471	3,330	n/a	2,692	3,494	4,959	4,360
Average (2005–2010)	4,049	3,988	5,589	3,152	3,545	2,429	2,989	4,417	4,009
Wheat									
2005	3,059	3,155	4,114	3,066	3,945	2,610	3,095	3,565	3,285
2006	3,172	2,991	4,572	2,960	3,491	2,336	3,094	3,473	3,287
2007	3,474	3,554	4,641	2,402	3,384	1,309	2,500	3,334	2,998
2008	3,721	4,017	5,483	2,950	4,064	3,125	3,458	4,299	3,931
2009	3,775	4,023	5,190	3,076	n/a	2,094	3,598	3,642	3,441
2010	2,662	3,991	4,041	3,044	n/a	2,272	3,358	3,367	3,150
Average (2005–2010)	3,317	3,625	4,681	2,919	3,735	2,342	3,186	3,605	3,360
Corn/Maize									
2005	5,134	4,543	6,918	4,411	3,852	3,273	3,171	5,769	5,302
2006	5,060	5,008	6,531	4,624	3,830	2,878	3,271	5,143	4,821
2007	3,218	4,674	4,938	3,832	2,114	779	2,556	3,249	2,972
2008	4,914	5,000	7,976	4,025	3,515	3,456	3,549	4,834	4,981
2009	5,103	5,569	7,351	4,751	n/a	2,840	3,757	5,292	5,100
2010	4,521	6,679	6,968	4,508	n/a	3,414	3,835	5,890	5,451
Average (2005–2010)	4,655	5,276	6,802	4,361	3,338	2,747	3,352	5,032	4,761

Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Figure 3.11: Average wheat yield by CEFTA countries for the period 2005-2010 (in kg/hectare)

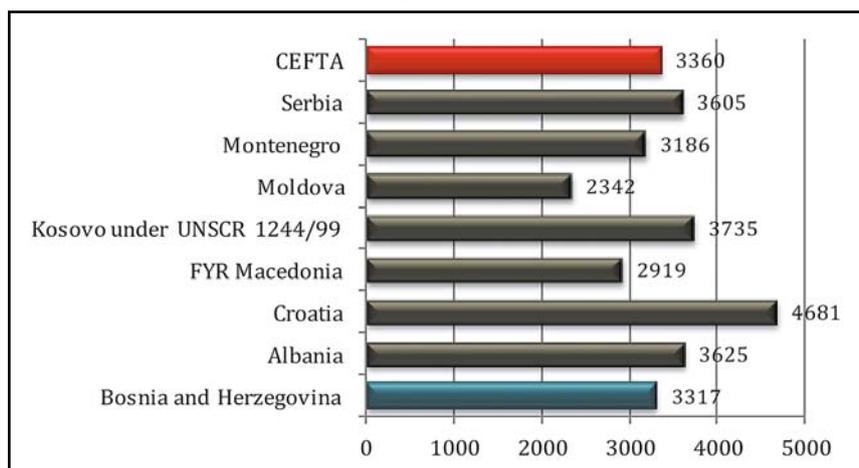
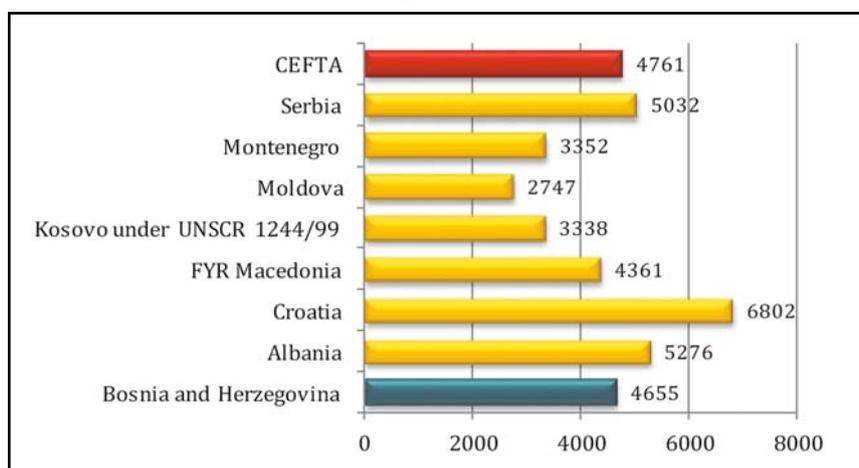


Figure 3.12: Average maize yield by CEFTA countries for the period 2005-2010 (in kg/hectare)



Source: World Bank Statistics (2010): AgriPolicy Statistics/Candidate Countries/Data (by country), <http://europartnersearch.net/agripolicy/statistics/candidates>, National statistical offices (bureaux), FAOSTAT and for Republic of Moldova edition, Republic of Moldova in figures (2008, 2011).

Finally, when it comes to the average yields of maize, BiH with 4,655 kg/hectare in the period 2005–2010 is after Albania (5,276 kg/hectare), Serbia (5,032 kg/hectare) and Croatia (6,802 kg/hectare), and in front of Kosovo, Montenegro and Republic of Moldova in particular (2,747 kg/hectare). As with all other CEFTA countries, the average yields of corn vary from year to year and in BiH it ranges from 3,218 kg/hectare (2007) to 5,134 kg/hectare (2005).

3.9.2 EU comparison

Wheat

Wheat is produced in all 27 EU member countries. The five-year average of number

of hectares harvested is 25.6 million for the period 2006–2010, see Annex 8 for detailed data. France is the biggest producer measured in terms of number of hectares harvested with 5.3 million hectares. The average in EU is 950,000 hectares. From these hectares, the five-year average of production is 134 million tonnes, with an EU country average of 5 million tonnes. France is also the largest producer with 37 million tonnes.

The most important benchmark figure in this context is the yield in EU countries. The EU five-year average for wheat yield is 4.88 tonnes/hectare, but there are significant variations across the countries. At the top the EU has

Ireland and Belgium with 8.67 and 8.64 tonnes/hectare and the Netherlands with 8.48 tonnes/hectare. These are the only three countries out of the 27 countries with higher yields than 8 tonnes/hectare. France is the largest producer measured in terms of harvested hectares and tonnes production, but the average yield in France is 6.92 tonnes/hectare.

At the bottom among the EU countries are Portugal with 2.11 tonnes/hectare, Romania with 2.59 tonnes/hectare, and Cyprus and Greece with 2.58 and 2.65 tonnes/hectare.

BiH has an average yield of 3.3 tonnes/hectare, which is at the level of the yield in Bulgaria, and is 67 percent of the EU average.

Maize

With regard to maize, the EU annual average for the five-year period 2006–2010 is 8.4 million hectares, and an average among the 18 countries producing maize of 465,000 hectares, see Annex 8 for details. The top three countries are Romania with 2.3 million hectares or 27 percent of the area with maize harvested in the EU, France with 1.6 million hectares and Hungary with 1.1 million hectares. Italy is just outside the top three with 994,000 hectares. In terms of production, the total is 56.7 million tonnes, with an average of 3.1 million tonnes among the 18 maize producing countries. France is producing the largest volume with 14.4 million tonnes equal to 25 percent of the total EU production. Italy produces 9.1 million tonnes, while Romania and Hungary produce 7.5 and 7.1 million tonnes respectively.

The yields vary also for maize, as they do for wheat. The EU average is 7.72 tonnes/hectare. The top five countries are Belgium and the Netherlands with 11.86 and 11.46 tonnes/hectare, Austria with 11.58 tonnes/hectare and the south European countries Greece and Italy with 10.39 tonnes/hectare and 9.94 tonnes/hectare.

The countries with the lowest yields are Romania with 3.25 tonnes/hectare and Bulgaria with 3.79 tonnes/hectare. The BiH average is 4.7 tonnes/hectare equal to 61 percent of

the EU average, but still only 39 percent of the highest yields achieved in Belgium. The average in Slovenia is 7.63 tonnes/hectare.

3.9.3 Synthesis of CEFTA and EU comparison

There are several reasons for the lower yields per hectare in BiH compared to most CEFTA and EU countries. Among the most important is the small scale and fragmented farms leaving no or only limited financial room for a high degree of modernization of equipment. This also leads to low productivity.

Furthermore, stakeholders in the sector in BiH point to the low quality of seeds as another important factor. The input factors are also generally used in low volumes, which also put limitations on the yields, even though the use of fertilizers and pesticides is increasing in later years.

Finally, the level of education and training among farmers is considered to be too low for modern high-yield production. Here it is also relevant to refer to the status of the extension services in BiH. Experiences from many other countries, both in the region and in the EU show that good extension services are of paramount importance in the modernization of agriculture, particularly in countries where the share of small-scale farms is relatively high, as in BiH.

3.10 Summary

Production structure

Cereals are produced in BiH on different types of farms. The precise number of farms with cereals is not known. The scale of production varies considerably from only one hectare per farm to hundreds of hectares per farm, but the most frequent type of farms only have a few hectares distributed on several parcels. However, the farm survey conducted in the sector analysis shows that the median number of hectares for wheat and maize producers in FBiH is 3.6 hectares and 6 hectares, while the median in RS/BD for the same two crops is 2.5 hectares and 5 hectares. If these medians are combined with the data for sown areas

with wheat and maize, the number of farms producing wheat and maize can be estimated. In FBiH, 5,030 farms produce wheat and 8,020 farms produce maize. In RS and BD there is an estimation of 14,920 wheat farms and 28,770 maize farms. In BiH, the total number of wheat farmers is then estimated to be 20,000, while there are 37,000 farms producing maize.

Volume of production

At the level of BiH the number of hectares sown with cereals has diminished by 8 percent from 318,000 hectares in 2006 to 293,000 hectares in 2010. The number of hectares has been constant in FBiH with a five-year average of 83,400 hectares, while RS has experienced a reduction of 12 percent from 225,000 hectares in 2006 to 199,000 hectares in 2010. In BD the situation is constant with 10,000 hectares.

The share with wheat has gone down in RS by 32 percent from 49,700 to 33,600 hectares. FBiH has also seen a decrease, but only of 10 percent from 20,100 to 18,100 hectares. At BiH level the total reduction is 25 percent. For maize grain the area sown in FBiH went down from 48,400 to 48,100 (-0.6 percent), in RS from 142,600 hectares to 138,400 hectares (-3 percent) and in BD from 5,500 to 5,200 hectares (-5 percent).

The yield measured in tonnes per hectare fluctuates for both wheat and for maize. The five-year average for wheat in FBiH is 3.5 tonnes/hectare. For maize the five-year average is 4.5 tonnes/hectare in FBiH. In RS the five-year average for wheat is 3.3 tonnes/hectare and also here with a poor year in 2010. For maize, the five-year average is 4.6 tonnes/hectare, which also was the yield in 2010, but the average is pulled down due to a very poor yield in 2007 with only 3 tonnes/hectare, just two-thirds of the average. In BD 2010 was also poor with yields of wheat of 2.8 tonnes/hectare and of maize of 4.5 tonnes/hectare. Both results are below the respective five-year averages of 3.6 tonnes/hectare for wheat and 4.6 tonnes/hectare for maize.

The total area harvested with *barley, oats and rye* was 31,500 hectares in 2010. It is a reduction from 39,400 hectares in 2009, or 20 percent down. Of the three small cereals, barley is far the most important with a five-year average of 65,500 tonnes of production, while the production of oats is 35,000 tonnes and rye 10,000 tonnes on average. The yields for these three cereals were low in 2010, and this is reflected in a relatively low production in 2010 compared to the previous year. The production of rye went down by 38 percent, the production of barley went down by 35 percent and the production of oats by 43 percent.

Value of production

The value of wheat went down from BAM 71 million in 2009 to BAM 45 million in 2010. In particular RS was hard hit with a reduction from BAM 46 million to BAM 26 million, or a decrease of 42 percent, but also FBiH and BD are suffering from lower production and yields.

With regard to maize, the total value was BAM 259 million in 2010, which was a small increase from 2009, when the value was BAM 235 million. FBiH, RS and BD have all experienced an increase in the value, primarily due to higher prices in 2010, and in spite of lower yields and a reduction in the sown and harvested areas.

In total the value of wheat and maize is BAM 305 million for BiH in 2010, distributed as follows: BAM 77.6 million in FBiH, BAM 217 million in RS and BAM 10.3 million in BD.

The total value of the five main cereals (wheat, maize, rye, barley and oats) in 2010 was BAM 332 million with a five-year average of BAM 338 million.

With regard to relative importance, maize grain is the most significant of all cereals and tops in 2010 with 78 percent of production, when wheat in the same year faced its lowest share with only 14 percent of production. The total value of the three smaller cereals is only 8 percent of production in 2010.

The total GDP of BiH was BAM 24,484 million in 2010. The value of cereals production was 1.4 percent of total GDP. The agricultural GDP was BAM 1,817 million in 2009, and the five main cereals contributed with 14.3 percent of agricultural GDP.

Profitability of wheat and maize production

The project farm survey and case studies undertaken show that wheat production generates earnings BAM 578 per hectare including subsidies, while maize grain production generates BAM 933 per hectare. Obviously, it is more economically attractive for farmers to produce maize instead of wheat, and this is also reflected in the weight of maize in total cereals production in BiH compared to wheat and other cereals.

CEFTA and EU comparison

BiH presents lower yields than many EU and CEFTA countries, and also yields below the averages. The reasons for the lower yield per hectare in BiH compared to most CEFTA and

EU countries are diverse. Among the most important are the small scale and fragmented farms giving only limited financial room for modernization of equipment. This also leads to low productivity.

Furthermore, stakeholders in the sector in BiH point to the low quality of seeds as another important factor. The input factors are also generally used in low volumes, which also put limitations on the yields, even though the use per hectare of fertilizers and pesticides has been increasing in later years.

Finally, the level of education and training among farmers is low for modern high yield production. Here it is also relevant to refer to the relatively weak extension services in BiH, particularly in FBiH. Experiences from many other countries, both in the region and in the EU show that good extension services are of paramount importance in the modernization of agriculture, particularly in countries where the share of small-scale farms is relatively large, as in BiH.

4. THE PROCESSING INDUSTRY

This chapter deals exclusively with small and medium-sized processing enterprises with less than 750 employees or a turnover lower than EUR 200 million. There are no enterprises that exceed these parameters (with the exception of the MIMS group (see below)). Focus is primarily on the primary processing in the milling industry, while secondary processing is only included to a certain extent.

4.1 Primary processing industry

During the period of former Yugoslavia there were 18 large-scale state flour (focused on wheat) and feed mills (focused on maize) in Bosnia and Herzegovina that were equally spread throughout the whole territory. They were relatively well equipped as modern Western European technologies were used. The total installed capacities for storage and processing was around 455,000 tonnes of wheat in BiH.

Since that time the number of large-scale mills has decreased, but after 1995 the total number of mills increased due to many new small private mills being founded. Now there are a total of 80 mills in BiH. Most of the mills are intended for flour production and the waste and byproducts are used for animal feed. Only 20 mills are exclusively designed for fodder production.⁵¹

Today, the largest suppliers of milling machinery and equipment to BiH and other former Yugoslav countries are the Swiss, Italian and Czech Republic manufacturers (Buhler, GBS, Prokop, Ocrim and others). Over the last few years, Turkish manufacturers have also gained a substantial role in supplying milling machinery. The prospects of entering EU markets have prompted flour producers to introduce new production techniques to

produce hydro-thermally processed flour, fast-cooking groats and stabilized wheat embryos, and to improve the quality of local flour.⁵²

4.1.1 Capacities and actual performance

In 2008, the capacity of the primary processing industry was estimated to be 650,000 tonnes of wheat annually,⁵³ but no official updated full picture can be prepared since data regarding capacities and values of production is either not collected by the authorities or is classified as confidential. Based on the worldwide annual average wheat consumption per head of 135 kg in developed countries, Bosnia and Herzegovina would need 513,000 tonnes annually for its 3.8 million inhabitants in order to meet domestic demand. The capacity in the country should then be appropriate to cover the needs. However, very often, installed capacities do not have much in common with actual performance.

By far the most important mill is KLAS which processes 400–450 tonnes per working day when running at full capacity. Yearly processing totals around 120,000 tonnes (with 300 working days per year) and covers around 20 percent of the BiH market demands. KLAS has no plans to increase production and the milling technology dates back to 2003. KLAS is part of the only strong local holding in Bosnia and Herzegovina, the MIMS Group, which is now one of the largest privately owned companies in BiH, employing over 5,000 people. The MIMS Group was founded about ten years ago as a wholesale company for food products, construction material and household items. It now has a variety of company members such as Merkur (retail), KLAS and Sprind (mill and bakery, each having around EUR 57 million turnover in 2009), Sarajevo and Tuzla Breweries, and Vegafruit.⁵⁴

⁵¹ European Union SESMARD Working document: BiH Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). 2008. p 64

⁵² European Bank for Reconstruction and Development (EBRD), FAO: Agribusiness Handbook, Wheat Flour. 2009. p 45

⁵³ European Union SESMARD Working document: BiH Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). 2008. p 64

⁵⁴ GFA Consulting Group GmbH: Food Industry Study in Southeast Europe. Final. December 2010. p 26 ff

Besides the two large mills, there are also some medium-size processing plants (Zitopromet, Mostar; Dukat, Tesanj; Mlin Majic, Odzak; Mlinpek, Bugojno and Jaice; Eurotrans, Gradacac; BN-Dukat, Brodac; Djuric, Modrica; Zitoprerada, Omarska; Jelena, Kozarska Dubica, with installed capacities of 15,000–30,000 tonnes per year. However, they often run below full capacity. Finally, there are many small mills that process around 1,000 tonnes per year. As the milling business depends heavily on economies of scale,⁵⁵ many small mills will go out of business, when the owners retire, or when the mills cannot afford to invest in modern technology and standards. 92 percent of the former mill “Husinski rudari”, re-named “Mlin i Pekara” in Ljubace is now owned by KLAS and is only used as a storage facility. Zitoprerada in Bihac stopped operations recently due to bankruptcy and Zlatan Dolina in Sanski Most is also out of business. Among the medium-size mills, BB-commerc in Olovo also went bankrupt.

In FBiH, the Ministry of Agriculture has provided the expert team with the data for mills and their present capacity, see Annex 4.

The total capacity of the FBiH mills is 1,778 tonnes/24-hours operation, where the 10 bigger mills with more than 50 tonnes have 1,400 tonnes in capacity in total, and the 13 smaller mills with less than 50 tonnes capacity per day only 378 tonnes.

If it is estimated that the mills can operate 300 days per year, the total capacity of the FBiH mills is 533,000 tonnes.

The production of flour in the FBiH mills is presented in the next table for the years 2010 and 2011.

Production is going down for all four types of products, mostly for flour from maize, which has ended, and the least for flour from cereals other than wheat, maize and rye, where production was almost the same in 2011 as in 2010. Wheat is by far the most important product covering 99.6 percent of the production of flour in 2010 (138,144 tonnes) and 99.7 percent in 2011 (124,876 tonnes).

If it is assumed that the annual capacity estimated above is correct (533,000 tonnes), the utilization of capacity in the FBiH primary processing sector in 2011 was as low as 23.5 percent.

A list of mills and bakeries in RS is provided by the RS Ministry of Agriculture, Forestry and Water Management (MoA) and inserted as Annex 5.

Information regarding the capacities of the RS mills is not provided by the RS MoA, but a university expert⁵⁶ estimates that the capacity utilization was 30 percent in 2010. Based on this information the capacity can be calculated using the data in the next table, where the production of grain mill products for the period 2006 to 2009 is presented.

As was the situation in FBiH, wheat flour in RS is the dominating product with 90,816 tonnes in 2009, or 94 percent of total production of 96,438 tonnes. If the capacity utilization is estimated to be 30 percent, the full capacity of the RS mills is 320,000 tonnes.

Table 4.1: Flour production, FBiH, 2010 and 2011, tonnes

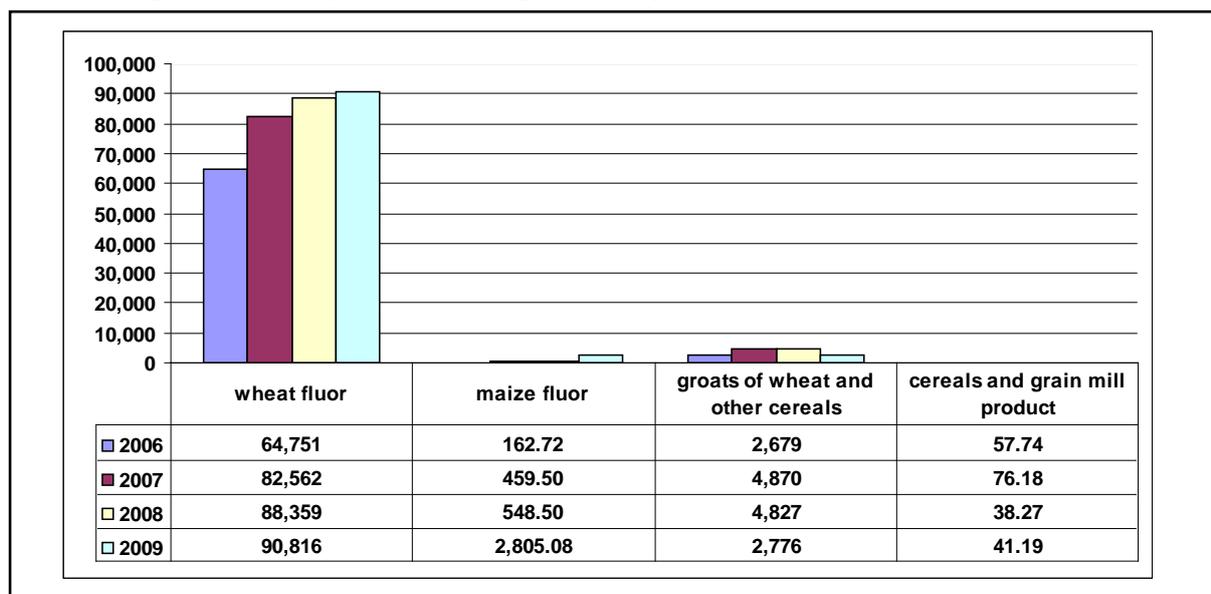
Name of product	2010	2011	Index 2011/2010
Wheat flour	138,144	124,876	0.90
Flour, maize	119	0	0.00
Flour, rye	51	23	0.44
Flour, other cereals	386	381	0.99
TOTAL	138,700	125,280	0.90

Source: Ministry of Agriculture, FBiH, May 2012

⁵⁵ For example the largest Austrian milling group processes 1,300 tonnes annually per 1 employee.

⁵⁶ Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011.

Figure 4.1: The production of grain mill products in RS, 2006–2009, tonnes



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years.

The total capacity of the FBiH and RS mills is thus estimated to be 854,000 tonnes, and the utilization rate is 26 percent.

The production of 222,000 tonnes of various products, with wheat flour as the dominating product, requires 296,000 tonnes of cereals, if the utilization rate (1 kg cereals gives 0.75 kg flour) is 75 percent. It could service an area of 66,000 to 70,000 hectares, depending on the average yield, to produce this amount of wheat. However, many mills rely on imported cereals, particularly from Hungary, due to what the processing industry considers as wheat of better qualities and lower prices. This represents a substantial challenge for the BiH farmers to compete with the imported wheat, both in terms of price and in terms of quality.

From Department of Agriculture in BD a list of names of mills in BD was provided, but no other data. The list is inserted as Annex 6.⁵⁷

Value of the production of milled cereal products

In order to estimate the value of the production of milled cereal products, the average price for wheat flour on the domestic market in

2010 was used (BAM 530 per tonne), since no production statistics, broken down by types of products, have been available from ministries or statistical offices.

- In 2010, a total 230,000 tonnes were produced (125,500 tonnes in FBiH, 96,500 tonnes in RS and 8,000 tonnes in BD). The total production of milled production in BiH is valued at BAM 122 million distributed between entities and BD as follows:
 - In FBiH it is BAM 66.5 million
 - In RS it is BAM 55.1 million
 - In BD it is BAM 4.2 million

Cereals storage

Cereals storage capacities in Bosnia and Herzegovina are based on existing mills. Capacities are very different and vary from several thousand tonnes to 65,000 tonnes, which is the capacity of the wheat silos of KLAS without including the storage capacity of the recently purchased former mill “Mlin i Pekara” in Ljubace. Information obtained from the Grain Association of FBiH reveals that the quality of storage facilities and their technical and technological characteristics vary. Formerly state

⁵⁷Comments from stakeholders have indicated that the capacity of the processing industry is bigger than presented in this report, but data was not provided to document this. However, bigger capacities only mean that the capacity utilization rate is even smaller than presented in this report.

owned mills have satisfactory storage conditions, but the majority of small private mills, which were built on the basis of old fashioned technical-technological equipment, do not.

However, BiH has prepared regulations on the minimum technical, technological and sanitary standards that every single mill, bakery or pastry factory has to meet, regardless of ownership or capacity. Many of the small mills do not meet the basic technical requirements defined by the Rulebook on Minimal Requirements.⁵⁸ The Rulebook exists, but the inspection services do not function properly yet.

The financial and sanitary controls of raw materials and commodities are not comprehensive,⁵⁹ and any standardized recording of business activities is usually not in accordance with bookkeeping regulations. Due to these circumstances in the sector, a significant black market in grain and flour exists according to information from stakeholders in the sector. Under these conditions, contrary to transparent market-oriented mechanisms, the profits that can be made from milling and baking are such that the number of mills and bakeries (especially the small ones) may continue to increase contrary to the usual concentration and centralization process being an integral part of the structural development under free market forces.⁶⁰

Furthermore, flour made from other cereals is also consumed, maize being the most popular. The consumption of maize and maize flour is traditionally high in Bosnia and Herzegovina (and also in the Former Yugoslav Republic of Macedonia). In 2007, consumption was about 83 kg per capita per year (383,640 tonnes annually). About 5,000 tonnes of maize flour are imported per year.

Besides some demand for maize flour, there is no other great industrial demand for maize. Maize is usually processed into starch and the capacities needed for these starch processing plants are substantial (examples can be found in Hungary). A waste product of starch production is the maize germ which can be processed into edible oil. There are no maize starch factories in BiH and neither are there any oil mills for maize. However, maize grits are used by fodder mills and also by breweries.

Fodder mills⁶¹

Animal feed mills have been set up in areas where livestock are kept in abundance. There are more feed mills in RS than in FBiH and the sector is relatively fragmented in terms of capacity. The analysed feed mills have an annual output of between a few hundred tonnes and up to 20,000 tonnes. Many of them are running at low capacity. A consolidation process is envisaged in the years to come for the fodder mills as for the sector in general, and the support from IPARD might push this process further, since only viable mills demonstrating the feasibility of the investments in the modernization of existing capacities will be eligible for support, see Annex 7 for a list of fodder mills.

4.2 Bread-baking and confectionery industry

The most important companies in the sector are listed in Annex 8.

Data regarding value and volume of production of the secondary cereals processing industry has been requested from the FBiH MoA, and the table below providing information of production volume for the years 2010 and 2011 is what the ministry has been able to provide.

⁵⁸The Rulebook on Minimal Technical-Technological and Personnel Requirements for Processing Grain at Mills (Official Gazette of FBiH, No. 81/06); Federation of BiH.

⁵⁹Interviews with stakeholders 2011 and 2012.

⁶⁰CEEC AGRI POLICY: Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. Instrument Specific Support Action. Thematic Priority Scientific Support to Policies. D12-2 Second 6-monthly report. Monitoring of agricultural policy, market and trade developments in Bosnia and Herzegovina. 2006. p8

⁶¹See Bajramovic, S., Dzomba, E. & Becirovic, E.: Feasibility study – Factory of premixes and safe animal feed in Bosnia and Herzegovina. July 2010.

Table 4.2: FBiH, Bakery products, cakes and cookies, kg

Name of product	2010	2011	Index 2011/ 2010
Fresh bread, wheat	21,148,694	17,836,184	0.84
Fresh bread, rye, including mixed	407,595	563,850	1.38
Fresh bread, maize	41,051	35,163	0.86
Fresh bread, special (enriched with mineral salt, vitamins and other additives)	1,073,375	919,631	0.86
Other kinds of bread	696,073	959,872	1.38
All kinds of pastries	3.388.194	3,275,739	0.97
Breadcrumbs	50,110	56,740	1.13
Other bakery products, fresh, frozen and baked	44,483	46,697	1.05
Mixes and pasta for bread, cakes, pastry, and rest of bakery products	74,650	89,243	1.20
Industrial cakes	285,638	363,020	1.27
Fresh and baked bakery products (pasta, doughnuts)	1,726,163	1,680,003	0.97
Confectionery, daily cakes	492,062	1,042,350	2.12
Toast, toast-bread and similar toast products	67,000	91,000	1.36
Gingerbread and similar	31,807	0	0.00
Waffle products with chocolate	864,601	379,858	0.44
Sweet cookies with cacao	172,384	4,782	0.03
Sweet cookies	2,364,410	4,706,412	1.99
Waffles and wafers	92,000	104,000	1.13
Cookies	1,202,350	1,281,860	1.07

Source: FBiH MoA. 2012

The most important product category is fresh wheat bread with almost 18,000 tonnes produced in 2011, down by 16 percent from 2010. The second largest product category is sweet cookies (sweet biscuits) with 4,700 tonnes in 2011, which is double that of 2010, and the category including all types of pastries with 3,276 tonnes. Besides sweet cookies, the “rising stars” in BiH secondary production is the category confectionery and daily cakes up by 212 percent, and fresh rye bread up by 138 percent and toast breads up by 136 percent, but these categories are still relatively small.

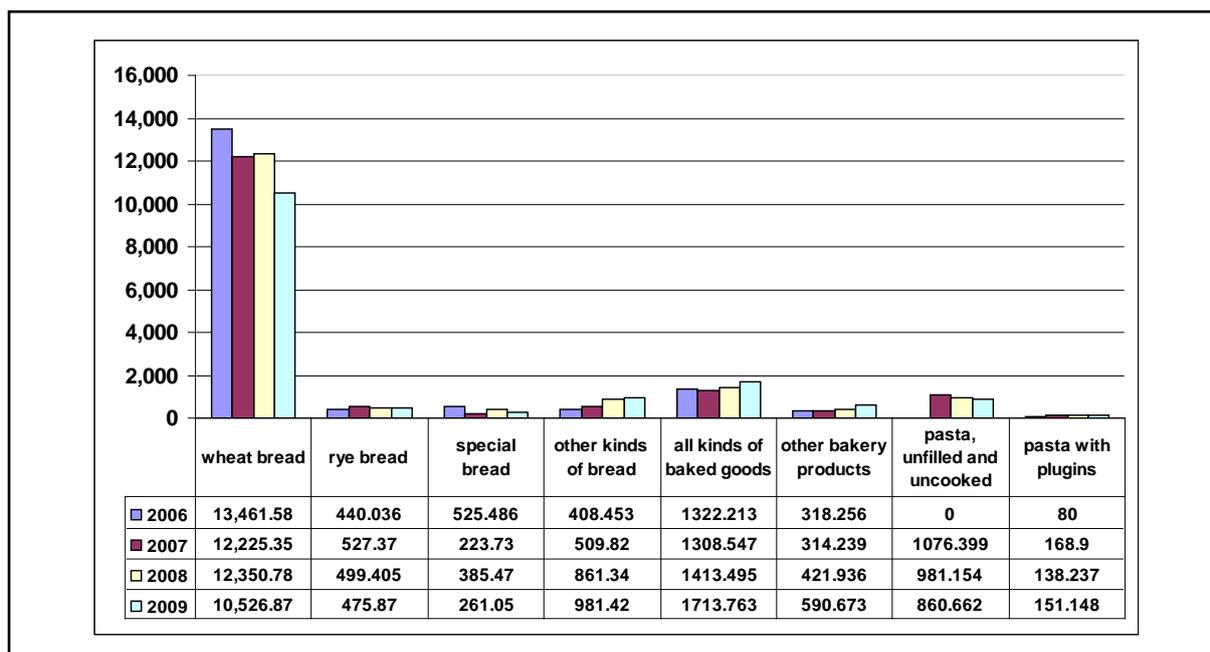
Unfortunately, there is no information about the value of the production available, but it is clear that the value added of the main product category – fresh wheat bread – is lower than what can be expected from other more processed categories, such as sweet cookies and other products. The increase in these categories might therefore also

represent a relatively strong increase in the value of the production, since the weight of fresh wheat bread is reducing. This tendency is positive from an economic point of view.

In the bread-baking industry in RS, there are 36 registered companies, and their production measured in terms of tonnes is presented in the figure and the table below for the years 2006-2009. These data have been collected through other sources; see the table, since no data were available regarding processing values and volumes in the RS MoA.

In RS it is also wheat bread which is dominating the production in the secondary processing industry with the production of 10,526 tonnes in 2009. This figure represents a decline in the production from 2006, when the production was 13,461 tonnes. This is a reduction of 23 percent, strongest from 2008 to 2009. The other product categories vary in tendencies, and no single one of them

Figure 4.2: The production of bakery products and pasta in RS, 2006–2009, tonnes



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years. No data for pasta, unfilled and uncooked in 2006.

shows strong increases, as was seen for some product categories in FBiH. The categories “other kinds of bread”, “all kinds of baked goods” and “other bakery products” are all up from the 2006 level, but they do not count much in the overall picture.

As in FBiH, RS illustrates an increase in the share of products with an expected higher value added on the expense of wheat bread. Also here in RS it is positive.

4.3 Quality of the products and quality requirements

Stakeholders’ opinions are very divided regarding the quality of domestically produced cereals. One mentioned that the quality is reasonably uniform, without significant deviations from year to year and that farmers normally meet the required quality standards. Only in the cases of extremely wet years or in drought years do the quality and quantity not meet requirements.

Others, especially the millers, state that the quality of locally produced cereals does not meet market requirements, especially since 2002 when a sharp decline in quality was discovered. To deliver the quality demanded

by the bread-baking industry, mills in BiH have to blend wheat. The blending ratio between local to imported wheat is 10–20 percent local and 80–90 percent imported.

During the first round of workshops it was mentioned that processors are often confronted with domestic (not imported) cereals with some content of agrochemicals, due to a lack of inspections of the farmers.

The minimum standard requirements for quality of wheat (harvested in 2010) bought by KLAS are as follows:

- Maximum moisture: 13.5 percent
- Minimum hectolitre weight: 76 kg per hl
- Maximum amount of foreign materials (admixtures): 8 percent (including dirt of foreign materials, max. 2 percent, damaged grain, broken grain, overheated grains, sprouted grains and grains smaller than 2 mm)

Other quality parameters are enforced as well, for example with regard to protein content, baking quality, etc.

In 2009 and 2010, the quality of wheat was good and corresponded to the above-mentioned requirements of buyers, including KLAS. But there were also some millers

who claimed that the moisture content was too high. All millers met during site visits mentioned that the quality of local wheat is too low, meaning that they have to import better quality wheat for blending purposes.

However, another problem seems to be that the quality of imported cereals also varies from year to year and from mill to mill. This problem is the consequence of the lack of enforcement of relevant legislation surrounding the milling and bakery industry and pasta factories. Small mills and bakeries have taken advantage of this situation and buy wheat and process it into flour straightaway without prior laboratory analysis or finishing (washing, separation of admixtures). The result of this practice is that some bakery products offered to consumers in Bosnia and Herzegovina are of dubious quality.⁶² This particular problem in the secondary industry has not been confirmed through the interviews in this analysis.

4.4 Summary

Processing of cereals, include primary processing of cereals into flour and secondary processing into fresh bread and various types of baked products, cakes, etc.

Volume of primary processing

The production of flour in BiH is taking place in 10 major mills in FBiH excluding a large number of small-scale mills and in 36 mills of various capacities in RS/BD.

In FBiH, wheat is far the most important product covering 99.6 percent of the production in 2010 (138,144 tonnes) and 99.7 percent in 2011 (124,876 tonnes). However the overall production was diminishing in 2011, mostly for flour from maize, which has ended, and the least for flour from other cereals than wheat, maize and rye, where the production is almost the same in 2011 as in 2010.

The annual capacity in the sector is 533,000 tonnes, and the utilization of capacity in the FBiH primary processing sector in 2011 was 23.5 percent.

As was the situation in FBiH, wheat flour in RS is the dominating product with 90,816 tonnes in 2009, or 94 percent of total production of 96,438 tonnes. The capacity utilization is estimated to be 30 percent, and the full capacity of the RS mills is 320,000 tonnes.

The total capacity of the FBiH and RS mills is estimated to be 854,000 tonnes, and the utilization rate is 26 percent.

The production of 222,000 tonnes of various products, with wheat flour as the dominating product, requires 296,000 tonnes of cereals, if the utilization rate (1 kg cereals gives 0.75 kg flour) is 75 percent. It could benefit farmers with 66,000 to 70,000 hectares, depending on the average yield, to produce this amount of wheat. However, many mills rely on imported cereals, particularly from Hungary, due to what the processing industry considers as wheat of better quality and lower price. This represents a substantial challenge for the BiH farmers to compete with the imported wheat, both in terms of price and in terms of quality.

Value of the production of milled cereal products

In order to estimate the value of the production of milled cereal products, the average price for wheat flour on the domestic market in 2010 is used (BAM 530 per tonne), since no production statistics, broken down by types of products, have been available from ministries or statistical departments.

In total 230,000 tonnes of milled cereals are produced, with 125,500 tonnes in FBiH and 96,500 tonnes in RS. An additional 8,000 tonnes are produced in BD. The total production of

⁶² CEEC AGRI POLICY: Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. Instrument Specific Support Action. Thematic Priority Scientific Support to Policies. D12-2 Second 6-monthly report. Monitoring of agricultural policy, market and trade developments in Bosnia and Herzegovina. 2006. p 9 ff.

milled production in BiH is valued at BAM 122 million distributed between entities and BD as follows: FBiH – BAM 66.5 million, RS – BAM 55.1 million and BD – BAM 4.2 million

Secondary processing

The secondary processing industry in BiH is made up of 15 major bread-baking companies and 12 major confectionery companies. Besides that there are several smaller companies.

The most important product category under secondary processing in FBiH is “fresh wheat bread” with almost 18,000 tonnes produced in 2011, down by 16 percent from 2010. The second largest product category is “sweet cookies (sweet biscuits)” with 4,700 tonnes in 2011, which is a doubling from 2010, and the category including “all types of pastries” with 3,276 tonnes. Besides sweet cookies, the rising stars in FBiH secondary production is the category “confectionery and daily cakes” up by 212 percent, “fresh rye bread” up by 138 percent and “toast breads” up by 136 percent, but these categories are still relatively small.

Unfortunately, there is no information about the value of the production available, but it is clear that the value added of the main product category – fresh wheat bread – is lower than what can be expected from other more processed categories, such as sweet cookies and other products. The increase in these categories might therefore also represent a relatively strong increase in the value of the production, since the weight of fresh wheat bread is reducing. This tendency is positive from an economic point of view.

In RS it is also wheat bread, which is dominating production in the secondary processing industry with the production of 10,526 tonnes in 2009. This figure represents a decline in production from 2006, when the production was 13,461 tonnes. This is a reduction of 23 percent, the largest reduction being from 2008 to 2009. The other product categories vary in tendencies and no one of them represents strong increases, as was the case for some product categories in FBiH.

As in FBiH, in RS there is an increase in the share of products with an expected higher value added on the expense of wheat bread. Also here in RS it is positive.

Product quality

Many millers and other stakeholders interviewed stated that the quality of locally produced cereals does not meet market requirements with regard to moisture, hectolitre weight and maximum amount of foreign materials (admixtures). All millers met during site visits mentioned that the quality of local wheat is too low, meaning that they have to import better quality wheat for blending purposes. To deliver the quality demanded by the bread-baking industry, mills in BiH have to blend wheat. The blending ratio between local to imported wheat is 10–20 percent local and 80–90 percent imported wheat.

In 2009 and 2010, the quality of wheat generally was good and corresponded to the mentioned requirements of the millers, but there were also some millers who claimed that the moisture content was too high.

5. GOVERNMENT POLICY FOR THE SECTOR

5.1 Overview of primary relevant competent institutions

A brief description of the main authorities in charge of agriculture and the agro-processing industry related to cereals in Bosnia and Herzegovina is summarized below.

5.1.1 Ministry of Foreign Trade and Economic Relations

BiH has until now no Ministry of Agriculture at state level. The EU has recommended the establishment of a national level agricultural ministry, which would guarantee that Bosnia and Herzegovina has one competent authority for agriculture and food, when EU accession negotiations begin. The Third European Partnership from February 2008 states a short-term priority in agriculture and fishery is the following: *“To strengthen the administrative capacity at national level in terms of agriculture, food and rural development, in order to effectively coordinate implementation of the policy of market development and rural development throughout the country. Work towards the establishment of the Ministry of Agriculture, Food and Rural Development at the state level with sufficient resources to carry out its tasks.”*

The international agricultural responsibilities are mainly implemented in the Sector for Agriculture, Food, Forestry and Rural Development of MoFTER.⁶³

5.1.2 The Plant Protection Agency⁶⁴

The BiH Plant Health Protection Administration (PHPA) was established under the 2004 Decision of the Council of Ministers (“Official Gazette of BiH” No. 23/04), and has its seat in Sarajevo. It is an administrative organization within the Ministry of Foreign Trade 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 the provisions ensuing from the International Plant Protection Convention (Official Gazette of BiH No. 8/2003) ratified by BiH in 2003, as well as from the national legislation:

- Law on Plant Health Protection (Official Gazette of BiH, 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 BiH, 49/2004) governing the registration, trade and supervision of active substances, and other issues related to phytopharmaceutical products.
- Law on Seed and Planting Materials of Agricultural Plants (Official Gazette of BiH, 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 BiH, No. 46/04), which governs the procedures regarding protection of new plant varieties, and the procedures for obtaining and protecting plant breeders’ rights.
- Law on Mineral Fertilizers (Official Gazette of BiH, No. 46/04), which stipulates the requirements for the composition, quality and labelling of mineral fertilizers placed on the market, as well as their use.

⁶³The specific duties are well known and are not presented here, but can be found at the following Web site http://www.mvteo.gov.ba/Default.aspx?template_id=26&pageIndex=1

⁶⁴Based on information provided by the PHPA, 2012

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

The protection of plants from harmful organisms is required for many reasons, primarily in order to prevent yield decrease and to increase agricultural protection. The competences and duties of the BiH Plant Health Protection Administration are clearly defined under the Decision on its establishment, the International Convention and the provisions of applicable laws.

Department for Plant Health Protection

The Plant Health Protection Department has the following duties:

- Coordinate and cooperate with the entities and Brčko District in policy-making in the field of plant health;
- Draft legal regulations and carry out other administrative duties in the area of plant health, and attend to their implementation;
- Monitor harmful organisms on a regular basis and draft reports pursuant to the law;
- Analyse and evaluate plant health in order to assess the emergence and spreading of harmful organisms in the country and abroad;
- Coordinate with competent entity authorities in relation to duties and authorizations in the field of plant health as stipulated by the law;
- Establish and keep registers, records and lists pursuant to the law;
- Draft and monitor special programmes related to measures on the prevention of introduction and spreading of harmful organisms, and provide for the implementation of these programmes;
- Propose and monitor measures of prevention, suppression and elimination of harmful organisms;
- Ensure the implementation of phytosanitary measures;
- 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;
- Draft reports, analyses, information and other materials for the official authorities and international organizations for plant protection and plant production; attend to the implementation of uniform procedures pursuant to regulations and international requirements;
- Cooperate with other official authorities and organizations in the country and abroad in the field of plant health;
- Represent BiH before international authorities and organizations in the field of plant health;
- Other duties related to plant health pursuant to regulations and upon the orders of the Managing Director.

Department for Phyto-pharmaceutical Products and Mineral Fertilizers

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

- Coordinate and cooperate with the entities and Brčko District in relation to the duties and responsibilities in the field of phyto-pharmaceutical products and mineral **fertilizers** stipulated by laws;
- Draft law and regulation proposals and carry out other administrative duties in the field of phyto-pharmaceutical products and mineral **fertilizers**, and attend to their implementation;
- Coordinate activities in the preparation of document evaluation, and conduct the procedure of registration of phyto-pharmaceutical products and issuance of permits;

- Establish and keep registers, records and lists pursuant to the law;
 - Administer and implement public notices for the assignment of public competences pursuant to the law, issue decisions on authorizations of institutions and supervise the work of competent institutions pursuant to the law;
 - Monitor the market situation, that is, the use of phyto-pharmaceutical products, and cooperate in the preparation of measures;
 - 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;
 - Draft reports, analyses, information and other materials for the official authorities and international organizations;
 - Cooperate with other official authorities and organizations in the country and abroad in the field of phyto-pharmaceutical products and mineral **fertilizers**;
 - Represent BiH before international authorities and organizations in the field of phytopharmaceutical products and mineral **fertilizers**;
 - Other duties related to phyto-pharmaceutical products and mineral **fertilizers** pursuant to regulations and upon the orders of the Managing Director.
- and pot herbs, fruit, vineyard, hops, and horticultural plants),
 - Prescribe requirements for the entry of suppliers in the central register of suppliers,
 - Prescribe in detail the content and the keeping of the register of suppliers, as well as other records and keeping the register of varieties,
 - Prescribe in detail the procedure for entering varieties in the register of varieties,
 - Prescribe 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,
 - Undertake 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 BiH, No. 03/05),
 - Draft legal regulations on the protection of new plant varieties and on plant breeders' rights, in cooperation with competent authorities of entities and Brčko District of BiH,
 - Prescribe in detail the requirements for allocating the plant breeders' rights.
 - Prescribe in detail the content and keeping of the register of new plant varieties and the plant breeders' rights.

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

- Draft legal regulations in the field of seed and planting material production, in cooperation with competent authorities of the entities and Brčko District of BiH,
- Prescribe requirements for the production and preparation for placement on markets,
- Prescribe requirements for the importation and placement on the market of the seed and planting materials of agricultural plants (grain, industrial plants, fodder plants, vegetable crops, medicinal plants, aromatic

5.1.3 Food Safety Agency

The Food Safety Agency (FSA) of Bosnia and Herzegovina is an independent administrative organization established under the Decision of the Council of Ministers of BiH dated 8 March 2005 (Official Gazette of BiH No. 22/05) at the proposal of the Ministry of Foreign Trade and Economy of BiH, pursuant to the BiH Law on Food.⁶⁵

The Food Safety Agency of Bosnia and Herzegovina (hereinafter: the Agency) is an independent administrative organization, the authority for food safety and quality,

⁶⁵Based on information provided by the FSA, 2012

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 BiH", 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:

The Agency is obligated to provide scientific advices, 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.

The Agency is the contact point for activities of the Codex Alimentarius Commission.

The Agency is obliged to contribute to the high level of animal protection and people's health and, therefore, to take care of the welfare of animals, health of plants and the environment on the territory of Bosnia and Herzegovina.

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.

The Agency's tasks also include providing:

- 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,
- Scientific opinion about other issues related to the health and welfare of animals and plants,
- Scientific opinion about products, including food and feed in relation to genetically modified organisms.

The Agency is obliged to provide its scientific opinion that would serve as a basis for the development and adoption of measures of

the Council of Ministers within the sphere of activity of the Agency.

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

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

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

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

- Provide competent authorities with the best scientific opinion in all cases defined by law and on all issues within its sphere of activity,
- Improve and coordinate the development of unique risk assessment methodologies within its sphere of activity,
- Initiate, prepare and organize development of implementation regulations from this Law,
- Provide competent authorities with scientific and technical support within its sphere of activity and, when requested, in the interpretation and analysis of risk assessment opinions,
- Make available scientific studies within its activities,
- Request, collect, compare, analyse and summarize scientific and technical data within its sphere of activity,
- Undertake measures to determine and characterize risks occurring in its sphere of activity,
- Establish the network system of organizations operating within its sphere of activity and undertake responsibility for their actions,
- Provide scientific and technical help in the procedures of crisis management conducted

by competent authorities in relation to food and feed safety,

- Ensure that public bodies and interested parties urgently receive reliable, objective and comprehensive data within the Agency's sphere of activity,
- Independently present its own conclusions and orientation in the issues within its competence.

The Rulebook⁶⁶ on Internal Systematization of the Food Safety Agency of BiH defines the following departments and offices:

- 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

As inferred, the FSA performs a range of scientific activities (e.g. gathering and analysing data on food and feed and risk analysis), provides scientific opinions to government, and implements international conventions and treaties in the domain of feedstuff safety. Additional tasks include the control of food safety inspectors at entity level, proposing to the Council of Ministers which food safety official laboratories should be nominated "Reference Laboratories", the development of a register of business operators and improving consumers' awareness and others. The FSA follows the structure of similar institutions in other EU countries.

The establishment of the FSA has made it possible to update and adjust food laws in Bosnia and Herzegovina so that they are in line with EU standards, thereby safeguarding the well-being of citizens. Already, the Food Safety Agency participates in the Rapid Alert System for Food and Feed (RASFF), which enables swift communication between participants on quickly evolving situations.

The need to keep up with the trends of other states (especially EU member states) is clearly an imperative for the FSA, given the interdependence of the markets in Bosnia and Herzegovina and the need for rapid action in cases of contaminated food, or other global crises. Until now, MoFTER has taken the lead on a number of issues regarding food safety. However, the responsibility for food safety remains shared between the national and entity-level authorities, creating difficulties in responding immediately to rising food concerns and amending regulations.

5.1.4 Entities Ministries of Agriculture and the Department in Brčko District

Whereas RS has just one Entity MoA, which is in charge of entity policy and subsidies, FBiH has one entity MoA and below this 10 canton authorities, which share competencies on subsidies with the entity level. The amended Law on financial support to agriculture and rural development of the Federation defines the types of incentives between Canton and the Federation. However, product subsidies feature more prominently in the financial support structure than rural development measures.

There is no harmonized policy across the entities and BD for providing subsidies, and they are currently, among others, a mixture of area payments of different sizes and for different crops, product support and in-kind contribution of blue diesel and fertilizers. The subsidies are not aligned with the EU agricultural policy measures, which favour area

⁶⁶Rulebook is a concept used in BiH administration for by-laws.

payments.⁶⁷ The budget for agriculture and rural development in the entities remains low. The lack of an efficient administration is impeding the competitiveness of farmers and the agri-processing industry throughout the country. Also due to the lack of a Ministry of Agriculture at state level, the situation is inefficient.

5.2 Agricultural policies for cereals including the processing sector⁶⁸

The Republika Srpska has a strategy for agricultural development in place for the period up to 2015 and the Brčko District has developed the Strategy for Development of Agriculture, Food and Rural Development (2009–2013). However, the Brčko Strategy was never approved. FBiH is working with the Mid-term Strategy for Agriculture Sector Development (2006–2010), which was updated until 2012 through an action plan, and officially extended for two years. The RS rural development strategy and action plan and the FBiH harmonization programme for agriculture, food and rural development have not yet been harmonized with the State-level framework. An overall lack of implementing legislation and of enforcement is impeding the coordination of harmonized strategies and development in this area.⁶⁹

Despite various approved and non-approved strategy documents, the GoBiH has always emphasized the importance of increased wheat production. However, these documents have not set out the economic case, and the costs and benefits, of producing more cereals. There are important differences between the entities on how to support the production of cereals, as will be spelled out later in this section of the report. The FBiH support for the production of cereals by area payments has increased the area sown with cereal. RS aims to increase yields through in-kind support to fertilizers and blue diesel (input factor support) without necessarily increasing the sown area.

5.2.1 Federation of BiH

FBiH's operational programme for agriculture, food and rural development is currently under revision. It will include activities related to establishment of a Payment Agency and preparations for the management and implementation of an IPARD programme. More generally, the strategy highlights the sustainable development in agriculture and the food processing industry, as well as profitability and competitiveness. In addition, the FBiH Government sees the provision of a sufficient quantity of good quality food to consumers at reasonable prices as a priority.

Agricultural budget

Looking at the 2002–2010 period, total budgetary support for the agricultural sector, including rural development, increased from BAM 11 million in 2002 to BAM 82 million in 2010.

The most substantial part was the market price support, and in 2010 the absolute figures were the highest ever with BAM 4.44 million under market support measures, and BAM 52.48 million under direct support measures. Payments on the basis of output were BAM 24.08 million and payments per head of animals or per hectare were BAM 27.98 million. The support of inputs was small with BAM 429,000 and other direct payments were only BAM 229,000.

The situation under rural development support is slightly different. Axis 1 referring to the EU regulation 1698/2005 – improving the competitiveness of the agricultural and forestry sector – had a budget of BAM 16.67 million in 2010, Axis 2 (improving the environment and the countryside) of BAM 421,000, Axis 3 (diversification of the rural economy) of BAM 3.02 million and others of BAM 21,000. The total rural development budget was BAM 20.13 million in 2010. In 2008 it was BAM 29.87 million and in 2009 it

⁶⁷ European Commission: Bosnia and Herzegovina 2011 Progress Report, Working Paper October 2011. p

⁶⁸ The individual entity strategies and programmes for agricultural and rural development are reviewed in more detail in other sector reports prepared under this assignment; see for example the sector report on the Meat and Dairy sector and the report on Fruit and Vegetables. 43

⁶⁹ European Commission: Bosnia and Herzegovina 2011 Progress Report, Working Paper October 2011. p 43

was BAM 24.27 million. The budget was over the years reduced in favour of direct support, which is not in line with EU policies.

The last item in the budget is general services in agriculture. This has been more or less stable over the last four years and in 2010 it was BAM 4.36 million.⁷⁰

It must be pointed out that the BAM 55 million allocated for agriculture in the 2011 budget also includes around BAM 20 million to be used for services and commitments from the previous period, which means that the remaining budget of BAM 35 million is considerably reduced and shows some parallels to the situation in RS, see below.

Subsidies specifically for wheat and maize

Of the BAM 55 millions in the budget for 2011, BAM 1.75 million was used to support the cereal sector. In the past, and until 2010, the support system was based on a premium per kilogram of wheat produced. FBiH at entity level (BAM 0.10 per kg) and at canton level (BAM 0.02 per kg) together BAM 0.12 per kg were paid to farmers for mercantile wheat in 2010 and BAM 0.10 in the period from 2007 to 2009, if a minimum of 1 hectare was sown or the minimal production was 4 tonnes.

Since 2011, the system has been changed towards a per hectare premium. The FBiH now supports wheat production with BAM 500 per hectare. To obtain this support the farmer must sow a minimum of one hectare of wheat and must use certified seeds. This is demanded in order to increase yields through appropriate use of high quality certified seeds. Finally, the farmer has to show an invoice proving that the wheat was sold to an authorized trader or buyer.

FBiH does not subsidize maize production at entity level. However farmers can obtain subsidies for growing maize at the cantonal

level. This cantonal support was BAM 2.38 million in 2008, BAM 0.28 million in 2009 and BAM 0.67 million in 2010.

Besides the hectare premium for wheat there is also a support scheme in place called "guaranteed price for mercantile wheat". This guaranteed minimum price at farm level was BAM 0.40 per kg in 2009, BAM 0.35 per kg in 2010 and BAM 0.43 per kg in 2011.

Finally, the Commodity Reserve also provides support. If agricultural producers in FBiH submitted trade (purchase) applications to the Federal Commodity Reserves Directorate before the date on which the Decision was adopted, following the agreement on co-financing of autumn sowing of the 2011 wheat harvest, the Federal Commodity Reserves Directorate will purchase all contracted quantities of wheat, as long as the wheat corresponds to the standard quality⁷¹ and is produced with a yield of up to 4.5 tonnes per hectare. The purpose of this support is to protect producers from unfavourable market trends⁷² and to keep a safety net under the farmers in case of falling prices.

In FBiH, unlike in RS, there is no input support in kind for fertilizer or blue diesel. However, there are on-going discussions to amend the Law on Excise Duties in Bosnia and Herzegovina for the purpose of introducing the so-called blue diesel (dyed fuel) for farmers.⁷³ This kind of support would be in line with the World Trade Organization (WTO), as it does not have a great influence on the prices of agricultural products.

5.2.2 Republika Srpska

Besides saying that rural areas have the basic function of producing food to satisfy the nutritional needs of the population,⁷⁴ the RS strategy for agricultural development mentions

⁷⁰All figures from the federal and cantonal ministries of agriculture, water management and forestry.

⁷¹Standard quality of mercantile wheat is the same as in former Yugoslavia and includes three issues: moisture maximum 14 percent, test weight minimum 76 kg/hl and admixture (foreign materials) maximum 2 percent. 2011.

⁷²Federal Ministry of Agriculture, Water Management and Forestry, website <http://www.fmpvs.gov.ba>

⁷³Federal Ministry of Agriculture, Water Management and Forestry, website <http://www.fmpvs.gov.ba>

⁷⁴Republika Srpska: Rural Development Strategy 2009–2015. p 98

nothing about the importance of cereals, self-sufficiency, strategic reserves or other items closely linked to cereal production.

However, the RS Ministry's strategy indicates that the long-term objectives of agrarian development in the Republika Srpska primarily are to increase the scope and adjust the structure of agricultural and industrial production, so as to provide long-term food related safety including self-sufficiency, strategic and operating reserves, and continuous growth of exports. Furthermore, the Web site mentions that another objective is "a stable market for agricultural and food related products".⁷⁵

Agricultural budget

In 2010, the RS agricultural budget for support to farmers (excluding staff) was BAM 80 million distributed with 50 percent in rural development investment support and 50 percent in direct payments. BAM 37.4 million was used for direct payments, and BAM 41 million was used for rural development support measures. In 2011, the budget was reduced to BAM 60 million (66 percent in investment support, 33 percent in direct payments) with BAM 20 million paid as compensation for flood damage (December 2010).

The agricultural budget and account for the years 2007 to 2011 (only budget) is presented below.

Subsidies specifically for wheat and maize

The subsidy system in RS is complicated and dynamic, as we try to show in the following section.⁷⁶

For the spring sowing in 2008 direct payments of BAM 200 per hectare for maize and for wheat have been paid to farmers. For the autumn sowing in 2008 direct payments of BAM 250 per hectare winter wheat was paid.

From 2009 the system was changed. For the spring sowing in 2009 of wheat and maize eligible applicants received BAM 76.89 per hectare as a subsidy for their euro diesel (120 litre/hectare) consumption and as a subsidy for their fertilizer NPK 15:15:15 consumption (260 kg/hectare). This payment was not a direct payment as the subsidies in 2008, but was the value of a 20 percent subsidy of the total price of euro diesel and fertilizer. This means that the farmers could buy euro diesel and fertilizer directly from the Government for a reduced price and with deferred payment for 6 months. This was the only sowing-related measure compared to the subsidy of BAM 200 per hectare in 2008 for spring sowing and BAM 250 per hectare for autumn sowing. The farmers had to send in an application form, including the sowing plan with personal data, and have sufficient land parcels in the farm register to be eligible to purchase these subsidized products.

Table 5.1: RS agricultural budget 2007–2011, million BAM

Budget topic	2007	2008	2009	2010	2011
Total payment of agricultural budget	60.7	104.7	53.2	95.4	62.2
Planned nominal budget, million BAM	60	80	80	80	60
Reallocation, million BAM	10	24.9	1.3	0.3	n.a
Direct payments, million BAM	44.8	83.1	38.5	37.4	40
Rural development, million BAM	13	17	14	41	20
Total RS budget, million BAM	1,250	1,500	1,600	1,638	1,600
% of executed agricultural budget to the RS budget	5.4	7	5	6	4.5

Source: RS MoA, 2012

⁷⁵Website of the representation office of the Republika Srpska in Brussels: http://www.rep-srpska.eu/agriculture_rs.php?lng=en§ion=9&page=2

⁷⁶Based on information from RS MoA, Vladislav Trifkovic, 2012

For the year 2010, the support was paid for the autumn sowing 2009 of winter wheat with BAM 235 per hectare through distribution of subsidized euro diesel (100 litre/hectare) and KAN fertilizer (100 kg/hectare), and for the 2010 spring sowing of maize with BAM 455 per hectare through distribution of subsidized euro diesel (100 litre/hectare), KAN (100 kg/hectare) and NPK 15:15:15 fertilizer (250 kg/hectare). These amounts of subsidies were the financial effect of subsidized prices of euro diesel and the fertilizer, because the Government of RS decided to write-off 100 percent of the prices of the input. In the first place it was decided that subvention in 2010, as it was in 2009, should be 20 percent of the total prices for distributed raw materials. At the end of 2010, after the serious floods in June and in December of 2010, the government of RS decided to write-off all debt of all farmers for the subsidized raw materials.

In this way the December flood had consequences for support payments, since the budget for support payments for 2011 was reduced by 50 percent, and the money was reallocated to emergency aid in the form of write-offs of farmers' debt for purchase of input from the Government. The budget for support payments (total agrarian budget) was reduced by BAM 20 million (EUR 10 million).

For the spring sowing 2011 of wheat and maize farmers again received cheaper diesel and fertilizer, and the financial result was a nominal subsidy of BAM 57.50 per hectare of subsidized prices of euro diesel and fertilizer: 100 litres of euro diesel and 250 kg NPK 15:15:15/hectare, with a 25 percent subvention of the total costs. After a long

drought in 2011 the Government decided at the end of year to increase subsidies from 25 percent to 40 percent. This resulted in subsidies of BAM 93.00 per hectare.

For the autumn sowing of wheat, the ministry again implemented direct payment support per hectare of BAM 250, with a minimum sowing area of 2.00 hectares of wheat. This measure is in line with the new "Programme of improvement of mercantile wheat production in RS 2011-2016".

The system does not seem to be very transparent for the farmers, and it lacks continuity, which is essential for long-term planning. The fluctuations in the real support per hectare makes it difficult to plan the production. Furthermore, this type of in-kind support requires big administrative control costs since each farm must be checked on the spot as to whether agroinputs have been applied according to regulations, and if a minimum yield could be obtained so that the in-kind support is justified. An area based payment system, as the one implemented in 2008, seems to be a better, simpler and more transparent solution, in line with the area payment in the EU.

5.2.3 Brčko District

The Strategy for Development of Agriculture, Food and Rural Development (2009–2013) mentions several strategic and operational goals such as intensifying crop production and supporting revitalization of the food processing industry. However, due to sufficient cereal production in the BD, a special emphasis on wheat and maize is not considered necessary.

Table 5.2: Subsidies for improvement of agriculture in District Brčko 2002–2010⁷⁷

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010
BAM	2,000,000	1,500,000	2,200,000	4,000,000	4,000,000	4,615,000	5,000,000	6,485,000	5,000,000
EUR	1,022,583	766,937	1,124,842	2,045,167	2,045,167	2,359,612	2,556,459	3,315,727	2,556,459

Source: Government of BD, Exchange rate: 1,95583

⁷⁷The table as well as other tables reflects the information and the time series provided by the entity and district authorities.

Agricultural budget

Being much smaller than the other two entities means that the BD has a small budget for subsidies for improving agriculture. The overall budget increased by 150 percent between 2002 and 2010, from BAM 2 million to BAM 5 million. In 2009 it was BAM 6.49 million, but it was again reduced in 2010.⁷⁸

TSubsidies specifically for wheat and maize

BD represents continuity in its support to wheat and maize production. Since 2007 and until 2011 the subsidy per hectare to wheat has been BAM 300 per hectare, and support to maize has been BAM 250 per hectare. The figures are presented in the table below.

Finally, it should be mentioned that a commodity reserve with a minimum price is not in place in BD.

5.3 Taxes (VAT)

Revenues in BiH directly or indirectly linked to agriculture can be grouped as (i) sales taxes, (ii) special taxes (excises) on tobacco, coffee, alcohol, non-alcoholic beverages and beer, (iii) fees and charges – for water, forest or land use and for quality control.⁷⁹

The Value Added Tax (VAT) rate in Bosnia and Herzegovina is 17 percent and applies to most goods and services. The Indirect Taxation Authority is in charge of the calculation and collection of VAT. VAT is levied at the state level and is applicable to goods and services provided for consideration. Registration is compulsory – also for farmers – if the annual

value of production sold exceeds BAM 50,000. A company may register voluntarily if the threshold is not met. Once entering into the VAT system, a taxpayer cannot opt out for five years.⁸⁰ A farmer producing more than 100 tonnes for the market, which involves around 25 hectares of wheat, has to register for VAT.

5.4 Support from the extension service

In FBiH, extension services are provided by the Cantonal Extension Services and those Institutes that have a role in extension service provision (38 positions in total), but the commitment of most Cantons was limited and no central services were established to support the system.⁸¹ Discussions are on-going to introduce an advisory service at entity level. This would give the FBiH MoA the opportunity to significantly influence the quality and direction of advisory services to farmers.

Extension services are provided in Republika Srpska by the Agency for Extension and Advisory Services (38 positions, no information on vacancies). In Brčko District, the Department of Agriculture and Rural Development (DARD) has three advisors. Agricultural extension services were established at entity level in RS in 2000 and in the Brčko District in 2002 with the support of an EU project. In RS the established system remains operational and includes municipal based advisers in most areas, supported by a central support unit with specialist adviser capacity, based in Banja Luka. Generally, the service appears to be well appreciated and

Table 5.3: Subsidies to wheat and maize per hectare, 2007–2011, BD

Year	2007	2008	2009	2010	2011
Wheat (BAM/ha)	300.00	300.00	300.00	300.00	300.00
Maize (BAM/ha)	250.00	250.00	250.00	250.00	250.00
Wheat (EUR/ha)	153.39	153.39	153.39	153.39	153.39
Maize (EUR/ha)	127.82	127.82	127.82	127.82	127.82

Source: Government of BD, Exchange rate: 1,95583

⁷⁸ Government of BD

⁷⁹ European Union Functional Review of the Agricultural Sector in BiH. October 2004. p 99

⁸⁰ <http://www.taxrates.cc/html/bosnia-herzegovina-tax-rates.html>

⁸¹ European Union SESMARD Bosnia and Herzegovina – Agriculture Report 2007. p 42

used, although it remains poorly equipped, under-funded and generally under-staffed.

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 a paid commercial service. In addition to government-funded extension services, BiH 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 non-governmental 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 BiH through implementation of various projects in the sphere of agricultural production development. For example, during the last three and a half years, the USAID LAMP project trained over 20,000 people, mainly in dairy and fruit and vegetable production, with over 275 experts from institutions like 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 supported several projects with important outputs of 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.

5.5 Land property and reforms

The war from 1992 to 1995 forced many people to migrate, either within the country or to other countries and in many cases people did not return to their farms and therefore gave up farming. Furthermore, not all did return to farming, as they did not have enough money to invest in restarting agricultural activities. An important issue is that heavy equipment to clear land for agricultural purposes is not available, and due to these farmers willing to increase the size of their farms is blocked, as the available land cannot be cultivated with the existing agricultural equipment.

However the most urgent problem seems to be that, especially due to the war, land titles and the cadastre are not up to date and many ownership structures are unclear. The lack of legal security is a major problem for the functioning of the land market in terms of selling and renting agricultural land, and due to lack of adequate regulation on how to rent out land with temporarily unclear ownership, the consolidation of the land market is very slow.

During the field visits it was learned that land lease prices are around BAM 100 per hectare and in more favourable areas like Bijeljina up to BAM 300 per hectare. However, in the North-east of Bosnia and Herzegovina some farmers are providing land for free to their neighbours to work, simply to keep it in good shape. Also, the Government provides concessions for agricultural land, mainly from former state cooperatives.

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 BiH today. The EU points out that land registration systems are not harmonized and that land management requires strengthening, and this is ongoing.⁸²

5.6 Commodity reserve and its purpose

Since the shock in 2008, when Serbia and Croatia banned wheat exports due to the

⁸² European Commission: Bosnia and Herzegovina 2011 Progress Report. Working Paper October 2011. p 44

fluctuations in world market prices, the Government of BiH has been concerned with wheat reserves, as every year there is a huge import demand, see next chapter of this report on trade. Several discussions about the importance of a strategic commodity reserve including wheat have been held in the country, although without a clear differentiation between the importance of the permanent reserve, which would be used to supply the needs of the population in emergencies, and commercial reserves to be used to intervene in markets, if needed.

The situation is analysed in detail in the recent FAO study "Policy options and recommendations for food commodity reserves in BiH" by A. Cerne (2011).

Efforts to have a commodity reserve in FBiH and in RS have been made, while there is no commodity reserve in the district of Brčko.

In FBiH we find a divided responsibility for the commodity reserves between the federal level and the canton. The objective of the commodity reserves is to make food available for people also in case of disasters, etc. No interventions in market imbalance situations are legal according to the design of the system in FBiH. In general the FBiH purchases cereals for a minimum price through tender procurement procedures, where contractors can provide offers for volumes of cereals to the given minimum price. If market prices fall below, the market prices are used. In 2010, BAM 4 million was budgeted for commodity reserves, and of these resources

BAM 2 million was used for purchasing new products and goods.

In RS there is a well-articulated strategy for commodity reserves implemented by the State Material Reserves of RS. The authorities can intervene in the market in the case of disaster, war and the like, but also in the case of imbalances in the market, which cannot be managed by traditional policy instruments. RS has an amount of BAM 9 million in product reserves, and an annual budget of BAM 2 million for all commodities.

The conclusion of the FAO Government study is that the purpose of a commodity reserve is to provide basic food products to the population in times of crisis. The creation and maintenance of commodity reserves should not affect the current market supply and thereby distort the free functioning of the market.⁸³

In the table below, the estimates of a needed commodity reserve for selected cereal products to cover the consumption for a period of 60 days is presented. The estimates are based on the assumption of a daily consumption per capita of 0.4 kg wheat, flour and pasta and 0.04 kg of maize (edible) for the population in BiH, also distributed in entities and BD.

The estimated total reserve should be in the range of 100,000 tonnes of wheat, and 10,000 tonnes of maize. Actually, the budget of the two entities is between BAM 2 and 4 million annually.⁸⁴ To keep a reserve of 100,000 tonnes of wheat, the authorities

Table 5.4: Needed reserves of cereals, estimations, kg

Area	Persons	Daily consumed quantity		Reserves needed	
		Wheat, flour and pasta, kg	Maize (edible), kg	Wheat, flour and pasta, tonne	Maize (edible), tonne
BiH	3,862,000	1,544,800	154,480	93,000	9,350
FBiH	2,327,000	930,800	93,080	56,000	5,600
RS	1,435,000	574,000	57,400	34,500	3,500
BD	100,000	40,000	4,000	2,500	250

Source: BiH Action Plan for Food Security. FAO. 2011.

⁸³ Cerne, A. FAO TCCT Consultant: Policy options and recommendations for food commodity reserves in BiH. 2011. p 3

⁸⁴ Bajramovic, S. FAO consultant: The legislation concerning food security policy in BiH. 2011. p 2ff

must provide financing of around EUR 20 million with a minimum price of EUR 200 per tonne (BAM 400 per tonne).

The action plan is currently submitted to entities and BD for comments and it is expected that it will be approved later in 2012.

Finally, it should be mentioned that the EU does not require that a commodity reserve be maintained. On the other hand, the EU intervenes in the market by setting a minimum price (intervention price) for wheat, which is EUR 101.31 per tonne. The minimum price within BiH is around twice as high as the EU intervention price, which will be binding when and if BiH joins the EU.

5.7 Credit Lines for Agricultural Investment Projects

Market fluctuations, not only due to unpredictable world market prices, but also due to changes in local support policy as described previously in this report, make it difficult for farmers to calculate agricultural investments precisely. It is therefore risky for farmers to finance investments with credit, which has to be paid back in due time.

Effective interest rates on short-term loans range from 8 percent in FBiH to 9.5 percent in RS. For physical entities the rates are higher than for the economy. Natural persons pay average effective interest rates on short-term loans of 12.6 to 13.7 percent, and on long-term loans of 9.5 to 10.5 percent.

Banks do not favour agricultural producers for loans, because the banks still consider them to be high-risk borrowers. Therefore, interest rates on agricultural loans to individual farmers are higher than for other users, although the required guarantees are the same, if not even more rigorous. Properties in rural areas (agricultural land and buildings) are generally not accepted as collateral, and the alternatives are the natural person's guarantees (guarantors) that agricultural producers find it difficult to come up with. As a result, farmers get most of their loans from microcredit organizations. The exceptions are the projects

from the World Bank and IFAD, which provide funds under favourable conditions.

Examples of typical bank loans available to farmers and small and medium-sized enterprises (SMEs) are:

- NLB Tuzlanska Banka approves loans (including to farmers) up to BAM 50,000 on seven-year terms and with an effective interest rate of 12.29 percent;
- Nova Bank AD Banja Luka approved short-term loans to individual farmers for the procurement of raw materials, agricultural equipment and spare parts. Loans are up to BAM 10,000. The repayment period is up to 12 months and the effective interest rate is 13.17 percent. Guarantors are also required (one for loans of up to BAM 5,000, and two for loans of between BAM 5,000 and 10,000). Long-term loans are only available for borrowers in Herzegovina for a period of 10 years and at an effective interest rate of 11.85 percent. Loan amounts depend on credit worthiness of the borrower;
- BOR bank in FBiH offers loans for export-oriented programmes and the agro processing industry from BAM 50,000 to BAM 1 million, with a repayment period of eight years, a grace period (for agriculture) of up to three years and an effective interest rate of 6.96 percent;
- Bobar Bank Bijeljina offers a specific type of loan to farmers for buying tractors, in cooperation with suppliers. The repayment period is up to 36 months, beneficiaries must contribute 40 percent of the costs and the effective interest rate is 12.7 percent. The same bank approves short-term loans (12 months) of up to BAM 500,000 to agricultural enterprises at 12.07 percent effective interest rate (EIR) and loans for company purchases of agricultural machinery for a period of five years at EIR 9.94 percent. Loan amounts depend on the needs and the credit worthiness of the borrower;
- Bosnia Bank International Sarajevo provides 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 loan terms of up to 10 years. Loan amounts depend on the credit worthiness of the borrower and interest rates are unspecified;

- ProCredit Bank approves loans of up to BAM 50,000 to farmers. For working capital the terms are up to 24 months, and for fixed assets for up to 84 months.

Generally speaking, most of the banks have no tailor-made offers related to agricultural production.

Investment Development Bank of RS and Development Bank of FBiH

The MoA of FBiH has established a favourable credit line to finance agricultural long-term investment projects through the Development Bank of FBiH. The scope of investments in agriculture includes crop and vegetable production, livestock (cattle, sheep, pig, poultry, beekeeping and fish farming), and multi-annual plantations, the installation of glasshouses and greenhouses as well as the construction of facilities in the food industry (packing, grading and sorting facilities, finishing and processing of fruits and vegetables, and milk, and cooling storages for fruits and vegetables). The investment schemes foresee that 25 percent of the investment is ensured by grant funds from the MoA, 25 percent of the investment is ensured by the investor and 50 percent is provided by the Development Bank loan. The loan repayment period is set at 13 months to 10 years, depending on the type of investment undertaken, with a grace period of up to 36 months also depending on the type of investment undertaken (but mainly for orchards and vineyards). Development Bank credit lines are distributed through 18 commercial banks in FBiH to all types of entrepreneurs (legal or natural persons), including farmers.

The Development Bank has a credit line to encourage new employment and within this framework it approves loans for up to seven years with grace periods of up to 2 years and 3.28 to 3.36 percent effective interest rates. The maximum loan amount is BAM 10,000

per newly employed worker in agriculture production. (However, in practice investments are often made to reduce labour costs rather than to create jobs.)

The Investment Development Bank (IDB) of the Republika Srpska practically operates as a fund because it does not distribute loans directly to customers. Loans are provided through banks and microcredit organizations (MCOs) with which it has signed agreements (almost all banks and MCOs based in RS). The IDB has nine credit lines of which two are exclusively intended for agriculture; namely, a credit line for micro business in agriculture and a credit line for agriculture. The unique conditions of lending (which must be accepted by all intermediaries who use the funds of IDB) for micro business in agriculture are:

- Beneficiaries: persons registered in the Farm Registry;
- Purpose: procurement of fixed and current assets;
- Loan amount: 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 a cluster 5.6 percent).

The unique conditions of lending (which must be accepted by all intermediaries who use the funds of IDB) for agriculture are:

- Beneficiaries: legal entities and entrepreneurs engaged in production or processing of agriculture or aquaculture;
- Purpose: procurement of fixed and current assets and refinancing of existing obligations;
- Loan amount: BAM 30,000–5,000,000 for fixed assets and BAM 10,000–2,000,000 for current assets for legal entities. BAM 5,000–500,000 for fixed assets and BAM 5,000–100,000 for current assets for entrepreneurs (natural persons);
- 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 rate: 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 have been below what was planned, they have still been quite significant with BAM 66 million over the last three years.

Leasing

In Bosnia and Herzegovina, leasing services are provided in accordance with the laws on lease of the FBiH and the RS. Of all the companies providing these services, eight were registered in FBiH, with 28 branch offices in the territory of the Federation BiH and 7 subsidiaries in the territory of the RS. An established leasing company based in the RS 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 2006–2008. During 2009 there was a significant drop in claims for lease, while during 2010 there was a slight recovery.

In 2009, the leasing sector in BiH had a loss of BAM 102 million, which was more than the capital of the sector, although 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 BiH in 2010 were in FBiH BAM 1.1 billion, and in RS BAM 80 million. The number of active contracts was 5,566, and the volume of leasing receivables approved in 2010, BAM 245 million. The leasing market is dominated by leasing of cars and terrain vehicles (52 percent) and machinery and equipment (33 percent). Real estate accounts for about 15 percent. Physical persons use the services of leasing for about 10 percent, and legal entities for about 90 percent. The average weighted interest rates, depending on the subject of leasing, have usually ranged from 10–12 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, entrepreneurs with the status of physical entities. In general leasing of agricultural machinery is not yet common, even if some dealers of agricultural equipment, as at the INTERAGRO Bijeljina Fair in September 2011, offered their tractors on a zero percent leasing base.

5.8 Summary

At state as well as at entity and district level policies are being prepared along the lines of EU regulation. Institutions relevant for the cereals sector, such as the Food Safety Agency and the Plant Health Protection Agency are preparing for EU candidate status and are aligning their organization, their activities and their regulations to EU requirements.

However, it is also clear that the entities and BD create many variations in the practical implementation of the policies.

Regarding cereals, there is no harmonized policy across the entities and BD for providing subsidies, and they are currently, among others, a mixture of area payments of different sizes and for different crops, product support and in-kind contribution of blue diesel and fertilizers. The subsidies are not aligned with EU agricultural policy measures, which favour area payments.

The budget for agriculture and rural development in the entities remains low. The lack of an efficient administration is impeding the competitiveness of farmers and the agri-processing industry throughout the country. Also due to the lack of a Ministry of Agriculture at state level, the environment for the farmers in the country lacks transparency and creates different conditions for production from one area to another. There is a need for harmonization and alignment of subsidies and enforcement of legislation across the different entity and district borders. This is the case not only for cereals production, but also for agriculture in general.

6. MARKET AND TRADE

This chapter of the report provides information about the trends in cereals trade in BiH, including data on exports and imports of cereals, milled products and secondary processed products.

6.1 Wheat

The only wheat produced in Bosnia and Herzegovina is soft wheat (*Triticum aestivum*), which is mainly winter wheat. Summer wheat is usually grown just in case the drilling of winter wheat was not possible, or if there was a winter killing. However, for summer wheat, there are unexploited areas in the high-land area, if the market is sufficiently attractive.

6.1.1 Wheat supply chain: From farmers to mills and secondary processing

The wheat supply chain is built on farmers, traders and elevators, millers, bakers/processors, retailers and consumers. Wheat is produced mainly for human consumption with only small quantities of poorer quality wheat marketed as feedstock.⁸⁵

Farmers

Farmers in BiH are mainly smallholders with mixed farms and many of them planting with limited inputs use (see also Chapter 2). The larger farmers who grow mercantile wheat have 15 hectares of land or more planted with wheat and yield considerably more than the BiH average of 3.69 tonnes per hectare. Farmers try to sell their surplus to the elevators although they often fail due to the poor quality of the product. In such cases they then use it as fodder on the farm.

Furthermore, there are still many families in rural Bosnia and Herzegovina who bake their own bread, and most farmers keep a few tonnes of wheat on their farms.

Elevators

The elevators serve two primary purposes. First, they provide a mechanism for accumulating and combining the production of several individual wheat producers. Second, this link provides storage because wheat is a seasonal commodity. In essence, the elevators' function is solely logistical. As a result, this activity is particularly influenced by transportation. Elevators also provide numerous additional services including cleaning (removing non-wheat matter), inspection (identifying and measuring various quality attributes), and blending (combining portions of wheat of various qualities in order to attain a certain specification of certain quality attributes).

In the past, Bosnia and Herzegovina had several large flour and feed mills which also acted as elevators as they were obliged to maintain certain storage capacities. Some of these mills are still in the process of privatization while others have folded because they cannot afford to refurbish their premises. Finally, some are used solely as elevators due to their storage capacities; for example, the former mill "Husinski rudari" renamed "Mlin i Pekara" in Ljubace is now owned by KLAS and used only as a storage place.

Milling

The second link in the wheat supply chain is milling. The by-products are usually used as livestock feed, pet food, and in industrial applications. The milling sector is described in more detail in Chapter 4.

Baking

The baking and confectionery industry is the milling industry's most important client. The wholesale baking industry is composed of manufacturers of bread, cakes, and related products, as well as cookie and cracker

⁸⁵Barber, J. & Titus, M.J. Structure of the United States Wheat Supply Chain. Upper Great Plains Transportation Institute (UGPTI) Staff Paper No. 131. 1995. p 1ff

manufacturers. The bread and cake segment of the bakery industry consumes the largest amount of flour. See Chapter 4 for details.

6.2 Maize

Maize is the most important crop in Bosnia and Herzegovina due to its multiple use and is largely used for on-farm consumption as fodder. When maize is harvested the remainder of the plant is often used as fodder instead of straw. Besides modern harvesting technology, smallholders also harvest maize using outdated machines and sometimes even by hand.

Maize is harvested for its grains and as corn-cob-mix. Green maize is used for silage, a relatively new technique to conserve the whole plant. The production of silage is not yet widespread, partly due to a lack of harvesting equipment. Small-scale farmers do not have the heavy tractors needed for packing the crop and pressing out the air.

6.2.1 Maize supply chain: From farmers to breweries

This supply chain also starts with the farmer and often goes to elevators and the milling industry and to the feed mills, and the production of cattle feed for animal consumption. However, breweries sometimes purchase directly from larger farmers. The most substantial part of the farm production never leaves the farm in the form of maize but rather in the form of fattened animals.

6.3 Trade and trade policy

The first joint state-level activity related to foreign trade policy under the responsibility of the Ministry of Foreign Trade and Economic Relations took place in 1998, when the first BiH customs tariffs were adopted, and supporting laws on foreign trade policy were passed. With this legal solution, customs protection for agricultural products was provided through four *ad valorem* duty rates amounting to 0 percent, 5 percent, 10 percent and 15 percent. At some later stage, as a consequence of interest pressure, levies for some agricultural products were

added to the *ad valorem* charges. However, the role of the levy was lost due to its transformation into fixed amounts as a result of international pressures (WTO and EU).

The *ad valorem* duties and fixed-tariff levies have formed a complex duty for agricultural products, thus making them the best protected within the national customs tariff. Yet even duty charges determined in such a manner were still much lower than in neighbouring countries and the EU. All this resulted in a disadvantageous position for BiH in further negotiations on the liberalization of trade, as they served as a basis for the calculation of agreed-upon reductions.

Membership of CEFTA (2007) essentially integrated all previous bilateral and multilateral agreements on free trade effective at that time, signed by the countries of the region. This membership provided BiH with important trade concessions and discipline (including trade liberalization, a decrease of export subsidies, a decrease or abrogation of tariffs or other trade barriers for domestic products, application of internationally harmonized veterinary regulations and plant health regulations with regard to the international trade of food and agricultural commodities). This is entirely in accordance with trade agreements with the EU, which are an important part of the EU/BiH agreement on stabilization and accession. CEFTA is completely compatible with commitments and advantages derived from WTO membership, for which BiH has officially applied.

The relations with the EU can be divided in two separate periods. The first period lasted from 2000 to 2007, when BiH enjoyed preferential treatment in the export of agricultural products to the EU market. This meant that every year the EU issued a special regulation identifying types, quantities and values of the preferences for import from BiH. The sole condition was that BiH was to provide appropriate proof of the quality and safety of the products. Unfortunately, BiH producers were not able to meet these requirements, so the majority of the export quota established by the EU remained unutilized.

The second period began in 2007, when BiH signed the Stabilization and Accession Agreement with the EU. This Agreement (in its section on trade) institutionalizes the rules of trade between BiH and the EU. However, the EU Council has still not ratified it. Accordingly, BiH has been given the possibility to export the majority of agricultural products to the EU market without any custom duties or other charges. For a (small) number of products, the EU reserved a protection level through customs duties or quotas. On the other hand, BiH has committed itself to gradually abolishing customs duties and other charges on agricultural products that come from the EU. For some products, the charges were lifted immediately, while for others, they are being phased out. By 2013, BiH will have a fully liberal trade partnership with the EU, under the conditions that BiH fulfils the requirements.

Other changes to customs tariffs were more in line with the harmonization of commitments deriving from the adopted international regulations and agreements; therefore, they had no significant impact on the protection

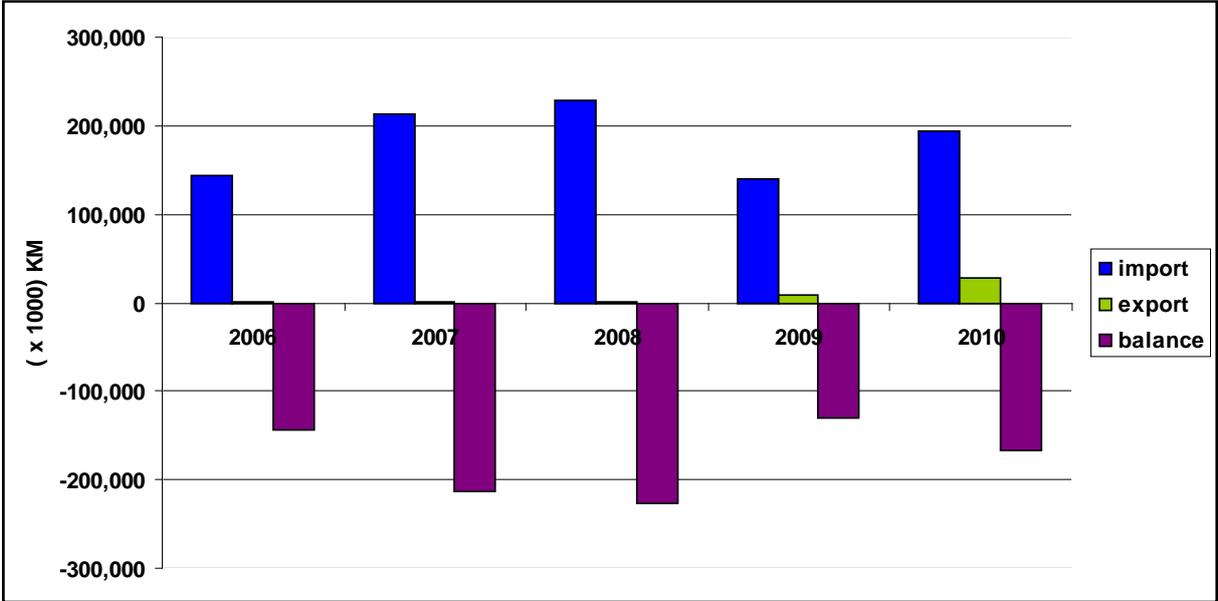
of local production. The large foreign trade deficit that BiH has in agricultural and food products indicates that it has been difficult for BiH producers to take advantage of the foreign trade policy and the policy has not been properly utilized.

6.4 Trade balance of cereals⁸⁶

Over the years covered by this analysis Bosnia and Herzegovina has not been self-sufficient in agricultural production (with the exception of plums). Therefore large quantities of agro-food produce have been imported and are a burden for the trade balance. In 2006, the gap between agricultural and food imports and exports was about BAM 1,700 million, equivalent to EUR 870 million. In 2010, the value of agricultural exports reached EUR 250 million, whereas the value of agricultural imports amounted to EUR 1,485 million equal to a deficit of EUR 1,235 million.⁸⁷ This is an increase in the deficit of 42 percent or more than 10 percent per year.

The trade balance of cereals, import and export by value (BAM) is described and

Figure 6.1: Total trade of cereals, BiH, 2006–2010, 000 BAM

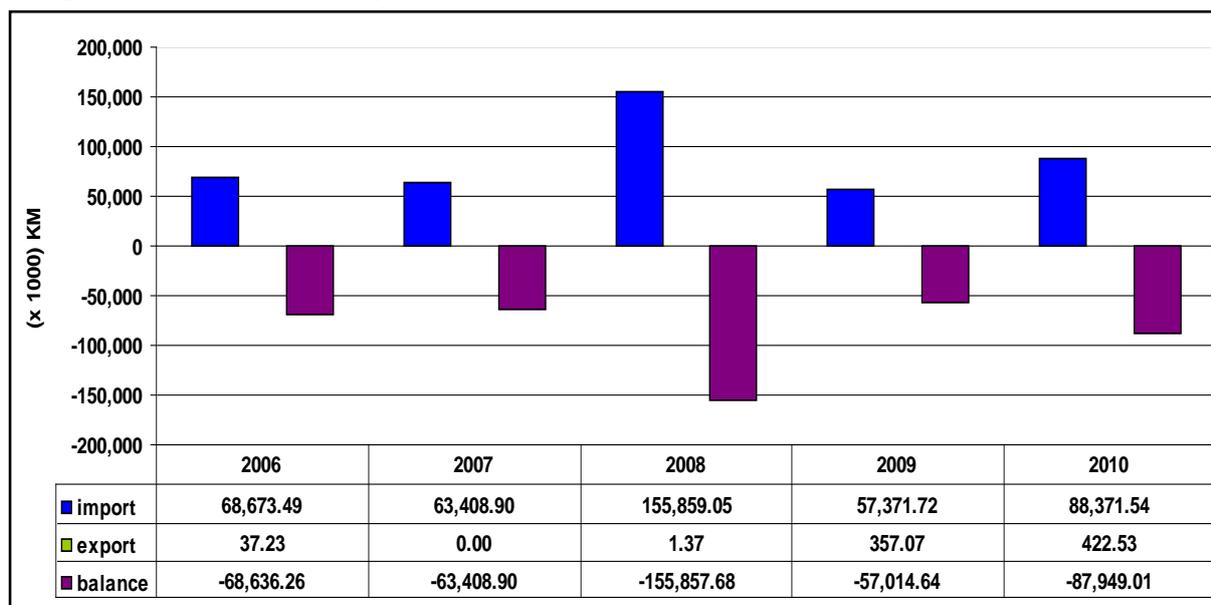


Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years

⁸⁶Bajramovic, S. FAO consultant: The status and constraints of the agricultural sector in BiH and the country food security situation. 201. p 18ff

⁸⁷<http://www.fao.org/countries/55528/en/bih/>

Figure 6.2: Import and export of cereals between BiH and the EU, 2006–2010, 000 BAM

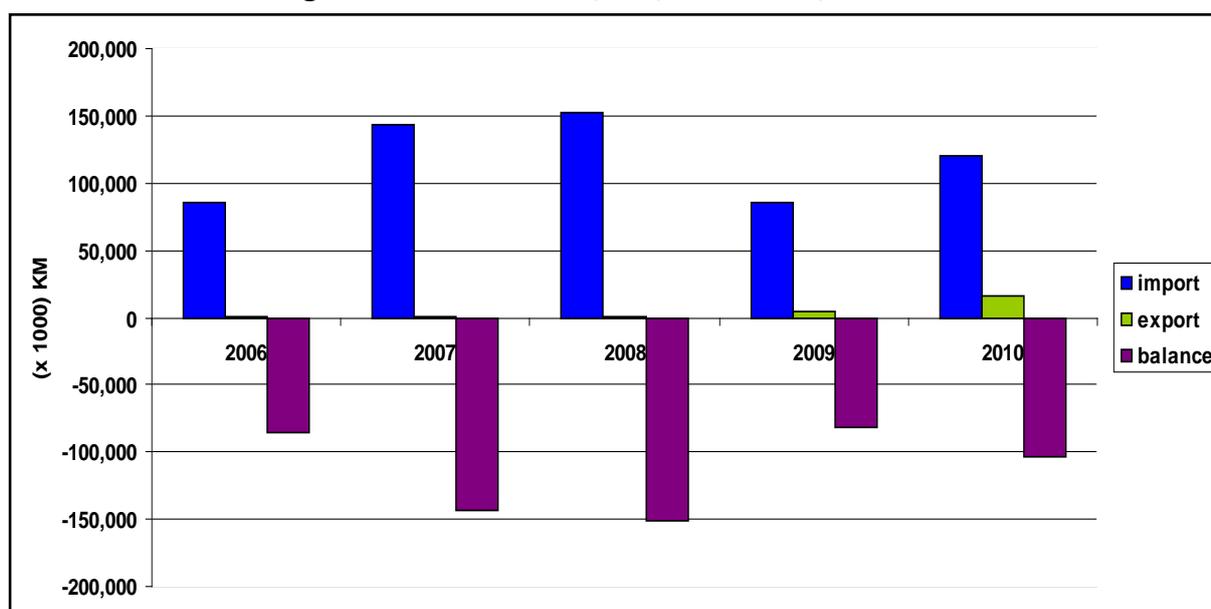


Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years

presented in figures below. The total trade deficit in cereals in 2010 was BAM 166.2 million, due to imports of BAM 194.3 million and exports of BAM 28.1 million. It is a minor increase from 2009, but the level is still lower than in the years 2007 and 2008, where the deficit was below BAM 200 million. Exports are increasing and show their highest level in 2010 with BAM 28.1 million.

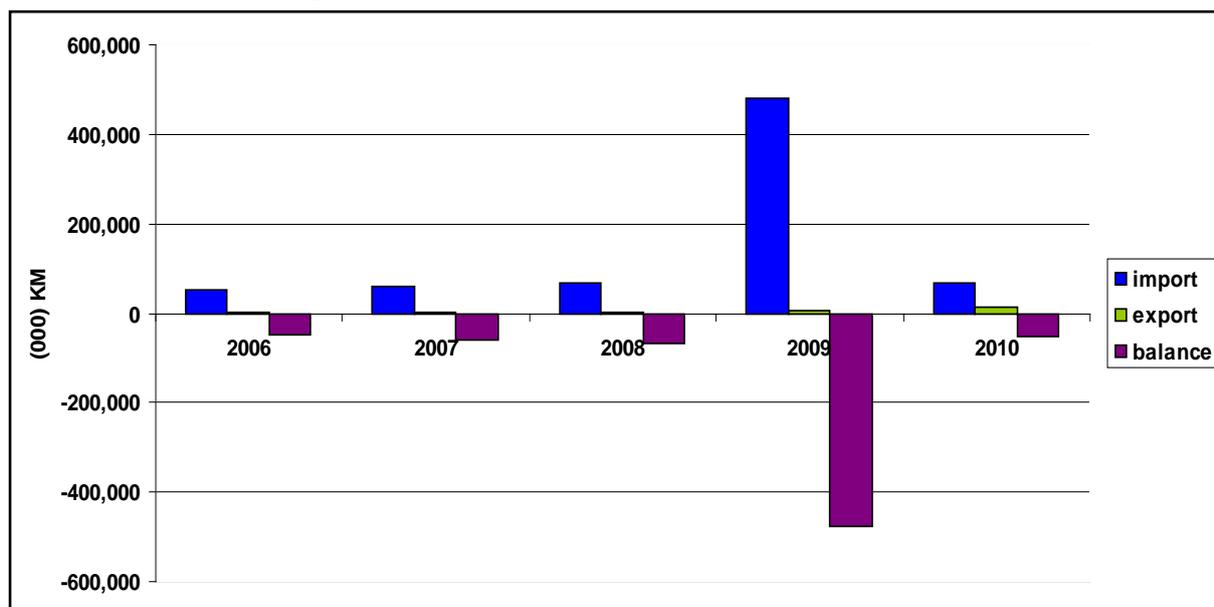
The trade in cereals with the EU is almost exclusively characterized by imports with exports being only BAM 0.4 million in 2010. Imports fluctuate substantially, and the level in 2010 was BAM 88.4 million for imports. In 2008, the import level was more than BAM 150 million, while the average for the period is BAM 86 million for all five years, but only BAM 69 million,

Figure 6.3: Wheat trade, BiH, 2006–2010, 000 BAM



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years

Figure 6.4: Maize trade, BiH, 2006–2010, 000 BAM



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years

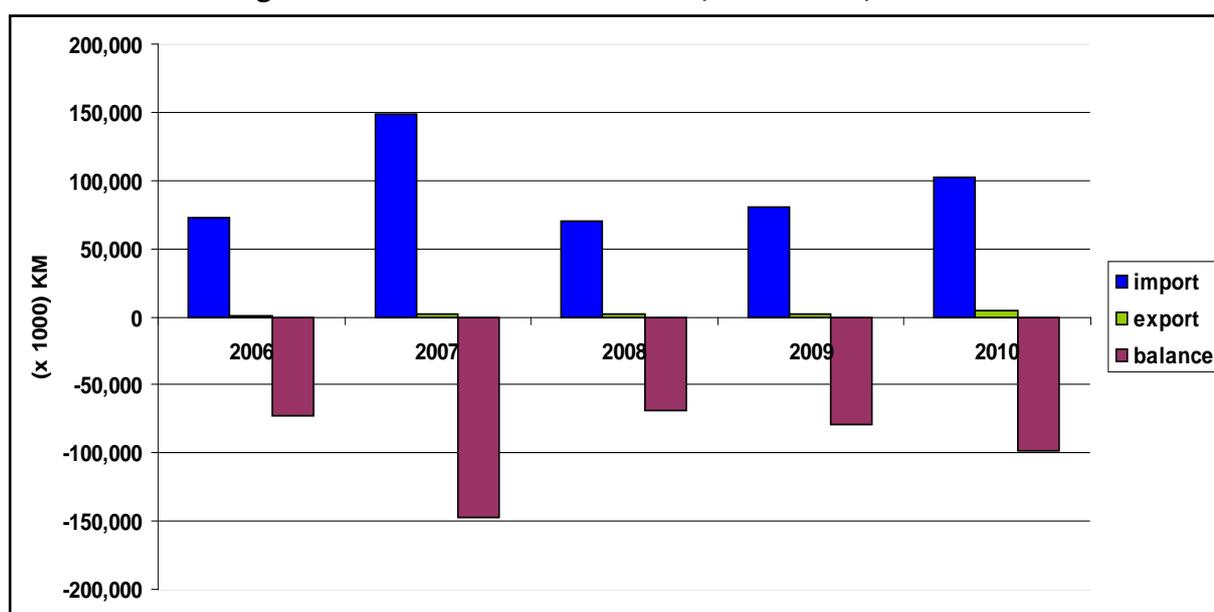
if the year 2008 is subtracted from the calculation.

In 2009 and 2010 wheat and maize exports were low. The trade deficit was BAM 100 million for wheat in 2010 and BAM 50 million for maize.

According to the figure below, the total import of cereals from CEFTA countries

in 2010 was BAM 102.3 million, while exports to the CEFTA countries was as low as BAM 3.8 million. The trade deficit was BAM 98.4 million in 2010. There has been a slow increase in the trade deficit over the last two years, but the trade deficit is still not at the 2007 level, where the deficit was BAM 147 million.

Figure 6.5: BiH–CEFTA cereals trade, 2006–2010, 000 BAM



Source: Vesna Mrdalj, Faculty of Agriculture, University of Banja Luka, 2011; PPP, 30 May 2011, and RS and BiH Agency for Statistics, various years

Table 6.1: Import Export Maize (2005–2010) 000 BAM and tonnes

Maize unmilled	Export, 000 bam	Export quantity, tonnes	Import, 000 BAM	Import quantity, tonnes	Net import, 000 BAM	Net import, tonnes
2005	696	1,358	53,567	222,317	52,871	220,959
2006	650	247	54,110	228,602	53460	228,355
2007	1,453	611	62,314	165,344	60,861	164,732
2008	894	608	78,438	183,337	77,544	182,729
2009	5,514	12,067	47,822	162,294	42,308	150,227
2010	12,076	24,300	66,527	186,130	54,451	161,830

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx> Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

Table 6.2: Import Export Wheat (2005–2010), 000 BAM and tonnes

Wheat, meslin, unmilled	Export, 000 BAM	Export quantity, tonnes	Import, 000 BAM	Import quantity, tonnes	Net import, 000 BAM	Net import, tonnes
2005	27	36	104,510	453,794	104,483	453,668
2006	13	50	92,055	342,098	92,042	342,048
2007	4	30	146,799	381,179	146,795	381,149
2008	712	1,178	175,281	355,314	174,569	354,136
2009	4,221	13,788	84,763	317,528	80,542	303,740
2010	16,212	43,407	120,685	353,509	104,473	310,102

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx> Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

Maize exports in 2011 were at the level of BAM 4.2 million, while imports were BAM 75.5 million with Serbia the main source of imports.

In 2011 wheat exports declined to BAM 1.03 million and imports increased to BAM 166.2 million.

The import price per tonne of wheat in 2011 was on average BAM 330 per tonne, but the import price from Hungary was only BAM 231 per tonne, while the small exports of wheat were sold at BAM 568 per tonne in 2011.

Hungary is Bosnia and Herzegovina's most important trading partner in terms of wheat, closely followed by Serbia and Croatia. During the period 2005–2009 wheat imports from

Hungary were always more than 50 percent of total wheat imports (with the exception of 2007). In 2008, out of the total of 326,800 tonnes of imported wheat, 274,200 tonnes or (84 percent) was imported from Hungary.

6.5 Balance sheets for wheat and maize

Tables 6.4 and 6.5 present the balance sheets prepared for wheat and maize at BiH level for the years 2006 to 2010. The balance sheets are prepared without consideration of ex ante stock at the beginning of the year and ex post stock by the end of the year. The assumption is then that the stocks (reserves) are constant.⁸⁸

⁸⁸Data from MoFTER shows that the stocks are around 25,000 tonnes per year (2009).

The formula for the balance sheet is then relatively simple: Domestic production minus exports plus imports = amount of wheat/maize available for total domestic consumption (industrial, food, feed, etc.). With a population of 3,840,000 people in 2011, the average annual consumption per capita is calculated. Finally, the share of the domestic consumption covered by domestic production is calculated. Increasing shares of the domestic market covered by domestic production indicate an increase in competitiveness. Decreasing shares indicate on the contrary decreasing competitiveness.

The tables demonstrate that the domestic production of wheat has covered a stable share of the domestic market with 40 percent for the years 2006 to 2008, and 43 percent in 2009. In 2010, the share has dropped dramatically to only 22 percent. This is caused by a decrease in domestic production as discussed previously in this report. Domestic consumption also declined, but imports increased to capture the share of the market left open due to low production in BiH.

For maize the picture is different. The share of domestic consumption covered by domestic

production has been rather stable over the five years, with an average of 82.5 percent. From 2009 to 2010 a slightly reduced share (i.e. 85.4 percent to 81.7 percent) is observed, and the market share signals a relatively high level of competitiveness on the local market for maize grain.

6.6 Import substitution

In order to estimate a potential expansion of wheat and maize production in BiH, different shares of import substitution were estimated: 25 percent, 50 percent, 75 percent and 100 percent. One point is that BiH, on the domestic market, can take advantage of short distances (physically and mentally) to the market, which to some extent can compensate for lack of economics of scale in production. It must be emphasized that import substitution is considered to be driven by the farmers and not by public interventions. However, the framework conditions might be attractive and facilitate the farmers in their decisions about an expansion of their production based on increased competitiveness due to increased yields, productivity, higher product quality and lower prices.

Table 6.3: Wheat balance, BiH, 2006–2010

Year	Sown hectares	Production, tonnes	Export, tonnes	Import, tonnes	Total consumption, tonnes	Consumption per capita, kg	Own production, tonnes	Share of domestic market, %
2006	73,500	232,500	50	342,098	574,548	150	232,450	40.5
2007	74,500	257,100	30	381,179	638,249	166	257,070	40.3
2008	64,800	240,500	1,178	355,314	594,636	155	239,322	40.2
2009	68,100	255,800	13,788	317,528	559,540	146	242,012	43.3
2010	55,400	145,500	43,407	353,509	455,602	119	102,093	22.4

Source: BiH Agency for Statistics, various years

Table 6.4: Maize balance, BiH, 2006–2010

Year	Sown hectares	Production, tonnes	Export, tonnes	Import, tonnes	Total consumption, tonnes	Consumption per capita, kg	Own production, tonnes	Share of domestic market, %
2006	196,500	993,900	247	228,602	1,222,255	318	993,653	81.3
2007	198,600	635,300	611	165,344	800,033	208	634,689	79.3
2008	204,600	1,004,300	608	183,337	1,187,029	309	1,003,692	84.6
2009	189,600	962,900	12,067	162,294	1,113,127	290	950,833	85.4
2010	191,700	853,400	24,300	186,130	1,015,230	264	829,100	81.7

Source: BiH Agency for Statistics, various years

If the GVA per hectare of wheat is BAM 578 (=EUR 295) and for maize is BAM 930 (=EUR 476), see the calculations about feasibility of wheat and maize grain production, where there are various yields at stake, and the average GDP per capita is BAM 6,468 (= EUR 3,300) in 2010, 11 hectares of wheat and 7 hectares of maize will be needed to produce income for one person. If every family farm household on average is 4 persons, 44 hectares for wheat and 28 hectares for maize will be needed.⁸⁹

Current production could theoretically be based on 255 wheat producers and 909 maize producers with optimal yields, but if yields are lower than that and instead are at level of the five-year average, 347 producers

for wheat and 1,447 producers for maize will be needed for the current production.

If it is possible to substitute the import of wheat and maize, 609 new or extra wheat farmers for every 25 percent import substitution, and 354 new maize grain farmers for every 25 percent import substitution will be needed, with 5-year average yields. With optimal yields the need will be lower, 446 wheat farmers and 208 maize farmers, see the next two tables, the first for wheat and the second for maize.

In order to also cover a commodity reserve as recommended by FAO, see Chapter 5 of this report, and as expressed in the action plan for a commodity reserve, additional numbers

Table 6.5: Import substitution of wheat, BiH, 2010

Share of substitution	Domestic production	Hectares needed with yield, t/ha			Additional farmers needed with yield 4,5 t/ha	Total farmers Needed
		2,7 (2010 yield)	3,3 (5-year average)	4,5 (Expert level)		
%	tonnes				44 ha/farm	255
0	50,400	18,667	15,273	11,200	0	255
25	88,377	32,732	26,781	19,639	446	701
50	176,755	65,465	53,562	39,279	892	1,147
75	265,132	98,197	80,343	58,918	1,339	1,593
100	353,509	130,929	107,124	78,558	1,785	2,039

Source: BiH Agency for Statistics, various years and own calculations

Table 6.6: Import substitution of maize, BiH, 2010

Share of substitution	Domestic production	Hectares needed with yield, t/ha			Additional farmers needed with yield 8 t/ha	Total farmers needed
		4,5 (2010 yield)	4,7 (5-year average)	8 (Expert level)		
%	tonnes				28 ha/farm	909
0	203,600	45,245	43,319	25,450	0	909
25	46,533	10,341	9,901	5,817	208	1,117
50	93,065	20,681	19,801	11,633	416	1,325
75	139,598	31,022	29,702	17,450	623	1,533
100	186,130	41,362	39,602	23,266	831	1,741

Source: BiH Agency for Statistics, various years and own calculations

⁸⁹The level of income needed to make a farm viable might not be as high as the average GDP/capita. Value of house rent and cheap access to food might reduce the needed income level. If the needed income is reduced, the needed number of hectares required to generate the income also goes down, and then the number of farms needed to produce the extra volume of cereals goes up. A measurement unit used in the EU is the Economic Size Unit (ESU) equal to EUR 1,200 in gross value added per year. However, there is no general rule stating how many ESU are needed to generate a minimum or an average level of income.

of hectares are required. The need will be in the range of 100,000 tonnes of wheat and considerably less for maize according to the action plan, and this amount of wheat produced with 4.5 tonnes/hectare requires 22,222 hectares. If it is furthermore assumed that the required number of hectares for a viable farm is the same as anticipated in the previous calculations and estimated to be 44 hectares, additional production from 505 farmers is required to contribute to the reserve stocks.

The preconditions for being able to fulfil the objectives of an import substitution strategy, no matter whether it is 25 percent or 75 percent of the current import, combined with the build up of a commodity reserve, are many.

First of all, it is important that economies of scale are achieved in cereal production. This will require more land for larger farms, which again will require a well functioning land market, supported by appropriate land consolidation and re-parcelling projects, supported by state, entity and donor resources. All legal problems related to ownership, renting or/and trading with land, cadastral issues etc. must be solved.

Secondly, the larger farms will have the size to benefit from new and larger machinery, including tractors, combines and maize harvesters, etc. Investment support for investments in new and modern technology may contribute to accelerate the renewal of the machinery park, which is needed.

In addition, better yields are required. Here we need to invest public and private resources in improved seed quality, and to make sure that high quality certified seeds are used in the production.

The agronomical production of the cereals must be optimized, taking new knowledge about good agricultural and environmental practice into consideration, ensuring an optimal use of fertilizers, pesticides and irrigation. This requires training of farmers and their employees, and this again calls upon a stronger extension service, where the relevant competences and the relevant pedagogical principles are available

for dissemination of the required knowledge to the farmers.

Storage facilities, including silos, dryers, etc. must be in place in the right quality at the right places ensuring that the cereals are stored under the best circumstances, contributing to optimal quality in the post-harvest management.

Finally, the organization of sales and the marketing must be enhanced, for example in producer organizations in order to increase bargaining power in the trade situation with the buyer and contractors. The point of departure is difficult since the attitude among the millers and processing companies is that BiH cereals are of inferior quality compared to the quality of imported cereals. As a consequence, the blending of the batches in a relationship of 10–20 percent domestic cereals and 80–90 percent foreign cereals is observed. To change this, domestic producers must be able to deliver the required quality at a competitive price.

A prerequisite for this is a sufficient profitability of the production of cereals. Here the stability of subsidies and of price regimes is of paramount importance, since these factors can reduce risks and uncertainty, and make the farmers concentrate on the risks and challenges associated with the production itself and the new investments.

The subsidies needed will be of the scale of BAM 500 per hectare, and with a 50 percent import substitution and a commodity reserve, the area with wheat would be 325,000 hectares, and the subsidy demand would be BAM 162 million annually, compared with BAM 25 million in 2011 based on the current subsidy/hectare of BAM 500 per hectare in the FBiH level of 2011.

6.7 Seed imports

Bosnia and Herzegovina imports BAM 2.5 million worth of wheat seeds and BAM 10 million of maize seeds (hybrids) annually. This is a consequence of the non-existent seed industry in the country. Besides some agricultural research institutes, which are

more involved in breeding than multiplication and marketing, most seeds are imported.

However, seed experts like Mr Mario Beus from FBiH Ministry of Agriculture, Water Management and Forestry emphasize the potential for multiplication in the country.⁹⁰

Since low seed quality in general is considered to be one of the reasons for lower yields in BiH than in other CEFTA countries, it is important to take the initiatives, which will strengthen national seed multiplication in the public and/or in the private sector. This is an issue for further and more detailed technical research than to be covered in this general analysis.

6.8 Trade with milled and processed products

As described above, the import quantities of cereals are substantial, while exports are very small. The situation in the trade with secondary processed products is similar, although not as unilateral, as was the case with cereals. Here we describe the trade in milled products, and later we will give some examples of trade in secondary processed product categories.

The table below presents the data for the export and import of milled cereal products from 2007 to 2011.

With regard to exports, the table shows some fluctuations, but the general picture is an increase in exports from 2007 to 2011 in the range of BAM 3.2 million or nothing less

than 110 percent. In the same period imports have however also increased, and the deficit has, as a consequence, increased from BAM 102.6 million in 2007 to BAM 135.5 million in 2011. This is an increase of BAM 33 million or 32 percent. The increase in import is not as large as the increase in export, but the point of departure for exports is relatively modest compared to the import level.

It is also worth mentioning that the price per tonne of wheat flour exported during the whole period covered is higher than the import price per tonne. In 2011, the export price per tonne was 49 percent higher than the import price, and in the period the average difference was 86 percent in favour of the export price. In 2011, the export price was BAM 973 per tonne, the import price was BAM 654 per tonne and the difference therefore was BAM 318 per tonne.

The picture for processed products such as sweet biscuits, waffles, etc. is more blurred than the one for milled cereal products. Exports here are also fluctuating with an increasing tendency in 2011, where the level of export is BAM 26.4 million. This is BAM 2 million more than in 2007 equal to an increase of 8 percent, which is far below the increase in exports of milled products. The deficit is increasing also for these products, with BAM 7.4 million or 17 percent in the period from 2007 to 2011. For these products the increase in imports is larger than the increase in exports, leading to an increase in the gap over time.

Table 6.7: Trade with milled cereals products, 2007–2011, BAM

Period	Export	Import	Balance
2007	2,885,729	105,518,528	-102,632,799
2008	4,407,401	163,315,764	-158,908,363
2009	2,369,635	110,174,358	-107,804,723
2010	3,357,144	122,818,061	-119,460,917
2011	6,126,657	141,628,393	-135,501,735

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx>. Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

⁹⁰Interview on Monday 26 September 2011 in Sarajevo

Table 6.8: Trade with sweet biscuits, waffles, etc., 2007–2011, BAM

Period	Export	Import	Balance
2007	24,416,245	67,612,039	-43,195,794
2008	31,763,253	94,114,874	-62,351,621
2009	27,419,749	75,741,395	-48,321,646
2010	23,724,219	77,856,259	-54,132,040
2011	26,408,456	77,006,748	-50,598,292

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx>. Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

The main trade partners for sweet biscuits are identified below.

Table 6.9: Export of sweet biscuits, main trade partners/countries, 2007–2011, BAM

Period	Slovenia		Croatia		TFYR Macedonia		Montenegro		Serbia	
	Trade Value	Tonne	Trade Value	Tonne	Trade Value	Tonne	Trade Value	Tonne	Trade Value	Tonne
2007	794,859	186	9,040,839	2,140	804,886	245	582,160	146	2,712,554	883
2008	1,153,423	177	11,071,272	2,181	895,444	227	1,148,033	23	3,303,751	897
2009	1,106,603	187	10,818,130	2,365	801,285	255	611,229	14	1,276,755	492
2010	945,588	153	9,721,985	2,682	1,251,113	582	653,217	201	696,636	432
2011	930,309	161	11,708,983	3,248	909,334	408	690,858	242	458,136	155

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx>. Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

Croatia is far the most important country for exports of sweet biscuits, and the exports have been increasing from 2007, where the export value was BAM 9 million, to 2011 where it was BAM 11.7 million. The increase is 30 percent. The export share to Croatia is 75 percent out of BAM 15.5 million of total exports.

For Serbia, the exports diminished from BAM 2.7 million in 2007 to only BAM 0.5 million in 2011. This is a reduction of 81 percent, and Serbia is today the least important of the countries where BiH has exports of sweet biscuits.

With regard to the import of sweet biscuits, the main importing countries are presented below. Here Serbia is back on the stage with the largest import share to BiH: BAM 25.6 million in 2007 increasing to BAM 28.3 million in 2011. The increase is

11 percent and the share of the total import in 2011 is 70 percent.

The Former Yugoslav Republic of Macedonia is the other country with a remarkable performance. The imports were almost BAM 3.2 million in 2007, and have increased to BAM 6.8 million in 2011, equal to an increase of 113 percent. The other countries have been relatively stable in their imports to BiH with this product category: Croatia has increased exports to BiH by 19 percent, and Montenegro has seen a decrease in exports to BiH of 52 percent, but for Montenegro it was from a low level.

As a final example, the trade with pasta is included. Here a small trade is observed, but again the increase in import is the dominating trend, with an increase of 30 percent from 2007 to 2011, while exports fell by 50 percent. The result was an increase in the deficit of 86 percent.

Table 6.10: Import of sweet biscuits, main trade partners/countries, 2007–2011, BAM

Period	Croatia		TFYR Macedonia		Montenegro		Serbia	
	Trade Value	Net Weight (Kg)	Trade Value	Net Weight (Kg)	Trade Value	Net Weight (Kg)	Trade Value	Net Weight (Kg)
2007	4,478,883	1,168,517	3,170,752	936,138	635,571	231,052	25,579,008	6,702,966
2008	5,756,267	1,254,274	6,017,197	1,440,310	796,189	244,2	36,611,943	7,887,578
2009	4,900,314	1,118,602	6,651,169	1,899,040	298,406	109,355	29,778,456	7,144,752
2010	4,942,092	1,315,728	7,183,451	2,008,080	284,656	99,612	27,252,697	6,346,191
2011	5,336,248	1,374,442	6,764,759	1,785,092	307,842	93,384	28,306,920	6,101,612

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx>. Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

Table 6.11: Trade with pasta, couscous, 2007–2011, BAM

Period	Export value	Import value	Balance
2007	390,622	964,501	-573,879
2008	414,091	957,087	-542,996
2009	384,837	669,334	-284,496
2010	404,477	1,270,098	-865,621
2011	194,893	1,259,885	-1,064,992

Source: COMTRADE: <http://comtrade.un.org/db/default.aspx>. Average yearly exchange rates between US\$ and EUR (EUR per US\$) are used as follows: 2011 = 0.748; 2010 = 0.785; 2009 = 0.748; 2008 = 0.711; 2007 = 0.760; 2006 = 0.829; 2005 = 0.804; 2004 = 0.804; 2003 = 0.884, and the exchange rate from EUR to BAM was BAM 1.9558 per EUR. Source: European Central Bank: <http://www.ECB.int>

6.9 Summary of trade

Trade policy

BiH is following the path towards EU candidate status, and by 2013, BiH will have a fully liberal trade partnership with the EU, if BiH fulfils the requirements, and if the companies wishing to export to the EU fulfil the requirements in the Acquis.

Trade balance in cereals

The total trade deficit in cereals in 2010 was BAM 166.2 million, due to imports of BAM 194.3 million and exports of BAM 28.1 million. It is a minor increase from 2009, but the level is still lower than in the years 2007 and 2008, where the deficit was below BAM 200 million. Exports are increasing and show their highest level in 2010 with BAM 28.1 million.

The total import of cereals from CEFTA countries in 2010 was BAM 102.3 million, while

the exports to the CEFTA countries was as low as BAM 3.8 million. The trade deficit was then BAM 98.4 million in 2010. There has been a slow increase over the last two years, but still not at the level of 2007, where the deficit was BAM 147 million.

Import prices

The import price per tonne of wheat was in 2011 on average BAM 330 per tonne, but the import price from Hungary was only BAM 231 per tonne, while the small export of wheat sold was BAM 568 per tonne in 2011. Hungary is Bosnia and Herzegovina's most important trading partner in terms of cereals, closely followed by Serbia and Croatia. During the period 2005–2009 wheat imports from Hungary were always more than 50 percent of total wheat imports (with the exception of 2007). In 2008, out of the total of 326,800 tonnes of imported wheat, 274,200 tonnes or (84 percent) was imported from Hungary.

Production balances

The domestic production of wheat has covered a stable share of the domestic market with 40 percent for the years 2006 to 2008, and 43 percent in 2009. In 2010, the share dropped dramatically to only 22 percent. This was caused by a decrease in domestic production. Domestic consumption also fell, but imports increased to capture the share of the market left open due to low production in BiH.

For maize the situation is different. The share of the domestic consumption covered by the BiH production has been stable over the five years, with an average of 82.5 percent. From 2009 to 2010 we have seen a slight reduced share from 85.4 percent to 81.7 percent, and the market share signals a relatively high level of competitiveness at the local market for maize grain.

Import substitution

Current production could theoretically be based on 255 wheat producers and 909 maize producers with optimal yields. If BiH is able to substitute the import of wheat and maize, BiH will need 609 new wheat farmers for every 25 percent of import substitution, and 354 new maize grain farmers for every 25 percent of import substitution. If five-year average yields are used to calculate the needed number of farmers, the figure will increase, since the five-year average is lower than the optimal yields. If a larger import substitution is achieved the number of additional farmers will also increase.

Commodity reserve

In order to also cover a commodity reserve, as recommended by FAO, and as expressed in the action plan for a commodity reserve, additional numbers of hectares are required. The need will be in the range of 100,000

tonnes of wheat and 10,000 tonnes of maize according to the action plan, and this amount of wheat produced with 4.5 tonnes/hectare requires 22,222 hectares, and 1,250 hectares for maize production with 8 tonnes/hectare on average yield.

Trade with processed products

Regarding exports of *milled products* the general tendency is an increase in exports from 2007 to 2011 in the range of BAM 3.6 million or 123 percent. In the same period imports have however also increased, and the deficit has, as a consequence, increased by BAM 29 million or 39 percent. The increase in imports is not as large as the increase in exports, but the point of departure for exports is relatively modest compared to the import level.

The price per tonne of wheat flour exported during the whole period covered is higher than the import price per tonne. In 2011, the export price per tonne is 49 percent higher than the import price, and in the period the average difference is 86 percent in favour of the export price. In 2011, the export price was BAM 973 per tonne, the import price was BAM 654 per tonne and the difference therefore BAM 318 per tonne.

The trend for *processed products* such as sweet biscuits, waffles, etc. is more blurred than that for milled cereal products. Exports here also are fluctuating with an increasing tendency in 2011, where the level of export is BAM 27.6 million. This is an increase of 14 percent, which is far below the increase in exports of milled products. The deficit is also increasing for these products, with BAM 10 million or 23 percent in the period from 2007 to 2011. For these products the increase in imports is higher than the increase in exports, leading to an increase in the gap over time.

7. LEVEL OF ATTAINMENT OF RELEVANT EU STANDARDS

7.1 *Production of cereals*

In the context of pressure to integrate EU requirements and standards into agriculture, the policy instrument “cross-compliance” is increasingly being used to improve the environmental impacts of farm management. Cross-compliance in the Common Agricultural Policy (CAP) sets environmental and other standards that farmers must adhere to in order to receive subsidies. All EU Member States set farming standards in relation to 18 EU regulations and directives, defined Good Agricultural and Environmental Conditions (GAECs) and ensure compliance with these standards on farms in receipt of CAP subsidies.

As a potential candidate country, Bosnia and Herzegovina will also have to adopt these 18 EU regulations and directives. The following paragraphs highlight the regulations and directives that will be relevant for plant production.

As listed in Council Regulation (EC) No 1782/2003 of 29 September 2003, there are eight regulations and directives and from them the first five are relevant for plant production under environment:

- Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 25.4.1979, p 1)
- Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution caused by certain dangerous substances (OJ L 20, 26.1.1980, p 43)
- Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (OJ L 181, 4.7.1986, p 6)
- Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.1991, p. 1)
- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (OJ L 206, 22.7.1992, p 7)

The group B contains seven regulations and directives and from them only the first one is relevant for plant production under plant health:

- Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market (OJ L 230, 19.8.1991, p 1)

Furthermore, BiH is actually harmonizing its phytosanitary service and policy with EU legislation, international obligations and standards in this area. According to the relevant competent authority this process is about to be completed. This includes plant health, plant protection products, and seeds and vegetative materials. The special emphasis is on drafting, adoption and enforcement of EU compliant regulations, strengthening of the inspection service and laboratory capacities, and raising awareness of operators of the improved system functioning. In the last progress report the EU pointed out that there was some progress in the phytosanitary sector as implementing legislation on the establishment of a phytosanitary register and plant passports, measures for control of harmful organisms in plants, plant products and regulated facilities and phyto-pharmaceuticals have been adopted.

The institution in charge of plant health issues is the Plant Health Protection Administration (PHPA), see also Chapter 5.

Detailed regulations are still to be adopted and enforced. In the meantime, the entities are enforcing different regulations, issuing different export certificates, and until recently their lists of approved varieties were different, which was confusing for importers. This confusion ended when the national variety list was adopted in 2010. The border inspection is the responsibility of the entities, and sometimes importers have to choose between two border phytosanitary inspection posts at the same crossing (e.g. at the Samac border crossing). These border inspection posts (BIPs) apply different procedures and different fees. The PHPA

stressed the importance of establishment of various phyto-registers, a plant passport system, a chain of command, and the division of responsibilities in the sector.

At the third meeting of the Provisional Subcommittee for Agriculture and Fishery, held in March 2011, the European Commission highlighted this problem. All government levels in BiH were called to quickly clarify and explain the competences in the area of food safety, protection of plant health and veterinary, and to increase administrative capacities of all relevant administrations and institutes. This is crucial for the export of BiH agricultural products to the EU, especially after the accession of the Republic of Croatia to the EU. The EU Delegation encouraged BiH to establish clear competences and chains of command and to harmonize procedures, including, inter alia, this area. The EU delegation repeated that the development of a well-functioning inspection system and inspection network, including the functioning of laboratories and similar institutes with well-trained people, are crucial.

In BiH, various institutions share the responsibility for plant health, although there is still an overall lack of coordination. The Phytosanitary Departments of entities and BD maintain lists of approved seed varieties and they certify exported products. Entity Ministries of Health are responsible for public health and they have food testing laboratories, while the entity Ministries of Trade are responsible for entity-level food quality control, consumer protection, and labelling. Entity and Brčko Inspectorates are responsible for inland and border inspections (except for border veterinary inspection) of various foods. They include veterinary, agricultural, sanitary and market/quality inspection departments. The procedures for food control and inspection vary between the entities and are inconsistently implemented throughout the country.⁹¹

The PHPA has started activities on establishing phytosanitary inspections. Institutes for

accreditation and standardization recently started working in the food sector. The Institute for Accreditation has accredited some food testing and certifying laboratories but it applies mainly to BiH and is not recognized internationally because this Institute does not participate in all international and regional accreditation organizations such as the International Accreditation Forum (IAF), and the European Committee for Standardization (CEN). The EU also requires that BiH strengthen its phytosanitary laboratories. The EU also requires that BiH increase the awareness of farmers, distributors, importers and exporters of the requirements according to national and international standards.

Plant protection products are regulated by the Law on Phyto-pharmaceutical Products (PPP). This foresees almost every requirement for establishing the system that regulates the marketing of PPP. The law is in good agreement with the EU Dir. 91/414. Nevertheless, due to the enactment of a new Regulation (1107/2009) which repeals the Directive, some adjustments are needed.

Even though this law foresees the approval of active substances following the EU official system (the active substances allowed by the EU and listed in Annex I are already allowed in BiH), the process of authorizing products has still not been implemented. This also applies to products not registered in the EU or imported from Third Countries. The two entities are using different systems for approval and registration of pesticides, neither of which is harmonized with the EU rules. The Law on Phyto-pharmaceutical Products foresees the Commission being in charge of the evaluating dossiers and of the authorization process, although this Commission has not yet been established. This is a key aspect for the functioning of the system and also in the project activities. A document with general outlines and proposals to set up a system for PPP registration and to establish a Commission for PPP evaluation that involves all of the administrative institutions (PHPA,

⁹¹Based on interviews with stakeholders 2011 and 2012.

Ministries of both Entities, Department of BD), as well as institutions/members with technical expertise, was drafted and submitted for discussion to the parties together with a draft proposal for a rule book defining the functioning of the Commission. However, technical training on phyto-pharmaceutical products has been offered to commission members, but has not yet started. It is foreseen that a number of related workshops will start as of January 2012.

The lack of a unified national list of approved pesticides for agriculture also has negative consequences for the harmonized regulation of import and export of plant products (in terms of pesticide residues). There is currently no official monitoring of residue levels on plant materials as which laboratories should be recognized to carry out such a role has not yet been defined. This is an aspect of the inspection system that is common to food and veterinary controls. Considering the requirements deriving from different EU legal provisions (e.g. Reg. 882/2004), the accreditation of the laboratories for official control, and the level of complexity that such analyses present, it would be most feasible to utilize the laboratories that are currently used for all official controls over food and veterinary sectors for residue analyses of the phytosanitary system. An exhaustive assessment of the capacities of the various laboratories in BiH (public and private) has been carried out within the framework of the IPA project "Support to implementation and enforcement of BiH Food Legislation". The result has been that out of the 49 laboratories evaluated, very few have the necessary experience in analysing plant-derived materials, while the majority perform analyses of food and veterinary products.

In summary, BiH authorities are facing several tasks in order to finalize the adaptation of existing legislation to EU standards and to enforce approved legislation. The actual status is not a great obstacle to BiH cereals farmers, as cereal exports are not significant.

7.2 Regulation related to cereals processing

Even though the Food Safety Agency was established in 2006, the EU has still recommended the establishment of a state level agricultural ministry, which would guarantee that Bosnia and Herzegovina has one competent food authority when EU accession negotiations begin. Until now only limited progress has been made on this issue. Besides the organizational structure, BiH must move forward to adopt EU standards and regulations in the processing sector.

The General Food Law Regulation EC/178/2002 lays down the general principles for food law in the EU and defines responsibilities for authorities and operators within the framework of food and feed safety. Operators are primarily responsible for the safety of the products they bring to the market.⁹²

The general objectives of the EU law are to ensure a high level of protection of human life and health, taking into accounts the protection of animal health and welfare, and plant health and the environment. This integrated "farm to fork" approach is now considered a general principle for EU food safety policy. This food law establishes the rights of consumers to safe food and to accurate and honest information. The EU food law aims to harmonize existing national requirements in order to ensure the free movement of food and feed in the EU.

In the EU, as in Bosnia and Herzegovina, consumers have increasingly high expectations about the safety of their food and a growing interest in how it is produced. According to the European flour milling association some of the procedures mentioned below, are carried out by millers with the objective of improving food safety:

- Purchasing wheat only from crop assured sources; i.e. where farmers have adopted best practice in growing their wheat and rye, keep records of how the crop is grown

⁹² <http://www.flourmillers.eu>

and have these practices independently audited by a third party;

- Ensuring that any wheat delivered has been stored and transported in accordance with industry guides of good practice;
- Checking every delivery of wheat for any food safety hazards and rejecting wheat which is not fit for purpose;
- Applying the HACCP (Hazard Analysis Critical Control Points) systems through the milling process with industry monitoring of residues of pesticides and other possible agricultural contaminants;
- Monitoring microbiological risks;
- Maintaining high standards of hygiene in the mills, based on the Regulation (EC) No 852/2004 on the Hygiene of Foodstuffs.

As wheat and maize are grown in open fields, care has to be taken to ensure that no contaminants can come through to affect the flour. Therefore the supply chain has to adopt a rigorous hazard control (HACCP) system, which focuses on the wheat. Logically, if there is no problem with the wheat then any problems with the flour will also be avoided.

The situation regarding food safety in Bosnia and Herzegovina is characterized by some progress. However, implementing legislation on certain food products, materials coming into contact with food, ionizing radiation and quick-frozen foodstuffs have been adopted. State level legislation was transposed with differing provisions at entity and Brčko District levels. The national food laboratory plan remains to be drawn up and reference laboratories have yet to be designated. Responsibilities in the field of food safety remain fragmented and the capacity to implement official controls, including laboratory capacity, remains weak.

However, legislation and inspection activities are not performed uniformly across the entities, in the Brčko District and at border inspection points. There are inadequate human resources – at all levels – to implement

the legal provisions, and reference laboratories for monitoring residues were not designated.

HACCP for Bosnian mills is not yet mandatory. Overall it is not surprising that just a few agroprocessing companies have EU approval for exports (EU export certificates). The EU summarizes the situation in its last progress report as follows: “Overall, preparations in the fields of agriculture and rural development, food safety, veterinary and phytosanitary policy and fisheries remain at an early stage. No comprehensive strategy exists for aligning with the *acquis* on agriculture and rural development. State level capacity for policy making and coordination is weak. Development of a functioning system to implement the food safety *acquis* remains a priority to increase trade in agricultural products”.⁹³

Due to non-compliance with EU standards and regulations, the existing export markets for cereals and flour are primarily CEFTA countries and Turkey.

7.3 Compliance with EU standards among the cereals farmers

The situation among cereals producers regarding compliance with EU standards is summarized below based on information collected through the 13 case studies. Here the farmers were asked about their position regarding EU standards linked to their production.

Production of cereals on the surveyed case study farms is exclusively conventional, in the sense that traditional production principles are used. None of the 13 farms did apply any type of certification system, such as certification for Global GAP standards and no farms were certified according to the Quality Management System of safe food production, quality management and environmental protection.

The arguments were the same from one farmer to another. There is currently no need for applying any standard, since the production is directed towards the domestic market, and

⁹³ European Commission: Bosnia and Herzegovina 2011 Progress Report. Working Paper. October 2011. p 44

here it is not a market requirement. If there is no demand for certificates of quality and any other characteristics of production and of the products, there is no reason to pay for and to apply any standard in cereals production. As a consequence, the production does not typically follow the formal principles of good agricultural practice, and the farmers do typically not meet the agrienvironmental and quality standards of the products.

However, a few of the farmers did actually look at the situation with a critical eye. Bearing in mind the strategic orientation of BiH of entering the EU, this current non-compliant production practice in their opinion will not last long for many of the farms and businesses, because EU directives and regulations will be applied in domestic legislation. Specifically they expect that those farms and firms wishing to sell their products also on the domestic market will have to meet the requirements of certain national and EU standards in order to be able to sell them. It is therefore a priority for this group of farmers to make the investments, which will make their farms aligned with the relevant standards in production and management.

In order to realize this, training and management of farms and companies in the requirements of international standards, good agricultural and environmental practice and conditions, HACCP etc. was requested. Also financial support from the relevant ministries in co-financing the costs of introducing quality systems in the enterprises and farms was on the wish list.

Based on these observations and the parallel observations about the critical comments from the milling industry with regard to the quality of products from the BiH cereal producers, there is among the farmers a growing understanding about the need to improve the standards of production and management. Furthermore, the farmers are willing to take these steps the day they are forced to take them. That day may come sooner than they expect, if the EU negotiations move along faster than what has been seen in the previous years. If this

happens, the IPARD programme with its support to increased competitiveness and modernization of production standards in line with the *acquis* will be very relevant.

7.4 Summary

In summary, BiH authorities are facing several tasks in order to finalize the adaptation of existing legislation to EU standards and to enforce approved legislation. However, the actual status is not a major obstacle to BiH cereals farmers, as cereal exports are not significant.

Production of cereals on farms in BiH is typically conventional, in the sense that traditional production principles are used. Certification systems, such as certification for Global GAP standards and Quality Management System of safe food production, quality management and environmental protection are not used. The arguments are that there currently is no need for applying any standard, since production is directed towards the domestic market, and here it is not a market requirement. As a consequence, the production does not typically follow the formal principles of good agricultural practice, and the farmers typically do not meet the agrienvironmental and quality standards of the products.

However, there is among farmers a growing understanding about the need to improve the standards of production and management. Furthermore, the farmers are willing to take these steps the day they are forced to take them. The IPARD programme with its support to increased competitiveness and modernization of production standards in line with the *acquis* will be very relevant.

HACCP for BiH mills is not yet mandatory. Overall it is not surprising that just a few agroprocessing companies have EU approval for exports (EU export certificates). Due to noncompliance with EU standards and enforcement of regulations, the existing export markets for cereals and flour are primarily CEFTA countries and Turkey.

8. PAST TRENDS AND FUTURE DEVELOPMENTS IN TERMS OF INVESTMENT

It is an important objective of this sector analysis to provide information about the past and the future investments in the cereals sector. The results of the data collection and analyses regarding investments are presented in this chapter focusing on the investment needs in cereals production.

8.1 *Past trends in farmers investments*

Since independence in 1992 and after the end of the war in 1995, BiH agricultural policy at state and entity/district level has not as such been oriented particularly towards cereal production and processing. As in all countries, farms in Bosnia and Herzegovina have either become more professional, started to expand, or they have remained small and subsistence based and have tried to get by with as little investments as possible. The widespread commercial strategy is to avoid spending money. The subsistence farmers' investments are focused on repair work to keep their small farms running. There have been, and are, no funds available for additional, more future oriented investments.

The other group are the commercial farms with more than 20 hectares of land, partly owned and the rest rented. These farmers are motivated and have some of the funds to invest in improved production facilities. These farmers will probably apply for support under the IPARD measures, whenever they become available, if experiences from other candidate countries also hold in BiH. The trend has been to acquire larger companies, and this trend will continue, with investments in vertical integration; from growing cereals towards fodder production for self use (own feed mills) towards animal fattening.

The primary processing sector shows a similar set-up. Some old mills will continue to run for as long as it is profitable with minimum repair work, and others have invested a lot

and will continue to invest. Finally, there is a group of mills that process up to 10,000 tonnes annually, which are doing fine but might not survive the selection process based on economies of scale, unless they find niche markets.

Whether or not processors apply for IPARD measures depends on their financial standing. If they can afford to pre-finance the investments, and if they are willing to do so, they might apply. Otherwise financial engineering mechanisms might be brought into play in order to ensure the implementation of the needed investments. Financial engineering instruments can include state guarantees, advance payments, interest subsidies, etc.

Besides the 30,000 tractors currently in operation on BiH farms, which can be seen as representing past investments, little is reported officially about actual agricultural equipment in use, and how farmers plan on investing in machinery in the future. Little is known either about how they will invest in premises and farm enlargement.

Based on the 13 case studies presented previously in this report and attached in Annex 3, some conclusions on past and future investments can be drawn, as farmers were asked about their previous and upcoming investments.

The small insight into cereal farmers' equipment presented in Annex 3 clearly indicates that these farmers have been investing, not only in new machinery, but rather in second-hand equipment, often imported from nearby EU Member States. The information is summarized in the following tables.

The eight farms used as case studies in FBiH have invested in the range of BAM 575,000 over the last 5 years. The average investment is BAM 71,500 per farm. In RS, the 5 case study farms represent a total investment of BAM

Table 8.1: Farmers investments previous years, 13 case studies

Investments previous 5 years	FBiH 1	FBiH 2	FBiH 3	FBiH 4	FBiH 5
Storage, garages, etc.	20,000			8,000	21,000
Tractors and equipment, BAM	50,000	111,000	157,500	34,000	126,000
Total, BAM	70,000	111,000	157,500	42,000	147,000

Investments previous 5 years	FBiH 6	FBiH 7	FBiH 8	Total	Average
Storage, garages, etc.					
Tractors and equipment, BAM	30,000	0	15,000		
Total, BAM	30,000	0	15,000	572,500	71,563

Investments previous 5 years	RS 1	RS 2	RS 3 (BD)	RS 4	RS 5	Total	Average
Storage, garages, etc.					100,000		
Tractors, equipment, BAM	750,000	0	23,000	0			
Total, BAM	750,000	0	23,000	0	100,000	873,000	174,600

Source: Own case studies, 2011

873,000 with an average of BAM 175,000, but one farm (RS 1) dominates the picture. Without that farm included in the sample, the average is reduced to BAM 30,000.

8.2 Farmers investments in the future

The same 13 farmers from the case studies intend to invest in the following machines and buildings:

- Silo for 200 tonnes in order to avoid the sale of products immediately after the harvest when, as a rule, sales prices are the lowest
- Harvester
- Soil amelioration
- Silo and grain dryer to avoid having to sell the product (wheat) immediately after the harvest
- Tractor and implements
- No investments, as much money already spent over the last years
- Harvester to replace the outdated ones
- Implements for improved land cultivation
- Harvester
- Tractor (larger one) plus implements
- Increase farm size by buying or renting new land
- Peripheral canal for flood protection
- Reconstruction of existing and construction of new irrigation systems
- Stables for bull fattening
- Feed mixer

⇒ The upcoming investments of BAM 1.8 million should be facilitated by commercial banks.

- Tractors
- Harvesters
- Silos for grain storage
- Drying facility with capacity of 20 tonnes
- Male calves for extended fattening activities
- Soil improvement – calcification

⇒ The upcoming investments should be partly financed out of own resources.

- Tractor and implements, machines
 - Construction of new warehouse
- ⇒ The upcoming investments should be partly financed out of own resources.

- Silos
- Expanding the farm to 1,000 hectares
- Mini slaughterhouse and meat processing plant
- Irrigation system – TIFON system

⇒ The upcoming investments of around BAM 230,000 should be partly financed out of own resources.

- Restoration of machinery
- Renovation of the barn for 150 dairy cows
- Soil improvement
- Reconstruction of existing irrigation systems
- Silos with drying facility for 5,000 tonnes

Table 8.2: Planned investments, 13 case studies

Planned investment	FBiH 1	FBiH 2	FBiH 3	FBiH 4	FBiH 5
Combine, tractor, etc.	100,000	50,000	0	75,000	75,000
Storage, dryer	80,000	100,000	0		
Land, soil improvements	10,000		0		50,000
Animal house					
Total, BAM	190,000	150,000	0	75,000	125,000

Planned investment	FBiH 6	FBiH 7	FBiH 8	Total	Average
Combine, tractor, etc.	50,000	25,000	75,000		
Storage, dryer		10,000	10,000		
Land, soil improvements					
Animal house		50,000	50,000		
Total, BAM	50,000	85,000	135,000	810,000	101,250

Planned investment	RS 1	RS 2	RS 3 (BD)	RS 4	RS 5	Total	Average
Combine, tractor, etc.		50,000	100,000	100,000	50,000		
Storage, dryer		50,000	50,000	50,000	50,000		
Land, Soil improvements							
Animal house	1,800,000	100,000	150,000	150,000	100,000	2,300,000	460,000

Source: Own case studies, 2011

The farms without on-farm silos will invest in silos, so they do not have to sell at low prices immediately after the harvest. Grain stored on farms for seed or livestock feed is an important part of farm income, and therefore wheat has to be kept dry, cool and free from insect attack. Storing maize on farms is much easier than storing wheat and is usually done in the traditional wooden stores, which enable a constant flow of air for drying. One farmer will increase his farm and just one will not invest, because he has already invested a lot in the past.

The increasing importance of on-farm storage facilities was already detected during field visits (and the visit to the INTERAGRO Bijeljina Fair in September 2011). Some modern farm equipment was seen during the field trips but compared to Bulgaria or Romania the agricultural equipment is very old and

definitely not state-of-the-art. Of course Bulgarian and Romanian farmers benefited widely from the Special Accession Programme for Agriculture and Rural Development (SAPARD) support, and before they received this support system farm mechanization was rather poor also in these countries.

The planned investments are summarized in the Table 8.2, and the investment costs estimated based on data collected from university experts and from actors in the field.

One farmer, case RS 1, plans to invest a considerable amount in a new animal house, and if this investment is eliminated from the sample, the average related to cereals is down to BAM 100,000.

Data from the farm survey among 130 farms support this pattern, and they report a priority to invest as follows:

Table 8.3: Priority to purchase new machinery, survey results, 2011

	Tractor	Combine	Maize harvester
Number	16	4	4
Share of survey population (= 46 total, wheat 29, maize 37)	35%	14%	11%

Source: Own farm survey, 2011

The estimated cost prices of the various types of equipment is indicated here as minimum prices:⁹⁴ Tractor price: BAM 50,000; Combine: BAM 125,000; Maize harvester: BAM 50,000.

The total investments will be around BAM 1.5 million, and on average the surveyed farmers will invest BAM 32,600 in the coming years as a priority for machinery to wheat and/or maize production. This confirms the need to upgrade the technological level of the farmers in BiH. Other investments might add further to this figure.

8.3 Primary processor's investments in the past and future

No data is available on what processors have invested in, or on how much they have invested. However, in personal meetings with representatives from the primary processing sector it was learned that millers have invested considerably amounts. For example, KLAS improved its entire technology in 2003, and they are not planning any major investments in the near future, except in dust-free loading facilities for trucks, which are an EU requirement and would improve the working conditions and the environment. The mill is located in Sarajevo.

Some other mills, especially the smaller newly established ones, with up to 10,000 tonnes annual capacity, have not invested in sufficient silos, and now they want to increase their storage facilities to store what is needed annually immediately after the harvest, as prices are low at this time. Besides additional silo capacities, more and better driers are needed. Manufacturers also want to invest in packing lines for wheat flour and packages of 5, 10 and 25 kg.

The more concerned millers also see a permanent need to invest in laboratory equipment.

The reactions to the announced IPARD programme, with co-financing support to farmers and millers, during field visits and

workshops were very positive from those producers who are already doing well, and it was rather reluctant from those who are performing less well. The expected requirement of a 50 percent private co-financing makes the expectations somehow modest among the processors of this last group.

As seen from the case studies and the interviews, most producers do not trust banks and still perceive significant limitations for the use of credits in agriculture. The more collateral a client, farmer or miller, has, the more bankable he is. However, large companies have access to other finances like equity capital from investors or foreign business partners.

A more predictable financial support policy of the authorities at all levels would definitely help farmers and processors, as they could provide more realistic five-year forecasts and planning, as long as they have experience and knowledge in preparing business plans.

8.4 Summary

The analysis of previous and planned investments in the sector is based on case studies and surveys as well as on stakeholder interviews and expert statements.

The eight case farms in FBiH have invested in the range of BAM 575,000 over the last 5 years. The average investment is BAM 71,500 per farm. In RS, the 5 case farms represent a total investment of BAM 873,000 with an average of BAM 175,000, but one farm dominates the picture. Without that farm included in the sample, the average is reduced to BAM 30,000.

The farms without on-farm silos plan in the future to invest in silos, so they do not have to sell at low prices immediately after the harvest. The increasing importance of on-farm storage facilities was confirmed during field visits and the visit to the INTERAGRO Bijeljina Fair in September 2011. The average

⁹⁴Data and prices collected by university expert, 2012

investments among the case farms are estimated to be BAM 100,000 per farm, including investments in storage, combines, tractors and other farm equipment.

The farm survey confirms the investment plans. On average the surveyed farmers will invest BAM 32,600 in the coming years as a priority for machinery to wheat and/or maize production. This confirms the need to upgrade the technological level of the farmers in BiH. Other investments might add to this figure.

The investments in the primary processing sector will also be demanding. Especially the smaller newly established mills with up to 10,000 tonnes annual capacity have not invested in sufficient silos, and now they want to increase their storage facilities to store what is needed annually immediately after the harvest. Besides additional silo capacities, more and better driers are

needed. Manufacturers also want to invest in packing lines for wheat flour and packages of 5, 10 and 25 kg. The more concerned millers also see a permanent need to invest in laboratory equipment. The number of processors expected to be viable in the future is minimum 20, and the total investment needs for these processors is estimated to be between EUR 20 million and EUR 25 million in total over the next five-year period.

The reactions to the announced possible IPARD programme, with co-financing support to farmers and millers, during field visits and workshops were very positive from those producers that are already doing well, and it was rather reluctant from those who are performing less well. The expected requirement of a 50 percent private co-financing makes the expectations somehow modest among the processors of this last group.

9. IDENTIFYING POTENTIAL AND NEEDS IN THE SECTOR

There are several internal strengths and weaknesses in the cereals sector and also external opportunities and threats for producers and processors. With these in mind, this chapter intends to identify potentials and needs in the sector and to identify the kind of policy interventions needed to utilize internal strengths and to take advantage of external opportunities. This SWOT analysis is based on two workshops for relevant stakeholders held in Banja Luka and in Sarajevo at the end of May 2011, many farm visits and case studies, several meetings with processors and input from experts in the sector. The results of the SWOT analysis were verified in two workshops held in October 2011, also in Banja Luka and in Sarajevo.

9.1 SWOT analysis

This SWOT analysis is based on the analysis of the current state of the cereals sector in BiH and takes into account the EU accession and the ultimate goal of preparing the sector for participation in the competition on the EU market. This SWOT analysis provides input to what to do politically at state and or entity/district level to make cereal production profitable and to resist the pressure from competition.

However, the Table 9.1 give a more comprehensive picture of the strengths, weaknesses, opportunities and threats for the producers of cereals, and it must be emphasized that not all topics included in the tables are documented through statistical analyses and data collection. In this way the topics presented also reflect the input from participants in the SWOT workshops, even though some topics were excluded from the presentation below due to obvious lack of relevance and factual support.

The following SWOT analysis (Table 9.2) for the processing industry was set up in a similar way and shows what is to be done at the political level to make cereal processing safer, more productive and more profitable. Additionally, a focus was set on processing of more local raw material instead of imported wheat.

These specific SWOT analyses have been elaborated in close cooperation with the stakeholders in order to identify important challenges and needs of the sector regarding specific supply chains. The SWOT analyses might serve as an input to the programming process for MoFTER, as well as for the Federal Ministry of Agriculture, Water Management and Forestry, RS Ministry of Agriculture, Forestry and Water Management and BD Department of Agriculture, Forestry and Water Management.

Regarding the cereal producers, their main strengths are related to their tradition for producing cereals primarily as feed for their animals. Furthermore, they also often have access to relatively cheap labour from family members. All family farms visited during the case studies rely on family members as labour force in the production of cereals. Due to a relatively low but increasing use of fertilizers and pesticides, the land is generally in environmentally good condition and is to some extent suitable for niche products and for organic production. Close access to processors is another positive condition for the farmers.

On the other hand, the producers are suffering from small-scale and fragmented farming making it difficult to take advantage of economics of scale in production and of new expensive machines. This is reflected in the low degree of mechanization, low productivity and low profitability, which is typical for the small-scale family farms dominating the landscape with their mixed production. According to the case studies and survey results, the extensive production is typically based on low input of production factors (technology, fertilizer, pesticides, and management) and the modernization of the farms with modern practices based on knowledge, training and extension is needed. Access to capital is a precondition, but is difficult to obtain and this is a problem for these family farms. For the large-scale

Table 9.1: SWOT analysis for BiH cereals producers

S – Strengths	W – Weaknesses
Experience and tradition in the crop production, where wheat as part of the crop rotation with maize improves plant health	Small and fragmented holdings (2 hectares and 6 parcels on average)
Cheap family work force	Poor farm mechanization
Unpolluted land suitable for organic production of cereals	Lack of on-farm storage facilities, especially for wheat
Existence of a local processing industry (flour and feed mills)	Inefficient production and high production costs (capital and hired labour) and therefore limited profitability
Existence of scientific research institutions	Lack of education (especially related to the use of agroinputs like seeds and fertilizers, but also with regard to agricultural economics)
	Small number of specialized producers
O – Opportunities	T – Threats
Harmonized subsidies within BiH	Continued degradation of non-cultivated agricultural land
BiH subsidies close to Croatian level; i.e. EUR 275 per hectare (2011) equal to BAM 550 per hectare	Limited guidance by the authorities, especially when announcing the level of financial support and minimum prices only after the start of the sowing season
Improved regulation of land ownership and land market	Complicated and not harmonized application procedures for farmers
Large fallow and non-cultivated areas – up to 500,000 hectares, which partly fits for cereals	Lack of enforcement of authority control (export, import, quality, seedlings)
Existence of larger tracts (consolidated and regrouped) of arable land in the lowlands in the FBiH (Sava canton – municipalities Odzak, Samac Domaljevac and Orasje and in north part of Tuzla canton – Kalesija municipality)	Incomplete price transmission; rising world market prices not always reflected at local price level
Diversification of products, for example potential for durum wheat on specific areas and organic production on others	Large imports of cereals, especially wheat, partly due to low quality of local production (assortment), unfavourable trade agreements and unfavourable climate
Improved extension and machinery services and tailor-made training programmes for producers (actually 10,000 hectares per 1 advisor)	Few agricultural service providers
Increased support for capital investments through national support programmes and the upcoming IPARD programme	High prices of inputs further reducing the profitability, especially of wheat
Considerable share of cattle breeding in agriculture and the need for arable crops for animal feed	Land to some extent contaminated with mines
Favourable climate and land conditions in the northern parts of BiH	
Know-how of local seed production (breeding and multiplication)	
In the long run: Worldwide shortage of cereals and increased transport costs	

Source: Own data collection through SWOT workshop, interviews, field trips, case studies and survey, 2011

Table 9.2: SWOT analysis for BiH processing industry

S – Strengths	W – Weaknesses
Existence of competitive processing facilities (for example KLAS and ZITOPROMET)	Limited capital resources (apart from market leaders)
Vicinity to consumers, which is relevant for products not suited for long transportation (e.g. bakery products)	Outdated technology (apart from the market leaders) often not in line with relevant quality standards
Sufficient storage capacity (silos), especially within the former state-owned enterprises	Overcapacities in the primary processing industry
	Lack of skilled labour, high fluctuation rate of labour
	Inadequate vocational training, particularly in the smallscale baking and confectionery industry
	Focus is almost exclusively on BiH market
	Outdated marketing activities
	Expensive transport of wheat to mills
	Weak cooperation between farmers and processors
O – Opportunities	T – Threats
Domestic market of 3.8 million customers	Inadequate sector policies and strategies at entity and state level
Product development, including specialities for niche markets	Market liberalization through CEFTA and upcoming EU membership
Import substitutions – concerning raw material if price and quality is competitive	Imports of cereals, especially wheat
Access to international markets via diaspora	Processing of illegally imported wheat, due to weak border control
	Strategic wheat reserves might not be handled by private enterprises
	Incomplete privatization of former state-owned enterprises
	Consumers highly attracted by imported products

Source: Own data collection through SWOT workshop, interviews, field trips, case studies and survey, 2011

producers (family farms as well as corporate farms), where hired labour is essential, the increasing price of labour is putting pressure on their costs and on the need for further mechanization and specialization. Lack of capital and expensive access to financing of the expansion and the modernization of production are other barriers for the development of the sector.

The producers face several opportunities, which can be utilized, if the circumstances are in favour of the farmers. First of all, there are 500,000 hectares of non-utilized land available for cereal production (and for other types of

agricultural production), if these hectares can be mobilized for productive purposes. A number of preconditions must be fulfilled, before the producers can and will take steps to expand production in a period where production is going down and competition is going up. A harmonized support regime in BiH is one precondition, eliminating internal unfair competition and making the national playing field even, where support rates are competitive with support rates (area payments) in neighbouring countries. In the long run, EU area payments might be the same for all Member States. In Croatia (an EU Member State from July 2013) subsidies per

hectare are EUR 275 (BAM 550) for wheat and maize, but politicians have already informed farmers that the hectare premium will go up to EUR 380 (BAM 750), although this has not yet been confirmed by the European Union. Another regulatory-based topic is related to the need for appropriate structures for land consolidation, land property/ownership rights and trade. For the farm restructuring process to take off, it is urgently needed that these regulatory and administrative structures are in place and agreed upon among the relevant political actors.

If these basic preconditions are fulfilled, there are many other opportunities which can be utilized.

Another point related to the opportunities for the sector concerns the role of entity and BD governments in strengthening and supporting the sector. The sector is, by almost all stakeholders, considered to be a so-called sensitive sector. This calls for a commodity reserve based on determined prices. The prices must be adequate to allow sufficient revenues from production, and should definitely be made available for the farmers before the deadlines for sowing.

The trends of decline over the last years, both in terms of production and the areas sown, especially with wheat, indicate that the entity and district and canton agricultural support policy is inadequate and is not in line with the interests of agricultural producers in the sector. More support may be provided to maize producers in the future, as the entity and district ministries currently do not support this (or at least very little), although it has objective conditions for improvement. Data for average maize yields is supportive for this, as they are slowly reaching the levels achieved in neighbouring countries such as Serbia and Croatia.

One important point in the discussion of the competitiveness of the cereal sector is the issue of product quality. Farmers have stated during workshops and interviews that local crops do not fall behind the required quality

compared with imported foreign products, and that the local processing industry does not have reasons not to buy them, particularly because local producers offer relatively small quantities. On the other hand, representatives from the processing industry pointed out several times at workshops and during interviews that local crops are not of the required quality and simply cannot be used as a raw material for further processing.

In the future the only difference in the competitive opportunity for Bosnia and Herzegovina might be that imported cereals will face higher transport costs. Despite the fact that highways and railways are improving, the main advantage of local cereal producers is that they can supply their local neighbourhood.

Based on the SWOT tables above, one strategy could focus on import substitution, and here one recommendation could be that cereal production is only suitable for farms in flat areas with more than 25 hectares of maize and 45 hectares of wheat. Farms of this size will be able to produce sufficient amounts of cereals to generate an average income for a family of four persons. These types of viable and competitive farms will be the only farms being eligible under IPARD. Today BiH has few farms of this size and to enlarge farms the land market must be improved. Furthermore, inputs must be made available to farmers at competitive prices. This depends partly on taxes, which are higher in BiH than in neighbouring Serbia. The extension services also have to be improved. In terms of investments, modern farm technology is required as is a better farm gate price for producers, which is only achievable if farmers have dryers and silos so that they do not have to sell directly from the field after harvesting.

For processors the upgrading of technologies and qualifications of the labour force is needed, particularly for the smaller mills and for the secondary processing firms. The mills will need these investments in order to be competitive on price with the cheaper imported flour. Better organization of the cooperation between producers and

processors is needed to achieve the required product quality of all products along the value chain, from seed via harvested cereals to flour and processed products.

The most important constraints for the expansion of cereals production are

- Farm structure (small farms and fragmented parcels)
 - Low level of input use (especially lack of irrigation)
 - Low quality of seeds
 - Lack of education of farmers in general and in relation to the application of good agricultural and environmental practices
- The current measures of support in both entities and in BD are not coordinated creating different competitive conditions from one area to another
 - Level of administrative prices is determined too late and on ad hoc basis
 - Support for funding the costs of standardization of production are lacking
 - Support for funding the costs of construction of adequate storage facilities for storing agricultural products (silos) are lacking
 - The regulative framework supporting the land market is needed for enlargement of the average farm and the increase of arable land

10. IDENTIFICATION OF TRAINING NEEDS IN THE SECTOR

Production of cereals in BiH on small farms is based on traditional and extensive production techniques with minimal expenses and investments. These types of producers are not especially interested in acquiring new knowledge, and only a few of them are in regular contact with the extension service, where it exists. Their main sources of information are the media, their neighbours and the veterinarians who provide their herds with artificial insemination and health care. Small-scale producers tend to have a relatively low level of knowledge regarding modern cereals production.

The knowledge of producers on medium and large family farms including the few large-scale corporate farms is at a significantly higher level, and their production is semi-intensive or even intensive for the largest producers. These farms have invested more in upgrading the level and quality of their production, and they have better trained staff, and are in less need of training and education as are the small-scale producers.

Based on this analysis the cereals sector in Bosnia and Herzegovina is facing a number of opportunities such as increasing total production of wheat and maize, partly by increasing the areas and partly the yield per hectare. Furthermore, improvement of quality to be in line with the processing industry's requirements and with EU requirements will also increase competitiveness within a more liberalized market. Tailor-made training courses could facilitate these opportunities. As each stakeholder in the cereals sector has to face different requirements, training needs might be grouped as follows:

- Training needs for producers; i.e. farmers,
- Training needs for processors; i.e. flour and feed mills, bread-baking industry, confectioners and breweries,
- Training needs for the public administration.

10.1 Training needs for producers

This target group is made up mainly of farmers in the northern part of BiH, who have the potential to produce cereals in a commercially viable way. Based on today's knowledge, the public extension service as well as private experts and input suppliers for seeds, machinery, fertilizers and also traders and buyers, as they need a certain product quality, should offer the following courses to farmers:

- Plant production with a focus on wheat and, to a lesser extent, maize; application of agrochemicals, silage preparation techniques
- Phytosanitary and food safety issues
- Introduction of new production techniques and technologies
- Overall Good Agricultural and Environmental Practices
- Making use of market information systems
- General agricultural economics, especially in the area of farm management⁹⁵

10.2 Training needs for processors' staff

Courses should be offered to employees of mills, bakeries and breweries in the following fields:

- Management (writing business plans, financing, accounting, human resources development)
- Product development
- In-company training on new technology, food safety and EU standards (HACCP and others)

10.3 Training needs for the public administration

A modern public administration requires adequate skills to perform the daily tasks. Capacitybuilding activities will most likely focus on two different skills; namely, managerial and technical. Civil servants should be put in a position to understand how a commercial

⁹⁵ Bajramovic, S., FAO consultant: The status and constraints of the agricultural sector in BiH and the country food security situation. 2011. p 11

company functions. Simply by understanding farmers and processors, the staff of MoFTER/SAFFRD, entity ministries, BD departments, research institutes and other subordinated institutions will be in a position to provide advice and support to the private sector accordingly also in respect to the expected upcoming IPARD applications. The required two groups of skills can be defined as “How to do it” (management skills) and “What to do” (technical skills).

Management skills

- Strategic planning and policy implementation
- Understanding of commercial and business environments
- Strengthening analytical capacities
- Accounting, macro economics, budgeting, microfinance
- Marketing and sales techniques for selected groups of staff, for example in research institutes
- Project management
- Public relations (including dissemination of information about IPARD)
- Language skills, especially English language skills
- Computer training

Technical skills

- Crop production with an emphasis on cereals, including wheat

- Land resources management
- Soil management (including crop rotation)
- Agricultural water management, irrigation
- EU guidelines and standards from farm to fork
- IPARD application procedures (design and evaluation of investment projects, application forms)
- Training in the practices of general food safety and HACCP application plus traceability in the food chain
- Laboratory requirements and techniques in the cereal sector
- General business training to include such topics as overall cost control and analysis, cost price calculations, selling price setting and negotiation techniques, the importance of the market chain, etc.
- Information technology and communication
- Management information system (MIS)

It must be emphasized that it is easy to prepare a very long list of training needs. However, in order to focus the effort, it must primarily be training related to EU acquis topics, which should come first. Here training of farmers/producers in Good Agricultural and Environmental Practice (GAEP) and of staff in the primary and secondary processing industry regarding HACCP and other quality control topics related to food safety, environment and hygiene should be a priority.

11. OUTCOME: CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis of the constraints in the cereals sector the following conclusions and recommendation for the sector are summarized below.

11.1 General findings and recommendation for cereals sector development

11.1.1 Producers of cereals

The most suitable areas of Bosnia and Herzegovina to grow cereals are located along the country's northern border close to the Sava and Drina, where the arable land is flat; farms are larger and have the potential for expanding the area further. For historic reasons the average farm in BiH is very small and fragmented and to enable a maximum return, farmers (with the exception of vegetable and fruit farmers) also keep animals for which fodder is needed. Although the majority of farms are mixed farms, there are a small number of specialized cereal producers. In general the majority of farms are not yet competitive under the framework of EU membership.

Production structure

Cereals are produced in BiH on most types of farms: subsistence and semi-subsistence farms, commercial family farms and corporate farms. The precise number of farms with cereals is not known. The scale of production varies considerably from only 1 hectare per farm to hundreds of hectares per farm, but the most frequent type of farms only have a few (2–3) hectares distributed on several (6–8) plots and parcels. However, the farm survey conducted in the sector analysis shows that the median number of hectares for wheat and maize producers in FBiH is 3.6 hectares and 6 hectares, while the median in RS/BD for the same two crops is 2.5 hectares and 5 hectares. If these medians are used together with the data for sown areas with wheat and maize presented in Table 3.3, the number of farms producing wheat and maize can be estimated.

In FBiH 18,100 hectares is sown with wheat and 48,100 hectares with maize. This amounts to 5,030 farms producing wheat and 8,020 farms producing maize, and a total for FBiH of 13,050 farms. In RS and BD the area sown with wheat is 33,600 hectares in RS and 3,700 hectares in BD. With regard to maize 138,400 hectares is sown in RS and 5,200 hectares in BD. This gives a total of 14,920 wheat farms and 28,770 maize farms. The total for RS and BD is 43,700 farms producing the two cereals. In BiH the total number of wheat farmers is then estimated to be 20,000, while there are 37,000 farms producing maize.

Volume of production

At the BiH level, the number of hectares sown with cereals declined by 8 percent from 318,000 hectares in 2006 to 293,000 hectares in 2010. The number of hectares has been constant in FBiH with a five-year average of 83,400 hectares, while RS has experienced a reduction of 12 percent from 225,000 hectares in 2006 to 199,000 hectares in 2010. In BD the situation is constant with 10,000 hectares.

The share with wheat declined by 32 percent in RS from 49,700 in 2006 to 33,600 hectares in 2010. FBiH has also seen a decrease, but to a lesser extent (10 percent, from 20,100 hectares to 18,100 hectares). At BiH level the total reduction is 25 percent. For maize grain, the area sown in FBiH went down from 48,400 hectares to 48,100 (-0.6 percent), in RS from 142,600 hectares to 138,400 hectares (-3 percent) and in BD from 5,500 to 5,200 hectares (-5 percent).

The yield measured in tonnes per hectare fluctuates for both wheat and for maize. The five-year average for wheat in FBiH is 3.5 tonnes/hectare, due to a poor year in 2010. For maize the five-year average is 4.5 tonnes/hectare in FBiH. In RS, the five-year average for wheat is 3.3 tonnes/hectare and also here with a poor year in 2010. For maize, the five-

year average is 4.6 tonnes/hectare, which also was the yield in 2010, but the average is pulled down due to a very poor yield in 2007 with only 3 tonnes/hectare, just two-thirds of the average. In BD, 2010 was also poor with yields of wheat of 2.8 tonnes/hectare and of maize of 4.5 tonnes/hectare. Both results are below the respective five-year averages of 3.6 tonnes/hectare for wheat and 4.6 tonnes/hectare for maize.

The total area harvested with barley, oats and rye was 31,500 hectares in 2010. This is a reduction from 39,400 hectares in 2009, or 20 percent down. Of the three small cereals, barley is far the most important with a five-year average of 65,500 tonnes of production, while the production of oats is 35,000 tonnes and rye 10,000 tonnes on average. The yields for these three cereals are also low in 2010, and this is reflected in a relatively low production in 2010 compared to the previous year. Rye is down by 38 percent, barley by 35 percent and oats by 43 percent.

Value of production

The value of *wheat* in BiH went down from BAM 71 million in 2009 to BAM 45 million in 2010. In particular RS was hard hit with a reduction from BAM 46 million to BAM 26 million, or a decrease of 42 percent, but also FBiH and BD are suffering from lower production and yields.

With regard to *maize*, the total value in BiH was BAM 259 million in 2010, which was a small increase from 2009, when the value was BAM 235 million. FBiH, RS and BD have all experienced an increase in the value, primarily due to higher prices in 2010, and in spite of lower yields and a reduction in the sown and harvested areas.

In total the value of the two most important cereals is BAM 305 million for BiH in 2010, distributed with BAM 77.6 million in FBiH, BAM 217 million in RS and BAM 10.3 million in BD.

The total value of the five main cereals (wheat, maize, rye, barley and oats) in BiH in

2010 was BAM 332 million with a five-year average of BAM 338 million.

The relative importance of maize grain is the highest and it tops in 2010 with 78 percent, when wheat in the same year had the lowest share with only 14 percent. The total value of the three smaller cereals is only 8 percent in 2010. The value of the five main cereals production is 1.4 percent of total GDP (BAM 24,484 million in 2010). The five main cereals contribute with 14.3 percent of agricultural GDP (BAM 1,817 million in 2009).

Profitability of wheat and maize production

The project farm survey and case studies undertaken in the sector analysis show that wheat production generates a GVA of BAM 578 per hectare including subsidies, while maize grain production generates a GVA of BAM 933 per hectare. It is more economically attractive for farmers to produce maize instead of wheat, and this is also reflected in the weight of maize as a crop in BiH compared to wheat and other cereals. These results are in line with pilot FADN estimates, which also indicate that the profitability of barley, oats and rye is lower than the profitability of maize grain.

CEFTA and EU comparison

With an average yield of wheat of 3,317 kg/hectare, BiH is lagging behind Albania (3,625 kg/hectare), Kosovo (3,735 kg/hectare), Serbia (3,605 kg/hectare) and Croatia (4,681 kg/hectare), and the yield is higher than in Montenegro, the Republic of Moldova and TFYR Macedonia. The wheat yields vary from year to year depending on climatic conditions during the year, and in BiH are ranging from 2,662 kg/hectare (2010) to 3,775 kg/hectare (2009). The five-year average yield for the period from 2006 to 2010 in the EU is 4,880 kg/hectare, equal to 147 percent of the yield in BiH. However, the variation among EU member countries is substantial: From 8,670 kg/hectare in Ireland, Belgium and the Netherlands down to 2,110 kg/hectare in Portugal and 2,590 kg/hectare in Romania, equal to 78 percent of the BiH average.

With regard to the average yields of maize, BiH with 4,655 kg/hectare in the period 2005–2010 is lagging behind Albania (5,276 kg/hectare), Serbia (5,032 kg/hectare) and Croatia (6,802 kg/hectare), but yields are higher than in Kosovo, Montenegro and the Republic of Moldova (2,747kg/hectare). As with all other CEFTA countries, the average yields of maize vary from year to year and in BiH ranged from 3,218 kg/hectare (2007) to 5,134kg/hectare(2005). The five-year average yield for maize for the period from 2006 to 2010 in the EU was 7,720 kg/hectare, equal to 166 percent of the yield in BiH. However, the variation among EU member countries is also substantial for maize production: from 11,860 kg/hectare in Belgium and the Netherlands down to 3,250 kg/hectare in Romania and 3,790 kg/hectare in Bulgaria, equal to 70 percent of the BiH average.

There are several reasons for the lower yield per hectare in BiH compared to most CEFTA and EU countries. Among the most important is the small-scale and fragmented farm giving only limited scope for modernization of the equipment. This also leads to low productivity. Furthermore, stakeholders in the sector in BiH point to the low quality of seeds as another important factor. Inputs are mostly used in small a quantity, which also puts limitations on yields, even though the use per hectare of fertilizers and pesticides has been increasing recently. Finally, the level of education and training with regard to modern high-yield production methods among farmers is low. Here it is also relevant to refer to the status of the extension services in BiH. Experiences from many other countries, both in the region and in the EU show that good extension services are of paramount importance in the modernization of agriculture, particularly in countries where the share of small-scale farms is relatively large, as in BiH. Extension services in BiH, as in many transition countries, are the weakest link in the chain, particularly in FBiH, and most farmers lack education, training, information and advice. Therefore, farmers tend to have a limited understanding of agricultural economics, of

how to optimize their factor input-strategy, the use of certified quality seeds, etc. Also, fertilizers and agro-chemicals are not used according to professional standards and good agricultural and environmental practice.

11.1.2 Processing industry

Processing of cereals includes primary processing of cereals into flour of different types and secondary processing into fresh bread and various types of baked products, cakes, etc.

Volume of primary processing

The production of flour in BiH is taking place in 10 major mills in FBiH excluding a large number of small-scale mills and in 36 mills of various capacities in RS/BD.

In FBiH, wheat is far the most important product covering 99.6 percent of the production in 2010 (138,144 tonnes) and 99.7 percent in 2011 (124,876 tonnes). However, the overall production diminished in 2011. The annual capacity in the sector is 533,000 tonnes, and the utilization of capacity in the FBiH primary processing sector in 2011 was 23.5 percent.

As was the situation in FBiH, wheat flour in RS is the dominating product with 90,816 tonnes in 2009, or 94 percent of total production of 96,438 tonnes. The capacity utilization is estimated to be 30 percent, and the full capacity of the RS mills is 320,000 tonnes.

The total capacity of the FBiH and RS mills is estimated to be 854,000 tonnes, and the utilization rate is 26 percent.

The production of 222,000 tonnes of various products, with wheat flour as the dominating product, requires 296,000 tonnes of cereals, if the utilization rate (1 kg cereals gives 0.75 kg flour) is 75 percent. It could benefit farmers with 66,000 to 70,000 hectares, depending on the average yield, to produce this amount of wheat. However, many mills rely on imported cereals, particularly from Hungary, due to what the processing industry considers as wheat of better quality and

lower price (BAM 230 per tonne in 2010). This represents a substantial challenge for the BiH farmers to compete with the imported wheat, both in terms of price and in terms of quality.

Value of the production of milled cereal products

In order to estimate the value of the production of milled cereal products, the average price for wheat flour on the domestic market in 2010 is used (BAM 530 per tonne), since no production statistics, broken down by types of products, have been available from ministries or statistical departments.

- In total 230,000 tonnes of milled cereals are produced with 125,500 tonnes in FBiH and 96,500 tonnes in RS. An additional 8,000 tonnes are produced in BD. The total production of milled production in BiH is then valued at BAM 122 million distributed between entities and BD as follows:
- In FBiH it is BAM 66.5 million
- In RS it is BAM 55.1 million
- In BD it is BAM 4.2 million

Secondary processing

The secondary processing industry in BiH contains 15 major bread-baking companies and 12 major confectionery companies. Beside that there are several smaller companies.

The most important product category under secondary processing in FBiH is “fresh wheat bread” with almost 18,000 tonnes produced in 2011, down by 16 percent from 2010. The second largest product category is “sweet cookies (sweet biscuits)” with 4,700 tonnes in 2011, which is a doubling from 2010, and the category including “all types of pastries” with 3,276 tonnes. Besides sweet cookies, the rising stars in FBiH secondary production are the categories “confectionery and daily cakes” up by 212 percent, “fresh rye bread” up by 138 percent, and “toast breads” up by 136 percent, but these categories are still relatively small.

Unfortunately there is no information about the value of the production available, but

it is clear that the value added of the main product category – fresh wheat bread – is lower than what can be expected from other more processed categories, such as sweet cookies and other products. The increase in these categories might therefore also represent a relatively strong increase in the value of the production, since the weight of fresh wheat bread is reducing. This tendency is positive from an economic point of view.

In RS, it is also wheat bread which is dominating production in the secondary processing industry with a production of 10,526 tonnes in 2009. This figure represents a decline in production from 2006, when the production was 13,461 tonnes. This is a reduction of 23 percent, strongest from 2008 to 2009. The other product categories vary in tendencies, and no one of them represents strong increases, as was the case for some product categories in FBiH. As in FBiH, there is in RS an increase in the share of products with an expected higher value added on the expense of wheat bread. Also here in RS it is positive.

Product quality

Many millers and other stakeholders interviewed state that the quality of locally produced cereals does not meet market requirements with regard to moisture, hectolitre weight and maximum amount of foreign materials (admixture). To deliver the quality demanded by the bread-baking industry, mills in BiH have to blend wheat. All millers met during site visits mentioned that the quality of local wheat is too low, and that they have to import better quality wheat for blending purposes. The blending ratio between local to imported wheat is 10–20 percent local and 80–90 percent imported wheat. It was also mentioned by a few processors that they often are confronted with domestic (not imported) cereals with some content of agrochemicals.

However, the picture is blurred, and in 2009 and 2010 the quality of wheat was good and corresponded to the mentioned

requirements of processors, but there were also some millers who claimed that the moisture content was too high.

11.1.3 Current state and entity/district policies

At state level, as well as at entity and district level, policies are being prepared along the lines of EU regulation. Institutions relevant for the cereals sector, such as the Food Safety Agency and the Plant Health Protection Agency are preparing for EU candidate status and are aligning their organization, their activities and their regulations to EU requirements.

However, it is also clear that the autonomy of the entities and BD creates many variations in the practical implementation of the policies within the framework of agricultural and rural development strategies and action plans.

With regard to cereals, there is no harmonized policy across the entities and BD for providing subsidies, and they are currently, among others, a mixture of area payments of different sizes and for different crops, product support and in-kind contribution of blue diesel and fertilizers. The subsidies are not aligned with the EU agricultural policy measures, which favour area payments.

The budget for agriculture and rural development in the entities remains low and tends to orient towards CAP pillar 1 support and not CAP pillar 2 supports. The lack of an efficient administration at all levels is impeding the competitiveness of farmers and the agri-processing industry throughout the country. Also due to the lack of harmonization and coordination between entities and districts, the environment for the farmers in the country lacks transparency and creates different conditions for production from one area to another. There is an outspoken need for harmonization and alignment of subsidies and enforcement of legislation across the different entity and district borders. This is the case not only for cereals production but for agriculture in general.

11.1.4 Trade policy

BiH is following its path towards EU candidate status and by 2013 BiH will have a fully liberal trade partnership with the EU, under the circumstances that BiH fulfils the requirements, and that the companies wishing to export to the EU fulfil the requirements in the Acquis.

Over the years covered by this analysis, Bosnia and Herzegovina has not been self sufficient in agricultural production with the exception of plums. Therefore large quantities of agro-food produce have been imported. In 2006, the gap between agricultural and food imports and exports was about BAM 1,700 million, equivalent to EUR 870 million. In 2010, the value of agricultural exports reached EUR 250 million, whereas the value of agricultural imports amounted to EUR 1,485 million equal to a deficit of EUR 1,235 million. This is an increase in the deficit of 42 percent, or more than 10 percent per year.

Trade balance in cereals

The total trade deficit in cereals in 2010 was BAM 166.2 million, due to imports of BAM 194.3 million and exports of BAM 28.1 million. It is a minor increase from 2009, but the level is still lower than in the years 2007 and 2008. Exports are increasing and show their highest level in 2010 with BAM 28.1 million.

For wheat and maize there was a very small export take-off in 2009 and 2010, but the mainstream tendency is import of both cereals. The trade deficit was BAM 100 million for wheat in 2010 and BAM 53.5 million for maize.

The total import of cereals from CEFTA countries in 2010 was BAM 102.3 million, while the exports to the CEFTA countries were as low as BAM 3.8 million. The trade deficit was then BAM 98.4 million in 2010. There has been a slow increase over the last two years, but still not at the level of 2007, where the deficit was BAM 147 million.

Import prices

The import price per tonne of wheat in 2011 was on average BAM 330 per tonne, but the import price from Hungary was only BAM 231 per tonne, while the small exports of wheat were sold for BAM 568 per tonne in 2011. Hungary is Bosnia and Herzegovina's most important trading partner in terms of cereals, closely followed by Serbia and Croatia. During the period 2005–2009 wheat imports from Hungary were always more than 50 percent of total wheat imports (with the exception of 2007). In 2008, out of the total of 326,800 tonnes of imported wheat, 274,200 tonnes or (84 percent) was imported from Hungary.

Production balances

The domestic production of wheat has covered a stable share of the domestic market with 40 percent for the years 2006 to 2008, and 43 percent in 2009. In 2010, the share dropped dramatically to only 22 percent. This was caused by a decrease in domestic production due to weather and flooding problems. Domestic consumption did also fall, but imports increased to capture the share of the market left open due to low production in BiH.

For maize the picture is different. The share of domestic consumption covered by BiH production has been rather stable over the five years, with an average of 82.5 percent. From 2009 to 2010, a slightly reduced share from 85.4 percent to 81.7 percent was observed, but it is not a dramatic reduction, and the market share signals a relatively high level of competitiveness at the local market for maize grain.

Import substitution

Current production of wheat and maize could theoretically be based on 255 wheat producers and 909 maize producers with optimal yields generating a four family member income at the average BiH level per capita (EUR 3,300 per capita).

If the current import of wheat and maize can be substituted, BiH will need 609 new or extra

wheat farmers for every 25 percent import substitution, and 354 new maize grain farmers for every 25 percent import substitution.

Commodity reserve

In order to also cover a commodity reserve as recommended by FAO and as expressed in the action plan for a commodity reserve, additional numbers of hectares are required. The need will be in the range of 100,000 tonnes of wheat and considerably less for maize according to the action plan. This amount of wheat produced with 4.5 tonnes/hectare requires 22,222 hectares. If it furthermore is assumed that the required number of hectares for a viable farm is estimated to be 44 hectares, additional production from 505 farmers is requested to contribute to the reserve stocks.

Trade with processed products

Regarding exports of milled products the general picture is an increase in the exports from 2007 to 2011 in the range of BAM 3.6 million or 123 percent. In the same period imports have however also increased, and the deficit has, as a consequence, increased 39 percent. The increase in imports is not as substantial as the increase in exports, but the point of departure for exports is relatively modest compared to the import level.

The price per tonne wheat flour exported during the whole period covered is higher than the import price per tonne. In 2011, the export price per tonne was 49 percent higher than the import price, and in the period the average difference is 86 percent in favour of the export price. In 2011, the export price was BAM 973 per tonne, the import price was BAM 654 per tonne and the difference therefore was BAM 318 per tonne.

The picture for processed products such as sweet biscuits, waffles, etc. is more blurred than that for milled cereal products. Exports here are also fluctuating with an increasing tendency in 2011, where the level of exports is BAM 27.6 million. This is an increase of 14 percent, which is far below the increase in exports of the milled products. The deficit is

increasing also for these products, with BAM 10 million or 23 percent in the period from 2007 to 2011. For these products the increase in imports is larger than the increase in exports, leading to an increase in the gap over time.

11.1.5 Compliance with EU standards

BiH authorities at all levels are facing several tasks in order to finalize the adaptation of existing legislation to EU standards and particularly to enforce approved legislation. However, the actual status is not a great obstacle to BiH cereals farmers, as cereal exports are not significant.

Production of cereals on farms in BiH is typically conventional, in the sense that traditional production principles are used. Certification systems, such as certification for Global GAP standards and Quality Management System of safe food production, quality management and environmental protection are not used. The arguments of farmers are that there currently is no need for applying any standard, since the production is directed towards the domestic market, and here it is not a market requirement. As a consequence, the production does not typically follow the formal principles of good agricultural practice, and the farmers do typically not meet the agri-environmental and quality standards of the products.

However, among farmers there is a growing understanding of the need to improve standards of production and management. Furthermore, the farmers are willing to take these steps the day they are forced to take them. That day may come sooner than they expect if the EU negotiations move along faster than what has been seen in previous years. If this happens, the IPARD programme with its support to increased competitiveness and modernization of the production standards in line with the acquis will be very relevant.

HACCP for BiH mills is not yet mandatory. Overall it is not surprising that just a few agroprocessing companies have EU approval for exports (EU export certificates). Due to noncompliance with EU standards and regulations, the existing export markets for cereals and flour are primarily CEFTA countries and Turkey.

11.1.6 Investments

The analysis of previous and planned investments in the sector is based on case studies and surveys as well as on stakeholder interviews and expert statements.

The eight case study farms in FBiH have invested in the range of BAM 575,000 over the last 5 years. The average investment was BAM 71,500 per farm. In RS, the five case study farms represent a total investment of BAM 873,000 with an average of BAM 175,000, but one farm dominates the picture. Without that farm included in the sample, the average was reduced to BAM 30,000.

According to the data from the case studies, the farms without on-farm silos expect in the future to invest in silos. Investments in silos make storage possible, and the farmers will not have to sell at low prices immediately after the harvest. The increasing importance of on-farm storage facilities was confirmed during field visits and the visit to the INTERAGRO Bijeljina Fair in September 2011. The average investments among the case study farms were estimated to be BAM 100,000 per farm including investments in storage, combines, tractors and other farm equipment.

The farm survey confirms the investment plans. On average the surveyed farmers will invest BAM 32,600 in the coming years as a priority for machinery for wheat and/or maize production. This confirms the need to upgrade the technological level of farmers in BiH. Other investments might add to this figure.

The investments in the primary processing sector will also be demanding, but not on the same scale as is the case for the primary producers. Especially the smaller newly established mills with up to 10,000 tonnes annual capacity have not invested in sufficient silos, and now they expect to increase their storage facilities. Besides additional silo capacities, more and better driers are needed. Manufacturers also plan to invest in packing lines for wheat flour and packages of 5, 10 and 25 kg. The more concerned

millers also see a permanent need to invest in laboratory equipment. The number of processors expected to be viable in the future is minimum 20, and the total investment needs for these processors is estimated to be between EUR 20 million and EUR 25 million in total over the next five-year period.

The reactions to the announced possible IPARD programme, with co-financing support to farmers and millers, during field visits and workshops were very positive from those producers that are already doing well, and were rather reluctant from those who are performing less well. The expected requirement of a 50 percent private co-financing makes the expectations somehow modest among the processors of this last group.

11.1.7 Training needs

Based on this analysis, the cereals sector in Bosnia and Herzegovina is facing a number of opportunities like increasing total production of wheat and maize, partly by increasing the areas and partly the yield per hectare. Furthermore, improvement of the quality to be in line with the processing industry's requirements and with EU requirements will also increase competitiveness within a more liberalized market. Tailor-made training courses could facilitate these opportunities.

In order to focus the training effort, it must primarily be training related to EU acquis topics, which should come first. Here training of farmers/producers in Good Agricultural and Environmental Practice (GAEP), and of staff in the primary and secondary processing industry regarding HACCP and other quality control topics related to food safety, environment and hygiene should have priority.

11.2 Recommendations for interventions

The following recommendations could contribute to make wheat and maize production more profitable in Bosnia and Herzegovina. An overall strategy for the development of the cereal sector in

BiH can focus on import substitution as the primary market incentives. Import substitution has a potential to be achieved, if the competitiveness of the producers is enhanced, and if the regulatory environment is harmonized and able to facilitate the strengthening of the competitiveness of the farmers.

It is important to facilitate structural changes of the sector. These changes should address the main problems causing the relatively low competitiveness of the sector as it is today. These causes are low yields, low productivity and low quality.

Land consolidation is needed and must be facilitated by the needed regulatory framework in order to make the land market work. Only in this way will it be possible for farmers to expand their land and to increase the economies of scale of production.

Larger areas for cereals production and development of specialized cereal farms makes it possible to invest in better and more productive technologies in the production of cereals. Support programmes focused on economic viable farms, where investment support is targeting productivity as well as product quality supplemented with support to competence build-up of the farmers and the processors is one side of the overall strategy. A harmonized regulatory environment including homogeneous support rates per hectare and per crop, enforced regulation and control, appropriate extension services and linkages to the research and development sector is the other.

Furthermore, the overall efficiency of production and competitiveness has to be increased through the use of certified seeds. Also, overall compliance with national and EU food safety and environmental protection standards has to be improved considerably.

Technical assistance and training is needed – especially in the production sector – to increase awareness and capacity regarding modern production techniques and technologies and attainment of national and EU standards.

Taking into consideration the overall situation in the sector and the analysis of the current situation presented in this report, future interventions are recommended to be oriented towards the following topics:

State/entity/BD level

- Harmonizing all subsidies for producers and processors between RS, FBiH and the BD, including cantons and municipalities. Harmonization will contribute to create a homogeneous market without distortions of the competitive environment;
- Harmonizing farm registers and agricultural information systems will improve the statistical data and make it possible for the authorities to take decisions against an updated background, and it will contribute to the professionalism of the sector, linking support and subsidies to registration of the farmers in the farm registers;
- Introducing a minimum price in line with the EU intervention price, which was EUR 101,31 per tonne in 2011 in order to contribute to the balancing of competition between BiH producers and their international colleagues;
- Supporting farmers with per hectare payments. Hectare payments should be announced before the crop is sown to give the producers some planning security. Hectare payments would also reach producers who do not sell to registered traders or processors, as is the case now. Around 70 percent of cereals that are produced are not subsidized as they are not produced on registered land;
- Improving farm structures by enabling a land market and by speeding up land consolidation. A functional land market will help commercial farmers to expand their farms faster and consider support to a land renting system, including payments given to rented land;
- Improving the extension services and providing more resources, in particularly in FBiH, where the need for a stronger organization of the extension service is

needed. Cooperation with the national research and development institutes can be enhanced through a better mutual cooperation between the two links in the chain. Competence build up of the extension services could focus on good agricultural and environmental practice, optimal resource utilization and energy efficiency in production. They can also facilitate specialized services like business plans and product development, architectural building plans, software and training;

- Encouraging public-private partnerships in seed development and other relevant areas to link the existing know-how of the governmental research institutes better with the market;
- Registering more cereal varieties in the national List of Varieties to have a broader choice, also reflecting the demand and needs from the processing side;
- Enforcing the implementation of laws, such as controls at all levels;
- Reporting regularly about market prices (Market Information System accessible to farmers) as the more transparent the market is, the better it will be for the farmers.

Producers

- Increasing overall competitiveness by providing financial support to the introduction of new seeds, investments in production and harvesting techniques;
- Improving on farm cereal handling equipment and machinery (combines, seed machinery, sprayers, ploughs and trailers) but also equipment for land clearance (of temporarily abandoned arable land) through financial support to investments in these technologies and through support via the extension service to the utilization of the technologies;
- Providing support to the investments in the construction and refurbishment of storage buildings (silos including driers), machine sheds and weight-bridges, where possible promoting collective ownership and management, including elements of a grains warehouses receipts system.

Processors

- Investment support to investments in various technologies needed and planned by the processors, including additional silo capacities, more and better driers, packing lines for wheat flour and packages of 5, 10 and 25 kg.
- Investments in improved laboratory services within the companies.

11.3 Main findings for IPARD

The following recommendations are given for consideration for interventions under IPARD:

It should also be mentioned here that training could also be supported by IPARD, although detailed research and training needs assessments might be needed upfront. The establishment of producer groups and producer organizations could also be included, since this type of support is also eligible under IPARD.

The total investment need under IPARD for the development of the cereals sector is estimated to be a maximum of EUR 500 million, financed with 50 percent from the private sector and 50 percent from BiH and the EU. The unit costs of investments are calculated based on information from case

Table 11.1: Priority Axis 1 – Improving market efficiency and implementing community standards, IPARD measures 101 and 103

Potential Investments under IPARD Measure 101					
Investments in Agricultural Holdings – Arable Crops Sector	Beneficiaries (numbers)	Investment per Beneficiary, EUR	Total investment funding in EUR	Public funding (EU = 37.5% + BiH state = 12.5%), EUR, 50%	Private funding, EUR, 50%
Cereal handling equipment and machinery (tractors, seeding machines, sprayers, ploughs, trailers)	5,000	40,000	200,000,000	100,000,000	100,000,000
Combines	2,000	70,000	140,000,000	70,000,000	70,000,000
Construction and/or renovation of storage buildings (silos incl. driers), machine sheds, etc.	3,000	45,000	135,000,000	67,500,000	67,500,000
Potential Investments under IPARD Measure 103					
Investments in Processing and Marketing of Agricultural Products	Beneficiaries (numbers)	Investment per Beneficiary, EUR	Total investment funding in EUR	Public funding (EU = 37.5% + BiH state = 12.5%), EUR, 50%	Private funding, EUR, 50%
Renovation of mills (buildings and equipment)	20	500,000	10,000,000	5,000,000	5,000,000
Construction and/or renovation of silos	20	500,000	10,000,000	5,000,000	5,000,000
Equipment for improvement of hygiene and product quality, in compliance with Community standards (HACCP, ISO, IFS)	20	25,000	500,000	250,000	250,000
Investments in laboratory equipment	40	50,000	2,000,000	1,000,000	1,000,000
TOTAL	10,100	n.a.	497,500,000	248,750,000	248,750,000

studies, survey data, expert data and market prices collected.

Assuming that only viable farms, proving to be feasible in the short term, will be eligible, the number of potential beneficiaries for measure 101 will be around 5,000, representing 10,000 projects in the financial table, while there will be only 100 potential beneficiaries under measure 103 for processing.

- Potential target group, farmers: 5,000, projects 10,000
- Average investment project: EUR 50,000
- Potential target group, processors: 100
- Average investment project: EUR 500,000 for technologies and EUR 50,000 for laboratory equipment

- Investment budget: EUR 500 million (50 percent by the private sector, 50 percent by BiH (12.5 percent) and the EU (37.5 percent))

Proposed size of projects for producers

The maximum and minimum limits of total value of eligible investments per project are:

Minimum	EUR 10,000
Maximum	EUR 100,000

Proposed size of projects for processors

The maximum and minimum limits of total value of eligible investments per project are:

Minimum	EUR 25,000
Maximum	EUR 500,000

LITERATURE AND WEBSITES CONSULTED

BAJRAMOVIC, S. Faculty of Agriculture and Food Sciences, University of Sarajevo; FAO workshop regarding arable crops sectors analysis. May 2011.

BAJRAMOVIC, S. FAO consultant. The status and constraints of the agricultural sector in BiH and the country food security situation. 2011.

BAJRAMOVIC, S. FAO consultant. The legislation concerning food security policy in Bosnia and Herzegovina. 2011.

BAJRAMOVIC, S., DZOMBA, E., & BECIROVIC, E. Feasibility study – Factory of premixes and safe animal feed in Bosnia and Herzegovina. July 2010.

BARBER, J. & TITUS, M.J. Structure of the United States Wheat Supply Chain. UGPTI Staff Paper No. 131. 1995.

BIANCALANI, R. FAO Chief Technical Adviser in Bosnia and Herzegovina. Bosnia and Herzegovina. 2002.

CEEC AGRI POLICY. Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. D12–2 Second 6-monthly report. Monitoring of agricultural policy, market and trade developments in Bosnia and Herzegovina. 2006.

CEEC AGRI POLICY. Agro economic policy analysis of the new member states, the candidate states and the countries of the western Balkans. Task 4–1; Specification for the second rural vitality report. Second report for BiH. 2006.

CERNE, A. FAO Technical Cooperation among Countries in Transition (TCCT) Consultant. Policy options and recommendations for food commodity reserves in BiH. 2011.

DG–AGRI. Study on the State of Agriculture in Five Applicant Countries: Country Report, Bosnia and Herzegovina. 2006.

EBRD, FAO. Agribusiness Handbook. Wheat Flour. 2009.

European Commission SESMARD (Support for Establishment of the State Ministry of Agriculture and Rural Development) Introductory Presentation: Harmonizing BiH subsidies/Improving sector support. 28 May 2008.

European Commission. Bosnia and Herzegovina 2011 Progress Report. Working Paper October 2011.

European Commission, Agriculture and Rural Development. Agricultural Policy Perspectives Briefs (No 1): The CAP in perspective: from market intervention to policy innovation. 2011.

European Union. Functional Review of the Agricultural Sector in BiH. October 2004.

European Union SESMARD (Support for Establishment of the State Ministry of Agriculture and Rural Development) Bosnia and Herzegovina – Agriculture Report. 2007.

European Union SESMARD (Support for Establishment of the State Ministry of Agriculture and

Rural Development) Working document. BiH Strategic Plan for Harmonization of Agriculture, Food and Rural Development (2008–2010). 2008. p 61

European Union SESMARD Introductory Presentation: Harmonizing BiH subsidies/Improving sector support. 28 May 2008

FBiH Ministry of Agriculture, Water Management and Forestry, Web site <http://www.fmpvs.gov.ba>

RS Ministry of Agriculture, Forestry and Water Management, Web site <http://www.vladars.net>

Brčko District, Department for Agriculture, Web site <http://www.brcko.org>

GFA Consulting Group GmbH. Food Industry Study in Southeast Europe. Final, December 2010.

IAMO/Leibniz Institute of Agricultural Development in Central and Eastern Europe. Studies on the Agricultural and Food Sector in Central and Eastern Europe. Vol 57. 2010.

KURBANOVA, J., LONC, T. & SZENTPALI, G. Overview on vulnerability to food security in Bosnia and Herzegovina. FAO REU. May 2011. p 6

Republika Srpska. Rural Development Strategy 2009–2015

Statistical Yearbooks 2009 from FBiH, RS and BD

The World Bank. Agricultural Sector Policy Note for Bosnia and Herzegovina. 2010. p 4

United States Department of Agriculture (USDA). Foreign Agricultural Service, STANOJCICEMINAGIC, S. EU Strengthens BiH Phytosanitary Service. 2011.

<http://www.brcko.org>: Department of Agriculture

<http://www.fao.org/countries/55528/en/bih/>

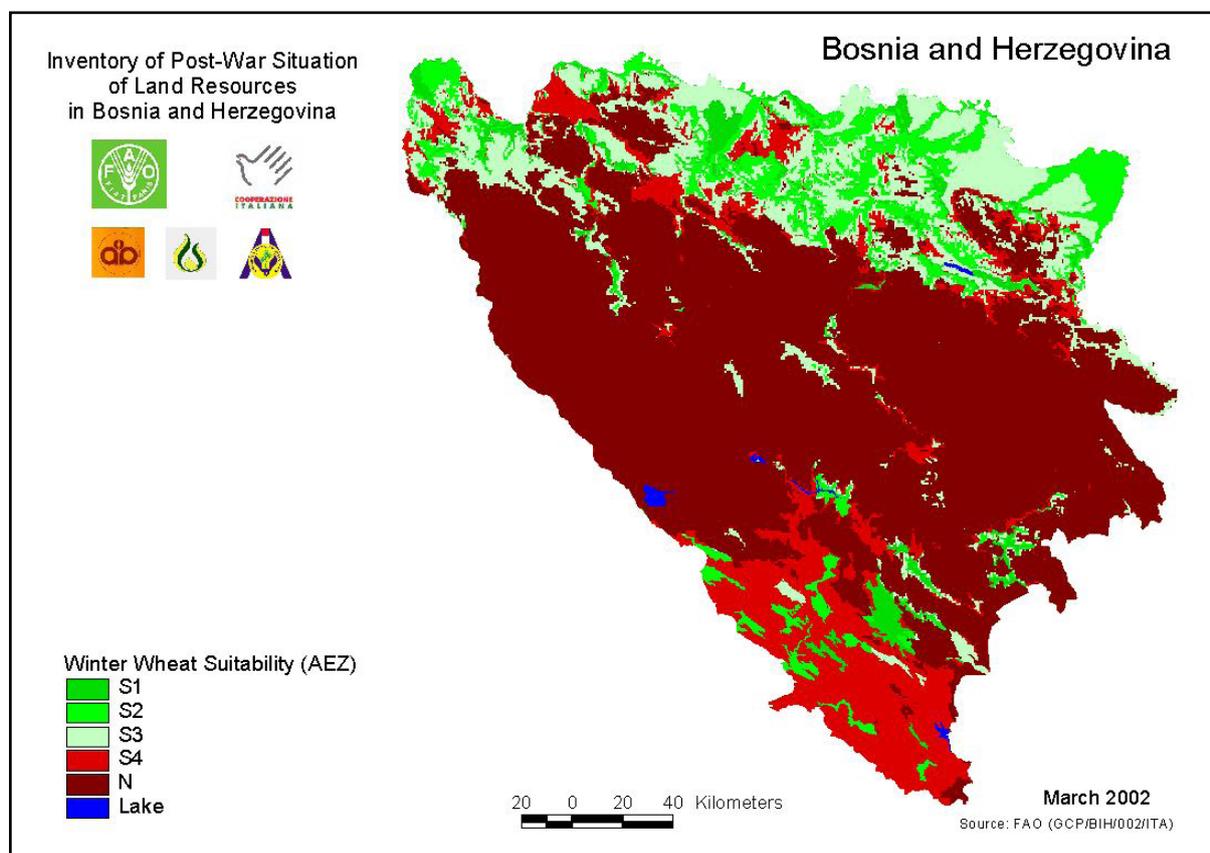
<http://www.fbihvlada.gov.ba>

<http://www.taxrates.cc/html/bosnia-herzegovina-tax-rates.html>

<http://www.vladars.net>: Ministry of Agriculture, Forestry and Water Management, RS

WINTER WHEAT MAP

Map of BiH with a focus on winter wheat suitable areas



On this map it can be clearly seen that the green (light) areas are almost exclusively located in the northern and North-eastern part of Bosnia and Herzegovina.

CASE STUDIES

Case Study reference number: FBIH – AC1

Type of entity: Farmer

Human resources: 7 family members

Economic activities: Production of arable crops (wheat, maize, barley and soya) and fattening pigs to output weight of up to 120 kg

Other activities: none

Turnover: 2009: BAM 62,875 2010: BAM 69,974

History

The farm owner has been engaged in the production of crops and fattening pigs since his youth. This is a traditional family farm where the owner's grandfather and father were also engaged only in agricultural production.

Current situation

In the area of 30 hectares of arable land (4 hectares of own land and 26 hectares of rented land, 10 hectares of which is owned by the Municipality Odzak, and 16 hectares by individuals), which is not irrigated, the farmer grows arable crops and soya in the following ratio (year 2010): wheat 4 hectares, barley 1 hectare, maize 11 hectares, and soya 14 hectares. The land rented from individuals has a price of 200 BAM/hectare annually. Such production structure is maintained each year, with the rotation of parcels in order to follow crop rotation that the farmer consistently applies.

Production of main cereals by years in hectares:

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	4	4	4	3	4	4	3.5
Maize	11	11	11	12	10	11	10
Other (barley)	1	1	1	0.5	1	0.5	1

The farmer has needed machinery (tractors and implements), which is enough to cultivate all the land, and he pays only for the services of renting a combine (200 BAM/hectare) during harvest of crops because he does not have his own combine. The farmer has maize baskets and floor storage capacity of about 50 tonnes. This is why the farmer most often stores between 40 and 50 tonnes of maize and 3–4 tonnes of soya each year, while the remaining yield is sold immediately after the harvest, using own transport to a known buyer "Oranica" d.o.o. [Ltd.], Samac-Domaljevac, with successful cooperation thus far.

Besides the sale of corn, part of the production is used for own needs, that is, for fattening pigs. Between 100 and 150 pigs with output weight of up to 120 kg are fattened each year in two cycles.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and consistently applying all needed agricultural machinery. The structure of sowing has been almost the same in the last about 10 years. The farmer pays particular attention to the seed material as a key factor for the total production level. In the wheat production he uses the varieties *srpanjka* and *žitarka*, while in the maize production the farmer believes in the Pioneer hybrids, group 400. Harvesting is done when the cereals become technologically mature, so there is a considerable risk of excessive humidity of the grains in case of precipitation during the harvest.

As for fattening pigs, the farmer buys piglets whose input weight is 25–30 kg and fattens them to the output weight of 120 kg.

Unfortunately, like most of the BiH farmers, this interviewed farmer does not keep his 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 not registered the business yet because until 2010 it had not been a requirement to receive the entity and cantonal financial incentives.

Investments

The farmer has a storage building of 10 x 8 m in size and capacity of 50 tonnes, constructed for BAM 20,000, which was the farmer's own investment. Besides, among the fixed assets bought in the last five years, a tractor with all needed implements should be singled out. A total value of purchase was BAM 50,000, which was also the farmer's own investment.

In the next period the farmer plans to have corn storage buildings (silos) constructed, then to purchase own combine harvester, and to enrich the land to improve chemical and physical properties of soil and thus create conditions for an increase in production. The main investment priority is the construction of a silo whose capacity would be 200 tonnes in order to avoid the sale of products (corn) immediately after the harvest when, as a rule, the selling prices are the lowest.

Market

For own needs and with such storage capacities, the farmer usually keeps 40 tonnes of maize and 10 tonnes of corn for animal feed, and some small quantities are stocked. Most of the corn production is sold immediately after the harvest to an already known buyer, "Oranica" doo [Ltd.]. The sale is not based on a signed contract but it takes place only on the basis of positive experiences. The payment is in cash, at most up to 50 days after delivery. Unfortunately, a major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any standard in the corn production. The corn is sold in bulk, with the farmer's own transport to the buyer. The quality and the humidity of the sold corn are prescribed.

Economic performance

The producer was not able to present variable costs by individual arable crops. It should be pointed out that the average yields for all crops are exceptional, with the following ranges: wheat 4–5 t/hectare, maize (kernel) 8.59.5 t/hectare, barley 5–6 t/hectare, and soya about 3 t/hectare. In 2009 and 2010 the farmer received some financial incentives: 0.12 BAM/kg for wheat (0.10 BAM/kg – at the level of the Federation of BiH, and 0.02 BAM/kg – Posavina Canton), and 600 BAM/hectare for soya. There were no incentives for the maize production, and the farmer has not applied for the financial incentives for the barley production.

	Wheat		Maize		Barley		Soya	
	2009	2010	2009	2010	2009	2010	2009	2010
Area (hectare)	4	4	11	11	1	1	14	14
Average yield (tonne/hectare)	4.80	4.95	8.90	9.40	5.20	5.30	2.85	3.05
Production volume (tonne)	19.2	19.8	97.9	103.4	5.2	5.3	39.9	42.7
Selling price (BAM/kg)	0.25	0.31	0.235	0.25	0.235	0.30	0.58	0.60
Output value – BAM	4,800	6,138	23,007	25,850	1,222	1,590	23,142	25,620
Output value / hectare	1,200	1,535	2,092	2,350	1,222	1,590	1,653	1,830
Subsidies – BAM	2,304	2,376	-	-	-	-	8,400	8,400
Total value	7,104	8,504	23,007	25,850	1,222	1,590	31,542	34,020
Total value / ha	1,776	2,129	2,092	2,350	1,222	1,590	2,253	2,430

Additional income from fattening pigs:

- (150 pigs x 120 kg x 2.65 BAM) + (150 pigs x 50 BAM incentive per head) = 55,200 BAM
- The costs of feed and buying piglets for BAM 18,900 (150 head x 28 kg x 4.50 BAM) should be deducted from the above sum.

Factors of success

The farmer gave three key factors for the success of his farm in the corn production:

- Use of quality seed material
- Meeting of agricultural deadlines and consistent application of agricultural machinery
- 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 corn production is uncertainty of subsidized or minimum selling prices before sowing. Therefore there are often protests and blockades of border crossings and major roads as farmers' response to the prices offered by relevant institutions.

The next problem is the lack of storage capacities and the need to sell a considerable amount of produced goods immediately after the harvest, when the prices are the lowest.

The position of the farmers in the Federation of BiH is unfavourable and not equal to 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.

The farmers are little acquainted with the standards of both the production and storage, that is, keeping the products. This results from the current requirements of the local market that absorbs almost all production.

Case Study reference number: FBIH – AC2

Type of entity: Farmer

Human resources: 5 family members

Economic activities: Production of arable crops (wheat, maize and soya)

Other activities: none

Turnover: 2009: BAM 77,235 2010: BAM 124,550

History

The farm owner has been engaged in arable crops production since his youth. This is a traditional family farm where the owner's grandfather and father were also engaged in agricultural production only. The owner's father began the business in the 1970s, starting with 6 hectares of his own land. That situation remained until the war when production stopped and then resumed after the war (1995–96). In 2000, the land was rented, so the production was increased with an additional 5 ha. Later the renting of the land and the increase in production continued. An additional 10 ha were rented in 2003, then 2 ha in 2006, 13 ha in 2008, and another 24 ha in 2010, which makes a total of 54 hectares of rented land in 2011.

Current situation

On 60 hectares of arable land (6 ha of own land, and 54 ha of rented land), which is not irrigated, the farmer grows the following corn crops in this ratio (year 2011): wheat 20 ha, maize 10 ha, and soya 20 ha. As the total amount of land used to be smaller, the production structure was somewhat different. It should be pointed out that the amount of land under soya has been considerably increased in the past two years from 5 ha to 20 ha (2010), and then 25 ha (2011). The parcels for each crop are rotated each year in order to follow crops rotation, which the farmer consistently applies.

Production of main cereals by years in hectares

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	25	25	22	22	16	16	15
Maize	10	15	17	17	7	7	6

The farmer has needed machinery to do all farm jobs. He also uses his machinery in terms of providing services to other agricultural producers, charging the services as follows: ploughing 250 BAM/ha, tilling 250 BAM/ha, sowing 70 BAM/ha, and harvesting 200 BAM/ha.

Besides the sale of corn, some produced goods are used for own needs, that is, for the fattening of 15 pigs the farmer keeps an average 10 tonnes of maize a year.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and consistently applying all needed agricultural machinery. The farmer uses seed material from various sources, and he buys it most often from Italy or France. Harvesting is done when the cereals become technologically mature, so there is a considerable risk of excessive humidity of the grains in case of precipitation during the harvest. There is no control of crops during the vegetation, harvest and placement. The transport to silos is carried out immediately after the harvest, so there is no previous storage.

Unfortunately, like most BiH farmers, this interviewed farmer does not keep his 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 still not included in the VAT system.

Investments

In the past several years the farmer has bought various machines, among others: two-row corn picker (BAM 16,000) in 2005, a used tractor (BAM 15,000) in 2006, and implements (disk harrow, plough, sprinkler) for BAM 11,000 in 2007. In 2008, he bought another tractor (BAM 20,500) and a combine (BAM 25,000). During 2010 he bought two tractor trailers (BAM 20,000), and in 2011 a planter (BAM 3,500). His funding sources are own funds that come from the sale of products, earlier income or the sale of old equipment and machinery.

In the next period the farmer plans to have a corn storage buildings (silos) and a grain dryer constructed. The main investment project is the construction of the silos in order to avoid the product sale (corn) immediately after the harvest, that is, to have an option of "waiting" for more favourable prices. Also, the construction of the dryer would reduce the humidity of products to appropriate technological level, thus increasing the product price. Besides, the farmer is planning to buy a tractor and implements.

Market

Until 2010 all wheat had been sold immediately after the harvest to the purchase centre "Agroobeda" in Vidovnice (20 km from the farm, transport by tractor trailers), but in 2011 agreement on the sale of wheat was reached with the Federation Directorate for Goods Reserves. Maize and soya are also sold immediately after the harvest to "Koka Posavina" doo. [Ltd.], the company located in the vicinity (5 km) of the farm. The sale is not based on a signed contract, but it takes place only on the basis of oral agreement and positive experiences. The payment is in cash, at most up to 60 days after delivery.

Unfortunately, a major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production. The farmer also complains about the impossibility to store his products in order to wait for better prices because if he has not sold the products immediately after the harvest, then he will lose the right to receive financial incentives.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any standard in the corn production. The corn is sold in bulk, with the farmer's transport by own tractor trailers to the buyer. The quality and the humidity of the sold corn are prescribed.

Economic performance

In 2009 and 2010 the farmer has received some financial incentives: 0.12 BAM/kg for wheat (0.10 BAM/kg – at the level of the Federation of BiH, and 0.02 BAM/kg – the Posavina Canton) and BAM 600/ha for soya. There were no incentives for the maize production.

	Wheat		Maize		Soya	
	2009	2010	2009	2010	2009	2010
Area (ha)	22	25	17	15	5	20
Average yield (tonnes/ha)	4.09	4.28	7.35	9.87	2.54	1.48
Production volume (tonnes)	90	107	125	148	12.7	29.5
Selling price (BAM/kg)	0.28	0.31	0.25	0.33	0.55	0.60
Output value - BAM	25,200	33,170	31,250	48,840	6,985	17,700
Output value/ha	1,145	1,327	1,838	3,256	1,397	885
Subsidies – BAM	10,800	12,840	-	-	3,000	12,000
Total value	36,000	46,010	31,250	48,840	9,985	29,700
Total value/ha	1,636	1,840	1,838	3,256	1,997	1,485

A considerable decrease in income from soya per hectare in 2010 compared to 2009 is noticeable. The decrease resulted from a flood that destroyed a lot of soya plants. The farmer was entitled to subsidies as compensation for the damage; however, the subsidies have not been paid yet.

Additional income is earned by providing machinery services. The farmer was not able to specify the amount of income because his service provision considerably varies during the years. Generally, it is about BAM 5,000 of the income earned in this way.

Factors of success

The farmer gave several key factors for the success of his farm in the corn production:

- Persistence, work and courage in terms of taking risks
- Experience and knowledge
- Possession of appropriate machinery
- Renting land
- Membership in an association of farmers

Lessons learned for policy measures

A major problem faced by the farmers engaged in corn production is uncertainty of subsidized or minimum selling prices before sowing. Therefore, there are often protests and blockades of border crossings and major roads as farmers' response to the prices offered by relevant institutions. The protests and road blocks are also planned for this year.

The next problem is the lack of storage capacities and the need to sell a considerable amount of produced goods immediately after the harvest, when the prices are the lowest.

Renting parcels is a complicated and large investment because of land fragmentation and the need to make separate notary contracts with each owner. This is why the renting of several hectares often results in several dozen individual notary contracts.

The position of the farmers in the Federation of BiH 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.

The farmers are little acquainted with the standards of both the production and storage, that is, keeping the products. This results from the current requirements of the local market that absorbs almost all production.

Case Study reference number: FBIH – AC3

Type of entity: Farmer

Human resources: 6 family members

Economic activities: Production of arable crops (wheat, corn)

Other activities: none

Turnover: 2009: BAM 130,310 2010: BAM 175,300

History

Production at the farm began in 1970 with an area of 7.5 ha, with two crops that are grown: wheat and maize. Besides, there used to be a farm building structure for keeping cattle, where 7–8 fattening older bulls were kept. In 1972, the first machinery for tillage was purchased along with needed implements, and in 1978 the first combine was bought. In later years production went on regularly within the existing capacities, with regular replacement of out-dated machinery. That practice had continued until the beginning of the war in 1992, when the owner and his household members left the property and went abroad. After the war, in 1996, he returned to his farm only to find fully devastated agricultural buildings, machinery and also the family house. It took a great effort to renew production that year. Owing to the credit funds from the Federation Ministry of Agriculture, Water Management and Forestry, a tractor with needed implements and a combine were bought. The production resumed on the mentioned 7.5 ha of own land. As early as 1997 production expanded to 20 ha, that is, to the land of the neighbours and acquaintances who did not return but they permitted the farmer to use their available land in order not to leave the land uncultivated and deserted. After 1997, the cultivated area has been gradually increased by renting additional land up to today's 85 ha.

Current situation

The farmer has 85 ha of agricultural land in use (7.5 ha of own land and 82.5 ha of rented land, mostly owned by individuals), which is not irrigated and with the following corn crops cultivated in this ratio (year 2010): wheat 45 ha, maize 40 ha. The production structure that approximates 50:50 percent is maintained every year, with either crop in slightly higher percentage respectively every year in order to keep the rule of crops rotation.

Production of main cereals by years in hectares

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	45	40	40	35	30	25	25
Maize	40	45	35	40	25	30	20

The farmer has needed machinery (tractors and implements), which is enough to cultivate all the land, and a combine used for harvesting on all 85 ha, but he also rents the combine to other producers for 200 BAM/ha. The farmer's storage capacities of 12 tonnes are modest and mostly used to keep corn for own needs (of total production, the farmer sets aside 10-15 tonnes of corn for own needs each year). Because of such small storage capacities, the remaining yield is immediately transported after harvest (own transport) to a regular buyer, who permits the farmer to store the yield for a while (until 1 August) with the right to take over his yield if there is a chance to get a better price. After 1 August, the farmer can either sell the produced quantities to the buyer at offered prices or continue to store his products for 30 BAM/tonne a month.

Besides the corn production, the farmer keeps a lactating cow, 26 pigs and about 50 head of various poultry.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and consistently applying all needed agricultural machinery. The farmer pays particular attention to the seed material as a key factor for the total production level. He also follows the appearance of new varieties and hybrids on the market, and also the innovations in machinery and the technology concerning the production of the two crops. Besides the land sown with already known varieties and hybrids that have been proven during the years of production, the farmer also has experimental parcels where he tests growing of new varieties and hybrids, their productivity, resistance to diseases and adaptability to the climatic and soil conditions of the area. Harvesting is done when the cereals become technologically mature, so there is a considerable risk of excessive humidity of the grains in case of precipitation during the harvest.

Being a large producer, the farmer is already in the VAT system that brings him certain benefits in terms of tax exemptions in the purchase of some expendable material.

Investments

The following farmer's investments in fixed assets in the last 10 years should be singled out:

- Construction of a building for pigs in 2001 for BAM 12,000
- Tractor for BAM 22,000, bought in 2004
- Tractor for BAM 15,100 in 2006
- Tractor for BAM 64,000 in 2009
- In 2011, a tractor was bought for BAM 40,000 (used six years before purchase)
- Tractor implements bought in the last four years for a total sum of BAM 16,400

It needs to be noted that all fixed assets have been bought with own funds and without any credit debts.

Although it may be concluded that the farmer lacks storage capacities, he does not plan any investments in that type of building because he believes that he can conduct business quite satisfactorily under the circumstances. Also, because of more recent purchase of machinery, he does not plan to purchase more of it in the near future.

Market

The largest part of corn production (with such storage capacities, usually 10–15 tonnes of corn is kept as animal feed for own needs) is sold to already known buyers immediately after the harvest. The sale is not based on any signed contract but it takes place solely on the basis of previous positive experiences. The producer points out that he can always ensure the placement of his goods and that no problems arise in the collection of payments from the regular buyers.

Unfortunately, a major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any standard in the corn production. The corn is sold in bulk, with the farmer's own transport to the buyer. The quality and the humidity of the sold corn are prescribed.

Economic performance

The producer was not able to present variable costs by individual arable crops. It should be pointed out that the average yields for all crops are exceptional, with the following ranges: wheat 4–4.5 tonnes/ha; maize (grain) 7.58.5 tonnes/ha. In 2009 and 2010 the farmer received some financial incentives: 0.12 BAM/kg for wheat (0.10 BAM/kg – at the level of the Federation of BiH, and 0.02 BAM/kg – the Posavina Canton). There were no incentives for the maize production.

	Wheat		Maize	
	2009	2010	2009	2010
Area (ha)	40	40	35	45
Average yield (tonnes/ha)	4.05	4.15	7.86	8.07
Production volume (tonnes)	162	166	275	363
Selling price (BAM/kg)	0.26	0.28	0.25	0.30
Output value – BAM	42,120	46,480	68,750	108,900
Output value/ha	1,053	1,162	1,964	2,420
Subsidies – BAM	19,440	19,920	-	-
Total value	61,560	66,400	68,750	108,900
Total value/ha	1,539	1,660	1,964	2,420

Additional income from providing service of renting the combine:

- 100 ha X 200 BAM/ha = 20,000 BAM
- The costs of fuel, lubricants and amortization should be deducted from the above sum.

Factors of success

The farmer gave several key factors for the success of his farm in the corn production:

- Use of quality seed material,
- Meeting of agricultural deadlines and consistent application of agricultural machinery
- Full engagement of all family members in the production, with needed enthusiasm and belief in success
- Long tradition of working in agriculture and a large experience
- Regular education in new technologies, varieties and hybrids (attending seminars and adopting innovations)
- Timely learning of information from the market

Lessons learned for policy measures

A major problem faced by farmers engaged in corn production is uncertainty of subsidized or minimum selling prices before sowing. It needs to be noted that the farmers very often do not know the selling price of cereals even when they deliver them over for sale. The price is determined later, so the producers often find themselves in such a situation that they do not know whether they can cover their production costs until the time of payment.

The position of the farmers in the Federation of BiH 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.

The farmers are little acquainted with the standards of both the production and storage, that is, keeping the products. This results from the current requirements of local market that absorbs almost all production.

Case Study reference number: FBIH – AC4

Type of entity: Farmer

Human resources: 5 family members and 1 seasonal worker

Economic activities: Production of arable crops (wheat, maize, and soya)

Other activities: none

Turnover: 2009: BAM 49,825 2010: BAM 46,025

History

The farmer began working in agriculture in 2000, on an area of 4.0 hectares, 2 hectares of which are his own land, and the remaining 2 ha are rented. As early as in 2001 he bought the first combine harvester, which made the production more significant. In 2002, the production was expanded to 10 ha of land and ever since the area has gradually been increased to today's 23 ha of agricultural land in use.

Current situation

The farmer has 23 ha of agricultural land in use (3 ha of own land and 20 ha of rented land), which is not irrigated and with the following corn crops cultivated in this ratio (year 2010): wheat 12 ha, maize 2 ha, and soya 8 ha. The approximate ratio of the production structure is maintained every year, with the proportional increase of land under individual crops according to the increase of the farm. The table below shows that the two most important cereals in the production at the farm are wheat and maize.

Production of main cereals by years in hectares

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	8	12	10	11	13	10	9
Maize	3	2	2	3	2	1	3

The farmer has needed machinery (tractors and implements), which is enough to cultivate all the land, and two combines used for harvest on available 23 ha, but he also rents the combines to other producers for 200 BAM/ha. The farmer does not have storage capacities, so of the total corn production he keeps only 2–3 tonnes for own needs and stores it in paper bags. Because of lack of storage capacities, the yield is immediately transported (own transport) to a regular buyer. This farmer makes most of his business with the cooperative "Oranica" d.o.o. [Ltd.], Samac-Domaljevac, with quite successful cooperation thus far.

In 2011, a contract was signed with the Federation Directorate for Goods Reserves, under which the Directorate provides the farmer with needed quantities of fuel and fertilizers, while in turn the farmer delivers goods in the value of received input. There is a problem of undetermined selling prices, so the farmer does not know how many goods he should deliver to the Directorate.

Besides agricultural production, the farmer keeps 5 pigs and about 20 various head of poultry.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and consistently applying all needed agricultural machinery. The farmer pays particular attention to the seed material as a key factor for the total production level. He also follows the appearance of new varieties and hybrids on the market, and also the innovations in machinery and technology concerning the production of the two crops. Harvesting is undertaken when the cereals become technologically mature, so there is a considerable risk of excessive humidity of the grains in case of precipitation during the harvest.

Unfortunately, like most of the BiH farmers, this interviewed farmer does not keep his 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.

Investments

The following farmer's investments in fixed assets in the last 10 years should be singled out:

- Purchase of a used combine for BAM 12,000 in 2001
- Rotary cultivator for BAM 5,000 in 2002
- Combine (used) for BAM 16,000 in 2006
- Tractor (used) for BAM 18,000 in 2008
- 0.8 ha of land was purchased for BAM 8,000 in 2008

It should be noted that all fixed assets have been bought with own funds and without any credit debts.

As for future investments, new combines should replace the out-dated ones, and the new machinery, with needed implements, should be bought. The new machinery would make the land cultivation quicker and more efficient and also be rented to other producers at a certain price.

Market

Almost all corn production (about 3 tonnes of corn is kept for own needs) is sold to already known buyers immediately after the harvest. The sale is not based on any signed contract (except in 2011 when the contract was signed with the Federation Directorate for Goods Reserves) but it takes place solely on the basis of previous positive experiences.

Unfortunately, a major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any standard in the corn production. The corn is sold in bulk, with the farmer's own transport to the buyer. The quality and the humidity of the sold corn are prescribed.

Economic performance

The producer was not able to present variable costs by individual arable crops. It should be pointed out that the average yields for all crops are exceptional, approximately amounting to: wheat 4.5 tonnes/ha; maize (kernel) 8 tonnes/ha, and soya 3 tonnes/ha. In 2009 and 2010 the farmer received some financial incentives: 0.12 BAM/kg for wheat (0.10 BAM/kg – at the level of the Federation of BiH, and 0.02 BAM/kg – the Posavina Canton) and 600 BAM/ha for soya. There were no incentives for the maize production.

	Wheat		Maize		Soya	
	2009	2010	2009	2010	2009	2010
Area (ha)	10	12	2	2	12	8
Average yield (tonnes/ha)	4.50	4.17	7.75	8.75	2.92	3.13
Production volume (tonnes)	45	50	15.5	17.5	35	25
Selling price (BAM/kg)	0.29	0.31	0.25	0.27	0.58	0.60
Output value – BAM	13,050	15,500	3,875	4,725	20,300	1,500
Output value/ha	1,305	1,292	1,938	2,363	1,692	1,875
Subsidies – BAM	5,400	6,000	-	-	7,200	4,800
Total value	18,450	21,500	3,875	4,725	27,500	19,800
Total value/ha	1,845	1,792	1,938	2,363	2,292	2,475

Additional income from providing service of renting the combines:

- 20 ha x 200 BAM/ha = 4,000 BAM

The costs of fuel, lubricants and amortization should be deducted from the above sum.

Factors of success

The farmer gave several key factors for the success of his farm in the corn production:

- Use of quality seed material
- Meeting of agricultural deadlines and consistent application of agricultural machinery
- Full engagement of all family members in the production, with needed enthusiasm and belief in success
- Regular education in new technologies, varieties and hybrids (attending seminars and adopting innovations)
- Membership in an association of agricultural producers, where the farmer is timely provided with key information about the market

Lessons learned for policy measures

A major problem faced by the farmers engaged in corn production is uncertainty of subsidized or minimum selling prices before sowing. It needs to be noted that the farmers very often do not know selling price of cereals even when they deliver them over for sale. The price is determined later, so the producers often find themselves in such a situation that they do not know whether they can cover their production costs until the time of payment.

The position of farmers in the Federation of BiH 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.

Farmers are little acquainted with the standards of both production and storage, that is, keeping the products. This results from the current requirements of the local market that absorbs almost all production.

Case Study reference number: FBIH – AC5

Type of entity: Farmer

Human resources: 4 family members

Economic activities: Production of arable crops (wheat, maize, soya and barley) and fattening pigs (3) of output weight up to 120 kg

Other activities: none

Turnover: 2009: BAM 37,842 2010: BAM 46.300

History

Since his youth, the farm owner has been engaged in the arable crop production and the fattening of a smaller number of pigs for family needs. This is a family farm where the owner's father was also engaged in agricultural production (since 1976).

Current situation

In the currently available area of 31 hectares (4 ha of own land, and 27 ha of rented land), which is not irrigated, the farmer grows cereals and soya in the following ratio (year 2011): wheat 10 ha, barley 5 ha, maize 8 ha, and soya 8 ha. He applies crop rotation.

Production of main cereals by years in ha

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	10	6	5	4	3	4	3
Maize	8	6	5	4	4	3	2
Barley	5	5	5	4	2	3	3

The farmer has all needed machinery (combine, tractors and relevant implements, and trailers), which is enough to cultivate all the land. He has maize and wheat baskets whose total capacity is 20,000 kg, and improved smallcapacity storage buildings (sheds). Most of the yield is sold immediately after the harvest, while the smaller part is stored. One part of corn and soya products is sold to an already known buyer, "Agroobeda Vidovice", with successful cooperation thus far. Another part goes to the Directorate for Goods Reserves, while the third part is sold to smaller buyers upon agreement. The farmer transports the goods to the buyers.

A smaller part of the production, about one tonne, is used for family needs and for the fattening of three pigs.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and applying all needed agricultural machinery. The structure of sowing has been almost the same over the last several years. The farmer pays particular attention to the seed material as a key factor for the total production level. Harvesting is done when the cereals become technologically mature, so there is some risk of excessive humidity of the grains in case of precipitation during the harvest.

The farmer has a registered business, but he is not in the VAT system. He receives financial incentives from the FBIH authorities: wheat (0.12 BAM/kg), and soya (600 BAM/ha).

Investments

The farmer has three garage buildings for the combine, tractors, implements and other equipment, as follows: garage 10 x 6 m, paid EUR 4,000, for combine; garage 8 x 6 m, paid EUR 3,000, for tractor; garage 5 x 4 m, paid EUR 2,000, for a smaller tractor. A total value of baskets and sheds used as temporary storage space is about EUR 1,500.

The farmer has complete machinery: combine (EUR 25,000), tractor (EUR 10,000), smaller tractor (EUR 6,000), picker (EUR 18,000), grain/maize drills (EUR 3,000), soya drills (EUR 2,000), 2 combination seed harrows (EUR 175), 2 tillers (EUR 450), 3 ploughs (EUR 400), and a sprinkler (EUR 600).

In the next period the farmer plans to buy a combine harvester, and a high-power tractor, including implements, and also to buy or rent new land for the purpose of production.

Market

Most of the yield is sold immediately after the harvest to the known buyers, “Agroobeda Vidovice” and the Directorate for Goods Reserves. On average, 1 tonne of corn and soya is kept for own needs. The sale is based on the signed contract. The payment is in cash, at most up to 30 days after the delivery.

A major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production. This interviewed farmer claims that he would give up financial incentives if he knew the selling price for his products in advance.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any standard in the corn production. The corn is sold in bulk, with the farmer’s own transport to the buyer. The quality and the humidity of the sold corn are prescribed.

Economic performance

The producer was able to present variable costs by individual arable crops. It should be pointed out that the average yields are relatively good, with the following ranges: wheat 3.5–4 tonnes/ha, maize (kernel) 7.0–8.0 t/ha, barley 5.0–5.5 t/ha, and soya about 2.2–3 t/ha. In 2009 and 2010 the farmer received some financial incentives, as follows: wheat 0.12 BAM/kg, and soya 600 BAM/ha. There were no incentives for the maize production, and the farmer has not applied for the financial incentives for the barley production.

	Wheat		Maize		Barley		Soya	
	2009	2010	2009	2010	2009	2010	2009	2010
Area (ha)	5	6	5	6	5	5	6	7
Average yield (tonnes/ha)	3.84	3.67	7.96	7.03	5.28	5.32	2.22	3.04
Production volume (tonnes)	19.2	22	39.8	42.2	26.4	26.6	13,3	21.3
Selling price (BAM/kg)	0.31	0.33	0.28	0.29	0.27	0.27	0.58	0.60
Output value – BAM	5,952	7,260	11,144	12,238	7,128	7,182	7,714	12,780
Output value/ha	1,190	1,210	2,229	2,040	1,426	1,436	1,286	1,826
Subsidies – BAM	2,304	2,640	-	-	-	-	3,600	4,200
Total value	8,256	9,900	11,144	12,238	7,128	7,182	11,314	16,980
Total value/ha	1,651	1,650	2,229	2,040	1,426	1,436	1,886	2,426
Variable costs	8,200	9,600	8,500	11,040	7,100	7,250	9,000	10,325
Variable costs/ha	1,640	1,600	1,700	1,840	1,420	1,450	1,500	1,475
GVA	56	300	2,644	1,198	28	-68	2,314	6,745
GVA/ha	11	50	529	200	6	-14	386	964

Factors of success

As for the success of his farm, the farmer has pointed out the necessary use of quality seed material, meeting of deadlines for sowing, application of agricultural technology measures, possession of appropriate machinery, and finally, permanent engagement of the owner and his family both in the production and the product placement.

Lessons learned for policy measures

A major problem faced by the farmers engaged in corn production is uncertainty of subsidized or minimum selling prices before sowing. Therefore, out of despair, the farmers often resort to blockades of border crossings and major roads as a response to the prices offered by relevant institutions.

The next problem is the lack of storage capacities and the need to sell a considerable amount of produced goods immediately after the harvest, when the prices are the lowest.

The position of the farmers in the Federation of BiH is unfavourable and not equal to the farmers in the Republic of Srpska and the region (Croatia and Serbia) because of lack of benefits (cash grants) concerning subsidized fuel or mineral fertilizers.

The farmers are little acquainted with the standards of both the production and storage, that is, keeping the products. This results from the current requirements of the local market that absorbs almost all production.

Case Study reference number: FBIH–AC6

Type of entity: Farmer

Human resources: 5 family members staff

Economic activities: Production of arable crops (wheat, corn and oats), milk production, fattening steers and machinery (tractor) services

Other activities: none

Turnover: 2009: 21,650 BAM 2010: 22,412 BAM

History

Until the 1991 war, the father of the farm owner who inherited the farm had been engaged exclusively in fattening of bullocks and heifers, with annual production between 180 and 200 head, while the production of animal feed and corn was intended only for the cattle fattening. A modern building, the size of which is 27 x 14 m and with a grid floor, was constructed for this production. By the way, this is a traditional family farm where the owner's grandfather and father were engaged in agricultural and cattle production only. The farmer continued breeding the cattle after the war (10–15 head) because of milk production and the fattening of bullocks and heifers, but the cattle production kept decreasing over the last years because of poor market conditions and problems with financial incentives for corn production, so in 2010 the farmer kept only 2 lactating cows and 2 heifers, and produced forage (clover-grass mixtures) and crops (wheat, maize and oats) on 6.3 ha of land.

Current situation

The farmer has 2 ha of own land and 4.3 ha of rented arable land. In 2010, the structure of the sown areas was the following: wheat 0.9 ha; oats 2.0 ha; maize 1.9 ha, and clover-grass mixtures 1.5 ha. In 2009, the structure of sown crops was similar but somewhat modified because of crops rotation (1.9 ha of wheat; 1 ha of oats; and 1.9 ha of maize). As for cattle production, the farmer kept two cows and produced 750–1,250 L of milk monthly, selling it to individuals in his local community. Production of milk was somewhat higher in 2009 (4 lactating cows), with the sale of milk to the dairy Imer from Gradacac. In 2009 and 2010, the farmer had two more fattening bullocks/heifers.

The farmer has reduced crop production even more in 2011 (total of 1.45 ha – wheat 0.15 ha; maize 0.30 ha, and oats on 1 ha of land), but he has started producing soya on 4 ha. The reason for this change is because of low, unknown and uncertain crop prices basically until the harvest itself. On the other hand, there is a problem with receiving financial incentives because in order to verify the existing production (and thereby the right to incentives), it is necessary, among other things, to have a land rental agreement, which is almost impossible because of unresolved property rights among the families who lease the land.

Production of main cereals by years in ha:

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	0.15	0.9	1.9	3.1	3.8	3.8	3.8
Maize	0.30	1.9	1.9	3.0	3.5	4.0	4.0
Oat	1.0	2.0	1.0	1.5	1.8	1.8	2.0

The farmer has a tractor and implements (only plow and trailer), which is sufficient only for partial cultivation of the land he uses, so besides paying for the services of renting a combine (200 BAM/ha) during the crop harvest, he also pays for the service of sowing and land cultivation with disk harrows and rakes (150–200 BAM/ha). A source of income for the farmer is leasing own machinery to other farmers, so he cultivates 20 ha annually and earns BAM 4,000 (200 BAM/ha). The farmer has baskets for the storage of maize, and floor storage capacity of ca 25 tonnes. He keeps one part of the production to feed the cattle, while the rest (wheat) is sold at the market, most often to the Federation Directorate for Goods Reserves and to the mill Majic from Odzak.

Farm management

The farmer has been traditionally engaged in the production of arable crops, growing them in a conventional way and consistently applying all needed agricultural machinery. As mentioned earlier, the structure of sown arable crops is often changed and depends on two groups of factors: the first group concerns the position of cattle fattening and production because of the farmer's tradition of this production, while the second group concerns the status of crops and their selling prices. The farmer pointed out that he pays particular attention to the seed material as a key factor for the total production level. Concerning the wheat production, the farmer uses the varieties *Žitarka*, *Super žitarka*, and *Pobjeda*, while in the maize production he relies on the KWS hybrids (*Klimt* variety, 20 kernels in a row), and the hybrid NS 640. Harvesting is done when the cereals become technologically mature, so there is a considerable risk of excessive moisture of the grains in case of precipitation during the harvest. In 2010, the wheat had the following quality properties: 74 percent of hectolitre weight, 15 percent moisture of grain, and 3 percent of foreign matter.

As for the milk production, in 2010 the farmer produced 750–1,250 litres on average monthly (about 12,000 litres annually), and fattened two heifers whose output weight was 420 kg.

Unfortunately, like most of the BiH farmers, this interviewed farmer does not keep his 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 still not registered his business (it was not required for receiving incentives until 2010). He is a member of the Farmers Association "Zito" (Corn) from Odzak, and the Farmers Union of the Posavina Canton.

Investments

The farmer has two pre-war constructed buildings: a storage building, 5 x 4 m, with 25 tonnes of capacity, and a stable, 27 x 14 m, quite devastated during the war. A smaller part of the stable is redesigned (boxes for keeping bullocks/heifers) with the farmer's own funds. In addition, a tractor with a trailer and a plough should be singled out from the farmer's investments in fixed assets in the last five years. The tractor was imported from Switzerland and cost EURO 15,000, including the mentioned implements. This investment came from credit funds.

In the next period the farmer plans to renovate the existing stable completely and to buy other implements he does not have: disk harrow, rake, tiller, planter, sprinkler – atomizer, drill, and mower. The main investment priority is purchase of these needed implements.

Market

The farmer retains the largest part of corn production because of his cattle (2 lactating cows and 2 fattening bullocks/heifers, while he sells the rest – wheat first of all – to the Federation Directorate for Goods Reserves and the mill Majic from Odzak, where the corn is stored. The sale is made immediately after the harvest and is not based on any signed contract but it takes place solely on the basis of previous positive experiences. The payment is in cash, at most up to 50 days after delivery.

Unfortunately, a major problem in the Federation of BiH 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 before sowing, so the producers always take some risk in the corn production. The farmer particularly pointed out this problem as a major reason for reducing areas sown with arable crops year after year.

Production and marketing standards

Production of arable crops is exclusively conventional. The farmer needs not certify the production because it is not a market requirement, and so he does not apply any usual standard in the corn production. The corn is sold in bulk, with the farmer's own transport to the buyer (mill Majic). The quality and the moisture of the sold corn are prescribed.

Economic performance

This producer was not able to present variable costs by individual arable crops. It should be pointed out that the average yields for all cultivated crops are quite good, with the following ranges: wheat 3.5–4 tonnes/ha, maize (kernel) 7.0–7.5 t/ha, and oats 2.5–3.0 t/ha. In 2009 and 2010 the farmer received some financial incentives: 0.12 BAM/kg for wheat (0.10 BAM/kg – at the level of the Federation of BiH, and 0.02 BAM/kg – the Posavina Canton). There were no incentives for the maize production, and the farmer did not apply for incentives for oat production.

	Wheat		Maize		Oats	
	2009	2010	2009	2010	2009	2010
Surface (ha)	1.9	0.9	1.9	1.9	1.0	2.0
Average yield (tonnes/ha)	3.75	3.95	7.15	7.40	2.65	2.85
Production volume (tonnes)	7.125	3.555	13.585	14.06	2.65	5.70
Selling price (BAM/kg)	0.30	0.32	0.25	0.30	0.35	0.40
Output value – BAM	2,138	1,138	3,396	4,218	928	2,280
Output value/ha	1,125	1,264	1,787	2,173	928	1,140
Subsidies – BAM	855	427	-	-	-	-
Total value	2,993	1,565	3,396	4,218	928	2,280
Total value/ha	1,575	1,739	1,787	2,173	928	1,140

Other income:

- 2 bullocks/heifers x 400 kg x 3.95 BAM = 3,160 BAM
- 12,000 litres of milk x 0.85 BAM/litre = 10,200 BAM
- Leasing machinery: 20 ha x 200 BAM/ha = 4,000 BAM (The costs of fuel, lubricants and amortization should be deducted from this sum.)

Factors of success

The farmer pointed out three key factors for the success of his farm in corn production:

- Use of quality seed material
- Meeting agricultural deadlines and consistent application of agricultural machinery
- 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 corn production is uncertainty of subsidized or minimum selling prices before sowing.

The farmer particularly pointed out an administrative problem regarding receiving financial incentives because in order to verify the existing production (and thereby the right to incentives), it is necessary, among other things, to have a land rental agreement, which is almost impossible because of unresolved property rights among the families who lease the land.

The next problem is the lack of storage capacities and the need to sell a considerable amount of produced goods immediately after the harvest, when the prices are the lowest.

The farmers are little acquainted with the standards of both the production and storage that is, keeping the products. This results from the current requirements of the local market that absorbs almost all production.

Case Study reference number: FBIH – AC7

Type of entity: Farmer

Human resources: 2 family members staff

Economic activities: Production of arable crops (wheat, corn) and livestock production

Other activities: none

Turnover: 2009: 3,602 BAM 2010: 3,624 BAM

History

Farmer has been involved with agriculture since the end of the war in 1996 cultivating his own property of approximately 3 ha. On the greatest part of this land (2.3–2.8 ha) the farmer produces wheat and maize, and the remaining surfaces are used for vegetable production, but only for household needs. Wheat and maize are mainly produced in order to ensure animal food for fattening of 4–5 steers, which is the annual farm production. The farmer purchased tractor and accessories in 1996 when he started to deal with agricultural production. The machinery was second-hand and has not been replaced since then.

Current situation

The farmer owns 5.8 ha of land out of which he cultivates 3 ha. Only one ha of land is irrigated. The largest part of this land is used for cereals production, wheat and maize (grain) in the ratio 60:40 percent up to 70:30 percent in favour of wheat every year. In 2010 the sowing structure was 1.8 ha of wheat and 0.6 ha of maize. The production structure is similar every year but crop rotation is practiced as much as the production structure allows.

Production of cereals in ha by years:

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	1.9	1.8	2.0	1.7	1.5	1.6	1.8
Maize	0.7	0.6	0.6	0.9	0.8	0.9	0.8

The farmer possesses a tractor and accessories so that he can cultivate his land completely up to harvest. Then he rents a combine harvester and pays 200 BAM/ha for this service. The farmer has modest storage capacities of approximately 5 tonnes and it is used to store cereals for his own needs (every year the farmer maintains the whole maize production and 2 tonnes of wheat). The rest of the wheat production is transported to the buyer – mill “Nežići” – right after harvesting (by the farmer), unless additional drying is necessary.

In addition, the farmer at the moment has one cow, one bull and 50 different poultry.

Firm management

The farmer traditionally deals with arable crops production in a conventional manner with consecutive application of all the necessary agro-techniques. But, the lack of information about new varieties and hybrids can easily be noticed, as well as innovations in techniques and technologies of production for these two crops. Production is based on the use of traditional varieties characterized by lower quality and biological potential rather than new ones, and therefore the farmer achieves lower yield per land unit.

Cereals are harvested after becoming technologically matured, so, there is a high risk of over-moisture of the grain in the case of precipitation during the harvesting.

Investments

Being a small producer, this farmer had no investments in capital assets over the past five years. The last investment was the only one, in 1966 when the farmer purchased tractors with necessary accessories.

With regard to future investments, the farmer plans to orient himself to more serious steer fattening (1520 steers annually with a selling weight of 400–500 kg) and for this purpose he will need finances for building facilities for livestock as well as for expanding storage facilities for cereals.

In addition, the farmer intend to purchase a small digger for channel digging in order to make water supply channels for his plots, and existing water accumulations in the vicinity of the farm would serve as a water source for the purpose of stabile and intensive irrigation of the land. On the other hand such a machine could also serve as the source of additional income as it could be used to offer services to other farmers.

Market

The entire production of maize and 2 tonnes of wheat are kept on the farm for the farmer's own needs (livestock and poultry feeding) and 5–6 tonnes of wheat are sold to a familiar buyer– mill "Nežići". The sale is not based on a contract (except in 2011) but exclusively on the basis of good previous experiences. Because the production volume intended for sale is relatively small the farmer claims he can always ensure placement in the market for it and that he has no problems with getting paid as far as familiar buyers are concerned. The natural character of the sale and payment is interesting. Namely, for the wheat delivered to mill "Nežići" the farmer does not get money but flour. The exchange is done on the basis of ratio – 70 kg of flour for 100 kg of wheat grain. Very rarely the farmer gets some share in the form of money.

Production and marketing standards

Arable crop production is exclusively conventional. There is no need for farmers to get certified, as the market does not require it, so none of the standards common in arable crop production is applied. Wheat is sold unpacked by way of the farmer transporting it to the buyer by his own transport means. Wheat is sold on the basis of obeying criteria on wheat quality and moisture content.

Economic performance

The farmer was not able to give data on variable costs by crops. The average achieved yields are rather good for wheat and slightly less good for maize and it varies 3–3.5 tonnes/ha for wheat and maize (grain) 5.0–5.5 t/ha. The farmer received no subsidies.

	Wheat		Maize	
	2009	2010	2009	2010
Surface (ha)	2.0	1.8	0.6	0.6
Average yield (tonne/ha)	3.45	3.39	4.7	5.3
Production volume (tonne)	6.9	6.1	2.8	3.2
Output value – BAM	2,622	2,440	980	1,184
Output value/ha	1,311	1,356	1,633	1,973
Subsidies – BAM	-	-	-	-
Total value	2,622	2,440	980	1,184
Total value/ha	1,311	1,356	1,633	1,973

Additional income:

- Milk: 1 cow x 3,200 litres x 0.84 BAM/kg = 2,688 BAM
- Meat: 1 calf = 135 kg x 6.20 BAM /kg = 837 BAM
- Meat: 1 bull = 450 kg x 3.75 BAM /kg = 1,688 BAM

Factors of success

The farmer pointed to the following as crucial factors for the success of his farm in cereals production:

- Obedience of agro-terms and use of agro-techniques,
- Hard work
- Experience acquired over time dealing with agriculture

Lessons learned for policy measures

One of the greatest problems faced by cereals producers is price uncertainty; a protected or minimum purchase price is unknown before seeding. Very often farmers do not know the price even at delivery time. The price is determined afterwards so the farmers often do not know if they managed to cover production costs before they get paid.

Case Study reference number: FBIH – AC8

Type of entity: Farmer

Human resources: 6 family members staff

Economic activities: Production of arable crops (wheat, corn and soya) and livestock production

Other activities: none

Turnover: 2009: 34,879 2010: 31,034 BAM

History

The farm has a tradition in production ever since World War II. It was established by the father of the actual owner. He has been taking over the responsibilities for the farm gradually, so now he is the full leader of it. The beginning of agricultural production was based on the use of exclusively own land, the size of which was 5 ha. The size of the cultivated land has been increasing over time and currently it encompasses 20 ha. It can be said that over the last two decades the production structure has remained substantially unchanged and production was taking place on the mentioned 20 ha. The farmer possesses his own agricultural machinery for land cultivation. It is replaced after the loss of its functional value on a regular basis, but this replacement has slowed down slightly over the last years.

Current situation

The farmer operates on 20 ha of agricultural land (5 ha owned, 15 ha rented) out of which only the 0.5 ha of land sown with vegetables is irrigated. The sowing structure in 2010 was: wheat 5 ha, maize 12 ha, soybean 2.5 ha and 0.5 ha vegetables for household needs. Such a structure is kept almost always, including crop rotation practice. As shown in the Table below two of the most important cereal crops are wheat and maize.

Cereal	2011	2010	2009	2008	2007	2006	2005
Wheat	5.5	5.0	5.7	4.5	4.5	4.8	4.7
Maize	11.8	12.0	11.5	12.5	12.3	11.9	12.2

The farmer possesses sufficient agricultural machinery (a powerful tractor and accessories) to cultivate all his own and the rented land as well as a combine used exclusively to harvest 19.5 ha of land under cereals. The farmer's storage capacity is 60 tonnes and it is used to store cereals for own needs. All maize and soya production is maintained on the farm for animal feeding, and the wheat is transported to the buyer immediately after harvesting. In the past, the farmer had a rather successful cooperation with Cooperative "Ratar". In the last two years the farmer cooperates mostly with the Mill "Majić" and in 2011 he sold his wheat to Federal Commodities Stocks.

In 2011 a contract with Federal Commodities Stocks was signed. According to this contract, the farmer was provided with fuel and fertilizers in the needed quantities and the farmer delivered commodities in a value equivalent to the value of these inputs. The problem is that the price has not been determined yet, so the farmer still does not know what quantity they are supposed to deliver.

In addition the farmer has six milking cows, four calves, two heifers and ten bulls, so this farm is a mixed animal-plant farm and the arable crops production functions to ensure the animal feed.

Firm management

The farmer traditionally deals with arable crops production in a conventional manner with consecutive application of all the necessary agro-techniques. The farmer pays special attention to seed as one of the key factors of production volume. He follows new varieties and hybrids on the market, as well as innovations in techniques and technologies of production for these two crops. The farmer uses wheat varieties: Novosadska S-rana, Novosadska S-40 and Marija, maize hybrids Novi Sad hybrid – group 500 and Osijek hybrid – 592 and 596. Hybrid Lucija is used for soybean production. Cereals are harvested after becoming technologically matured, so, there is a remarkable risk of over-moisture of the grain in the case of precipitation during harvesting.

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 the indicators of production and economic performances. That is why this case study includes only data on volume of production and selling prices in 2009 and 2010.

Investments

Over the last decade the following investments in assets can be pointed out:

- Purchase of second-hand tractor in 2000 – 7,000 BAM
- Purchase of second-hand tractor in 2002 – 10,000 BAM
- Combine harvester (second-hand) in 2005 – 15,000 BAM

Priorities for future investing are; replacement of the old combine and acquisition of new machinery with accessories. In addition, investment in a modern facility for livestock is planned and the needed amount is estimated to be approximately 50,000 BAM.

The farmer also pointed out the need to build a drier for grains but he does not plan this investment at the moment due to a lack of funds. The notion that the actual price of drying one tonne of maize grain is 200–300 BAM led the farmer to this conclusion.

Market

All maize and soya production is maintained on the farm for animal feeding, and the wheat is sold right after the harvest to a familiar buyer. The sale is not based on a contract (except in 2011) but exclusively on the basis of good previous experiences.

Unfortunately, one of the main problems is the lack of information from authorized institutions (Federal and Cantonal ministries of agriculture) about selling prices and support before sowing, so producers always take certain risks in cereals production.

Production and marketing standards

Arable crop production is exclusively conventional. There is no need for farmers to get certified, as the market does not require it, so none of the standards common in arable crop production is applied. Wheat is sold unpacked and the farmer transports it to the buyer by his own transport means. Wheat is sold on the basis of obeying criteria on wheat quality and moisture content.

Economic performance

The producer was not able to give data on variable costs by crops. Pretty good average yields were achieved in all crops production (except wheat in 2010 when the yield was poor and amounted only to 2.95 tonnes/ha). Average yields were approximately: wheat up to 4.5 tonnes/ha, maize (grain) 7–7.5 tonnes/ha, soybean 3 tonnes/ha. In 2009 and 2010 the farmer received support (on entity and cantonal level) in the amount of 0.12 BAM/kg of wheat. Maize production was not supported and the farmer did not apply for subsidies for soybean production.

	Wheat		Maize		Soya	
	2009	2010	2009	2010	2009	2010
Surface (ha)	5.5	5.0	11.8	12.0	2.2	2.5
Average yield (tonnes/ha)	4.35	2.95	7.03	6.75	3.27	3.04
Production volume (tonnes)	23.93	14.75	83	81	7.2	7.6
Selling price (BAM/kg)	0.29	0.31	0.25	0.25	0.60	0.57
Output value – BAM	6,938	4,573	20,750	20,250	4,320	4,350
Output value/ha	1,715	1,208	1,758	1,688	1,964	1,740
Subsidies – BAM	2,871	1,770	-	-	-	-
Total value	9,809	6,434	20,750	20,250	4,320	4,350
Total value/ha	1,783	1,269	1,758	1,688	1,964	1,740

Other additional incomes (livestock production):

- 4 calves x 120 kg x 6.0 BAM = 2,880 BAM
- 8 steer x 400 kg x 3.65 BAM/kg = 11,680 BAM
- 6 cows x 3.500 litres of milk x 0.85 BAM/l = 17,850 BAM

Factors of success

The farmer pointed out the following as crucial factors for the success of his farm in cereals production:

- Good choice of seed and adequate protection in proper time
- Obedience of agro-terms and use of agro-techniques,
- Existence of Cooperative “Žitopromet”
- Regular education in new technologies, varieties, hybrids, (attending seminars and applying acquired knowledge and innovation)

Lessons learned for policy measures

One of the greatest problems faced by cereals producers is price uncertainty, a protected or minimum purchase price is unknown before seeding. Very often farmers do not know the price even at delivery time. The price is determined afterwards so the farmers often do not know if they managed to cover production costs before they get paid.

Farmers are in an uneven (unfavourable) position in comparison to other entities and countries in the region (Croatia and Serbia) as they have no regress for blue diesel and fertilizers. On the other hand, there is the CEFTA agreement and no custom duties are in force.

Farmers know almost nothing about standards in production and storage. Such a situation is the result of a lack of such requirements on the domestic market that absorbs almost the whole production volume.

Case Study reference number: RS - 1

Type of Producer: Substantial corporate producer

Human Resources: 32 permanent employees

Economic activity: Cereals (main activity)

Other activities: Provision of warehousing and storage of products

Background of the agricultural farm

The agricultural farm is located in the Republic of Srpska Posavina. In the past, the farm was a state enterprise, which had about 1,800 ha of arable land. Currently it has 902 ha of arable land, while the rest of the land is situated on the territory of another entity (FBiH). The division of the company followed the moment of privatization of the state capital. Until 2001, the company had the status of a state enterprise, and afterwards it was privatized.

The present situation and management of agricultural farms

The farm has a total of 902 ha of total arable land. The company management believes that its current available land is not sufficient, in view of future plans, and investments in the production of fattening animals. Arable land is under concession, with a period of use of 15 years, and the amount of the concession fee is defined at 3 percent of total revenues generated annually. In the planting structure, the most common crops are wheat and corn, while the remainder are triticale, oats and oilseed rape. The company, in order to improve its production, is currently in a *program of reconstruction*, which includes reconstruction of existing, and construction of new irrigation systems, landscaping and reconstruction of existing (2) and the construction of new facilities of barns for 200 heads/barn and construction of a mixer for feeders. It has its own machinery to carry out all farming measures, as well as warehouse space with a capacity of 10,000 tonnes and dryers to dry product.

The farm is managed by one manager – the director, a professional engineer of agronomy. The farm is included in the VAT system and entered in the Register of farms under the MoA, which makes it eligible to receive government subsidies. The structure of employees, in addition to the director, is as follows: in administration there are 3 persons in charge of administrative and accounting tasks, while the direct labour workers are engaged in the implementation of production tasks. In terms of the organizational structure of the enterprise, it is a simple organizational structure, which on the one hand makes it easy to control all the activities of the company, as well as quick and efficient decision-making in line with market changes, but also there is a large commitment by the manager. The director, along with the production managers, makes real annual operating plans of sowing as well as reports on the completed harvest. Due to the form of the institutional organization of the company, a joint stock company, an annual assembly of shareholders is organized, where the results/performance indicators of the company are presented.

Investments

In the previous period, after privatization, and the settlement of debts to workers, the company has invested heavily in agricultural equipment, as follows:

- (1) Procurement of tractors; (5 tractors, of which 2 are second hand John Deere), total funding 301,000 BAM
- (2) Procurement of modern harvester of cereal grain, the overall financing 332,911 BAM
- (3) Procurement of corn sowing machine, (2 seeding machines), total financing 30,000 BAM
- (4) Purchase of a ploughs; (4 ploughs, 4–fold), total financial assets 50,000 BAM
- (5) Procurement of sowing machine for wheat, (3 meter operation), total financial assets 18,000 BAM
- (6) Procurement of sprinklers (2 sprayers volume 600 litres), total financial assets 7,000 BAM
- (7) Procurement of harrows; (2 harrows), total funding 3,000 BAM
- (8) Procurement of driller for channels for drain water from the depression; total funds 7,000 BAM and other machinery, manure spreaders, mineral fertilizer spreaders, spreaders for calcium (capacity 5 tonnes).

The reconstruction of the existing facilities for the farm machinery is ongoing, barn facilities for cattle fattening (2 buildings), and the building area of 50 m² to accommodate the chemicals. For the purposes of draining excess water, the drainage channels have been reconstructed, while 600 ha of arable land is within a hydromelioration system.

Planned, and at the same time, the priority investment is to build a peripheral canal to protect against flooding, construction of farms for fattening beef cattle, which involves the construction of new barn facilities, a feed mixer and procurement of input materials for cattle, then the reconstruction of existing and construction of new irrigation systems. Planned resources for the realization of this investment amounted to 1.8 million BAM, and source of financing would be the commercial banks. One of the important investments from next year (2012) onward represents the reconstruction of existing irrigation systems in the RS, which will be implemented with the help of the respective Ministry and financially supported by the World Bank.

Markets

Main products: wheat and corn, farm sells on the local market or to domestic processors and marketers. The most important buyer of wheat is the domestic milling industry (mills in the area of Bijeljina and Prnjavor). With known buyers, the company rarely makes a true contract of sale. Transport of goods is organized solely by the customer: mills and traders. Given that the company has silos for storage, sales are not realized immediately after harvest, but the goods are stored awaiting a good price. The company receives the prices and the necessary information through the Stock Exchange information centres in Serbia and Hungary. Specifically, the company has signed quarterly contracts with stock exchanges for market information about prices. For services on price information, the company pays between 180–200 BAM quarterly to stock exchanges. Sales of rapeseed are based on previously signed contracts, and major customers are “Bimal” Brčko and the company PINUS PRO doo Samac, which buys it and exports to Slovenia, where oilseed is processed and biodiesel produced.

Production, product management and standards

Production of cereals is conventional. On average for the period 2005–2011, wheat was produced on an area of 310 ha and 290 ha of corn. During the period of 2007–2011, the production of rapeseed has been organized on about 125 ha. Yields of wheat for this period on average ranged between 3.2 tonnes/ha (2010) to 4.2 tonnes/ha (2009). Low yields from 2010 are the result of the occurrence of heavy floods, which are very common at the time of heavy rainfalls in this area. The multi-year average of wheat yield per unit area (2005–2011) ranged around 3.7tonnes/ha. Multi-year average of corn yields for the period 2005–2010 ranged from 6.5 tonnes/ha.

Table 1. Average yields of wheat and maize

CROPS	2011	2010	2009	2008	2007	2006	2005	Average 2005–2011
wheat t/ha	3.9	3.0	4.4	4	3.9	3.5	3.5	3.7
maize t/ha ⁹⁶		5.5	7	6	7	6.7	6.7	6.5

The plan is to introduce quality standards into the company and obtain certificates, which would inter alia facilitate the improvement of business, allow higher profits, creating a better basis for further development and better positioning of the company in the market generally.

Economic performances of production

	Wheat		Maize	
	2009	2010	2009	2010
Area(ha)	318.3	319	309	362
Size of production (tonnes)	1,400	957	2,163	1,991
Subsidies	79,900	94,221		
Value of production	511,000	466,550.19	515,230.84	690,919.65
Total value of production	590,900	560,771.19	515,230.84	690,919.65
Variable costs	423,198.73	372,982.99	453,603.41	545,578.49
GVA	167,701.3	187,788.19	61,627.43	145,341.16

The value of the variable costs for wheat in the period 2010 included reimbursement for NPK 15:15:15 and diesel fuel, and corn in the period 2009–2010. Due to natural disasters (floods) in 2010, procurement of fuel and fertilizer (90 tonnes and 117.25 tonnes of NPK 15:15:15, 90 tonnes of KAN (27 percent)) in the amount of 252,165.42 BAM has been written off by the relevant ministry.

⁹⁶Note: Maize, multi-year yield is calculated for the period 2005–2010.

- In addition to agricultural production, part of the company's revenue is achieved through the provision of warehousing and storage to other customers. Total production of the company, on an annual basis (all crops) is between 4,000 and 5,000 tonnes. Due to the existence of a storage capacity of 10,000 tonnes, the company gives the rest of the free storage space to potential users of services for storage and maintenance of a certain amount of products and on that basis it gets a certain income. With potential users of services for storage and maintenance of a certain amount of products, the company signs a contract, which specifies the amount of compensation for certain services that potential users are required to cover (for the receipt of goods 2 BAM/tonne, for storage 3 BAM/tonne per month, and for the exit of goods 2 BAM/tonne). On top of these services 17 percent is added in tax.

Success Factors

The key success factors in the business enterprise are the capability of the company to perform current production out of its own funds, providing its own participation in the financing of long-term development programmes, as well as the availability of qualified personnel for current and long-term development

Case Study reference number: RS – 2

Type of Producer: Large corporate producer

Human Resources: 200 permanent employees, and seed production employs 150 workers at peak season

Economic activity: Cereals (main activity)

Other Activities: Animal production (milk production and cattle fattening, production of piglets and fattening pigs)

Background of the agricultural farm

The agricultural farm is located in Semberija in the Republic of Srpska. The farm was established in 1946. Until 1992, in terms of institutional organization, the company had different organizational forms. Since 2009, it has been operating as a joint stock company. Since its beginning the company has been directed toward crop and livestock production. Besides the mercantile, the company has dealt with seed production, and this activity continues today in cooperation with the Institute of Field and Vegetable Crops, Novi Sad (NS seeds) and Zemun polje, Belgrade. In livestock production, the company was known as a Producer of breeding materials, or in its composition, it had a reproduction centre for the production of female breeding material (heifers and gilts). Until 1992, the company owned 6,000 ha of arable land, and today has only 43 percent of the said total surface area. The rest of the area is divided by the concessionaire, the area of 50–100 ha, and one part of the land is rented to individuals by the state and municipality.

The present situation and management of farms

The agricultural farm today has a total of 2,550 ha of total arable land. In addition, the farm in its composition has 68 ha, which is the built-urbanized land i.e. the buildings. The total arable area (2,550 ha) is under the concession. The period of use of the land under concession is 15 years, with the right for an extension for 7.5 years with an extension of the concession agreement. The amount of concession fees until 2010 amounted to 95 BAM/ha and from 2011 onward, 2.5 percent of total revenue. On the farm, mercantile and seed production of major crops were also developed. The structure of the sown areas under concession is as follows:

- 750 ha of wheat
- barley, 120 ha
- 225 ha of oilseed rape
- 750 ha of corn
- 300 ha of soybeans
- 250 ha of sugar beet
- 80 ha of alfalfa (Lucerne)

Within the farm there are two farms, of which one is dairy cows Simmental and Black – White (280 head). In milk production, a by-product (calves) are intended for breeding (males), and females for breeding. The second farm is a pig farm and it is intended for the production of piglets. Currently the farm has about 170 breeding sows. The equipping of the farm with machinery can be said to be good. Due to their own equipment, there is no need to use services for the application of specific agricultural measures. It does not have storage facilities – silos, but for storing they use an old floor warehouse in which they keep soya, sunflower, corn and barley. The capacity of the floor warehouse is about 5,000 tonnes. Of the total available arable land (2,550 ha) the farm has the option of irrigation on 750 ha, and currently is irrigated only 25 percent or 187.5 ha. The farm currently employs 200 workers. The company management structure consists of an Assembly and Management Board.

The farm is managed by a director/manager, a professional agricultural engineer. The Director of the Company, together with the managers of individual productions, make actual annual operational plans for planting and after the completion of the harvest, report on actual returns and realized process. The farm is in the VAT system and is entered in the Register of Agricultural farms in the relevant Ministry, which is entitled to receive state subsidies. Due to the form of the institutional organization of the company, i.e. joint stock company, it organizes an annual meeting of shareholders, where they present the results/performance indicators of the company.

Investments

In the previous period, the farm has set aside significant funds for the purchase of equipment and terminals to the value of 5,000,000 BAM and construction of two barn buildings for dairy cows, including the necessary equipment for milking worth between 200,000 and 300,000 BAM. As sources of funds for these investments their own funds were used, as well as bank loans and government subsidies on the basis of the MoA Subsidy ByLaw.

In the future, the farm plans significant funding to direct towards restoration of machinery, adaptation of the barn for 150 dairy cows and to soil improvement. Given the type of soil, which is dominated (*podzol*)⁹⁷ calcification of the land is necessary. Currently, 250 ha of land are planned to be calcified. One of the most important investments, next year (2012) represents, as already stated, the reconstruction of existing irrigation systems in the RS, which will be implemented by the relevant ministry, and financially supported by the World Bank. Priority investment is the construction of silos with a drying facility with a capacity of 5,000 tonnes.

Market

After the harvest, crops are stored in the floor warehouse, and then placed on the market. The company's own products are sold in the local market. In terms of marketability of individual crops, wheat has the highest marketability, then soybeans and oilseed rape (100 percent). From other crops, the total production of maize and barley, part is left for cattle feeding, and the rest is put on the market. Transport of products to the end customer, if the outlet is far away, is done by trucks, and to closer customers (merchants and mills within Semberija) by own agricultural machinery (tractors).

Flour mills within Semberija mainly buy wheat although a certain amount of wheat along with corn through the company "Agrogroup" from Brčko is exported to Turkey. For mercantile wheat and corn there are no contracted sales. Purchase of wheat is being implemented in accordance with the Decision of the Government of RS, which clearly defines the size of the protective price, which is the basis for collection.⁹⁸

For oilseeds (rapeseed and soybean), the farm has agreed to sell to the factory, "Bimal" from Brčko, the only producer of edible oil in BiH. The contract, signed by the farm with the processor on the purchase of soybeans and canola, can clearly define the protective price, and at the time of sale, the market sales price. Selling of crops is done immediately following the harvest, and the payoff is within 30 days after delivery. In 2010, the purchase price for rapeseed and soybean amounted to 580 BAM /tonne, and the 2011 buyer is willing to pay 760 BAM/ton, due to lack of supply of these products on the market.

Since the farm, in addition to the programme of mercantile production, is involved in a programme of seed production, seed production is made with the Crop Institute from Novi Sad and Zemun polje Belgrade. For each year, the farm signs a contract with these companies for the implementation of seed production for each crop. Lately, the farm produced its own seeds of wheat, barley and soybeans, which are then marketed as commercial varieties, while the seed corn and sunflower varieties are owned by listed companies. For the purposes of seed production of maize and sunflower fields on the farm, they receive, from one of these houses, seed and advance payments for the provision of other necessary materials in seed production (fertilizer, crop protection chemicals, etc.), while the rest of the money is paid out after a good implementation-specific delivery of seed produced.

Production, product management and standards

Production of cereals is conventional. Table 1 shows the average yields for wheat and maize for the period 2007–2011.

Table 1 Average yields of wheat and corn for the period 2005–2011

Crops	2011	2010	2009	2008	2007	2006	2005
Wheat t/ha	3.8	2.3	4.7	4.9	4.2	3.1	3.5
Maize t/ha		6.2	9.1	4.5	2.6	4.8	5.2

The farm has not been certified to the standards in the processes of production management, within which are included guidelines for the implementation of good agricultural practice (GAP).

⁹⁷ Note: Podzol, acid soil, light, water, pure in phosphorous, calcium and nitrogen.

⁹⁸ Note: For example in 2011, the wheat collection price was 0.38 BAM/kg. If a farmer wants to receive a subsidy for wheat, he cannot sell below that price.

Economic performances of production

Economic performances of production show the review of main crops: wheat, maize, soybeans and oil rape.

	Wheat		Maize (mercantile)		Oil rape		Soya	
	2009	2010	2009	2010	2009	2010	2009	2010
Area (ha)	1,082	934	520	550	254	144	220	250
Average yield tonne/ha	4.73	2.39	9.1	6.2	2.6	1.9	2.41	2.49
Size of production (tonnes)	5,118	2,232	4,732	3,410	660	274	530	623
Value of production	1,433,040	602,640	1,419,600	1,364,000	508,200	147,960	265,000	361,340
Subsidies	305,253.41							33,349
Total value of production	1,738,293.4	602,640	1,419,600	1,364,000	508,200	147,960	265,000	394,689
Variable costs	507,458	565,070	333,320	574,200	135,636	117,072	124,960	131,500
GVA	1,230,835.4	37,570	1,086,280	789,800	372,564	30,888	140,040	263,189

In addition to agricultural production, part of the company's revenue generates through the sale of milk, pigs and fattened pigs weighing between 110 and 120 kg. Total milk production annually is around 1.5 million litres. Milk belongs to the E class and is bought from Kozarska Dubica dairy. The purchase price of milk is 0.64 BAM/ l + 0.22 BAM/ l milk of payments for E—class. Therefore, the annual revenue through the sale of farm milk is around 1.29 million BAM. The farm has 3,000 head of pigs per year, of which 60 percent of the piglets, and 40 percent of the pigs weighing between 110 and 120 kg. Revenue from the sales of piglets annually is 148,500 BAM, of fattened pigs 386,400 BAM.

Deficiencies and needs for investment, training and information to comply with the acquis

Generally speaking, one of the aspects of involvement in domestic agricultural production, i.e. production of cereals in world trade flows means the harmonization of the legal framework of regulations, particularly with the EU (acquis). Another important aspect is to apply the standards in the areas of forming the product itself, such as farms and enterprises. This company is not in the Quality Management System (does not apply, nor a certification system of safe food production, quality management and environmental protection). Given that the company is mainly oriented to product placement in the domestic market, it currently does not require that products have the certificate on its quality. However, this practice, bearing in mind the strategic orientation of the RS and BiH, which is entering the EU, for many farms, and businesses will not last long, because of the adoption of EU directives and regulations, which will be applied in domestic legislation.

Specifically, this means that those who sell their products on the domestic market will have to meet the requirements of certain standards in order to be able to sell them. It is therefore a priority for investments, aligned with the standards imposed by the application primarily in the processes of production and management of the company. In order to realize this, it is necessary to introduce training and management of companies on the requirements of international standards, particularly support of the relevant ministry in (co) funding the costs of introducing quality systems in the enterprise. Furthermore, as another important priority for the development of grain markets in RS and BiH, the company mentioned performance improvement of the existing market institutions, specifically the Commodity Reserves in the RS. Also, to ensure a high income, the company has to work on changing the structure of plant production, the introduction of modern technologies of production, repair and increasing the land area under irrigation.

Success Factors

The key success factors in the business enterprise, according to the existing human resources, are relatively stable production, good equipment with technical means, thanks to significant investments in equipment i.e. agricultural mechanization in the previous period.

Case Study reference number: RS – 3

Type of producer: Commercial producer

Human Resources: 3 family members and 3 employees during the season (45 man days per season per year)

Economic activity: Cereals and oilseeds (main activity)

Other Activities: Animal production and farm mechanization services

Background of the agricultural farm

The farm is located in Brčko District. Since 1985 the farm has been producing maize, wheat and soybeans. Initially the production of these crops was taking place on smaller areas of 2–3 ha, and then the area gradually increased. During the period 1995–1996, the farm began to deal with the fattening of cattle and up until today, in this regard, it maintains a constant volume of production.

The present situation and management of the farm

The farm now has a total of 33 ha of arable farmland. Of the total arable land (33 ha), 12 ha belong to the farmer, and 21 are rented. An area of 30 ha is with field crops, most of which is under wheat (15 ha), followed by maize (12 ha) and soybeans (3 ha). Sown crops are cultivated on areas, which are partly owned by the farm, and another part is rented. About 3 ha of arable land is planted with grass – clover mixtures, Smiljkita and Red Clover and are owned by the farm. Agricultural land of 21 hectares is rented from a private person and the Government of the District of Brčko. From the private person, the producer rents 13 ha and is paying a price of 200 BAM/ha. The Government of Brčko District has rented him 8 ha of land, for which the producer pays 80 BAM/ha. In addition to crop production, the farm is also engaged in animal production. The structure of the livestock on the farm is: 2 dairy cows, 20 beef cattle, 7 breeding heifers, 7 sows, 35 piglets, 10 sheep, between 15 and 20 poultry, and a horse. Equipment of the farm i.e. the agricultural mechanization is satisfactory. The age of the agricultural machinery is between 10 and 20 years. In addition to revenues generated through the sale of agricultural and livestock products, an additional source of farm income is generated through the provision of machinery services. In addition to barns (the barn for fattening beef cattle is 60 m²), the farm owns a warehouse for the storage of maize, with a capacity of 15 tonnes, an animal feed mixer to prepare meals for feeding livestock, while for wheat the farm does not have adequate space for storage and maintenance. The owner manages the agricultural farm. The work on the farm is actively participated in by two family members, and at the time of seasonal work, the farmer hires additional manpower (3 seasonal workers). Seasonal labour is hired in the spring, summer and autumn. The farm is not in the VAT system, it is registered in the Government of the Brčko District, and thus it is entitled to receive subsidies. The producer is a member of the cooperative ZZ “Poljokop” Brčko.

The farm is an example of a “traditional family farm”, where the basic factor of production along with family labour, is the land. The main motive of the farm in dealing with agricultural production is the provision of income and security for their own families.

Investments

In the period 2005–2010, the farm invested in the following capital investments:

- (1) Construction of the facility for fattening beef cattle, with a value of 15,000 BAM,
- (2) Construction of buildings for accommodation of dried fodder (hay) with a value of 5.500 BAM,
- (3) Procurement of implements (drills and ploughs), with a value of 1.500 BAM,
- (4) Procurement of new collectors for the hay, with a value of 1.300 BAM,
- (5) Purchase of second-hand agricultural machinery and implements (tractor pulling drill, plough-3 XS), with a value of 21.500 BAM,
- (6) Purchase of new tanks for manure, with a value of 6.000 BAM

The total funding for the construction of buildings and purchase of agricultural mechanization was procured by the farmer from his own funds.

In the future, the farm intends to realize a number of investments, purchases of new farm machinery (tractors and harvesters), the extension of an existing warehouse for the storage of grain, or the construction of silos with a drying facility with a capacity of 20 tonnes, the expansion of existing livestock through the purchase of male calves and soil improvement – calcification.⁹⁹

These investments are arranged according to the following priorities:

1. Purchase of new farm machinery (tractors and harvesters)
2. Soil improvement – calcification
3. Purchase of male calves
4. Expansion of existing warehouse and construction of silos with dryer and storage of grain, with a storage capacity of 20 tonnes.

The farm intends to implement planned investments out of their own and borrowed funds.

Market

Products that are marketed are: wheat, maize, soybeans and fattened cattle. There is no previously signed contract between producers and buyers (the mill, “Pavlovic”) from Bijeljina, but the product sales are based on mutual agreement. Bearing in mind that out of the total production volume, about 5 tonnes of wheat is left on the farm, it appears that, on average about 88 percent of the total production is sold to the market. Since wheat is sold exclusively in the territory of the Republic of Srpska and in the mill industry in Semberija, the price at which the farmer sells wheat is determined by the prices fixed by the Government of the Republic of Srpska. Wheat is sold immediately after harvest.

Maize is sold to domestic producers who are engaged in pig fattening. In relation to the total realized production of maize on the farm, about 60 percent of the maize is intended for the market. Payment to the producer follows immediately upon delivery. Sales of maize are undertaken directly “on the farm”.

The producer has a contract for the sale of soybeans directly with the edible oil factory “Bimal” Brčko. The contract, just prior to entering into production (in March), clearly defines the purchase price (2011, 670 BAM/tonne). The buyer is also prepared, if the year is characterized by a low yield of soybean, to pay a higher price per unit to the producer. For example, in 2008 the protection price from the contract, on the basis of which the collection of soybeans should have been conducted was 490 BAM/tonne, but due to low yields, the purchase price amounted to 590 BAM/tonne. The contracted delivery date of goods is within 40 days, and the producer is paid for the goods after 9–10 days. In addition to the contracted sales, another aspect of the arrangement between the producer and Bimal is manifested through the lending for soybean production, or supplying the producers with the necessary inputs that the supplier returns through the delivered goods.¹⁰⁰

Livestock products (fattening cattle and pigs) are sold to private slaughterhouses in the DB and Bijeljina through traders. Annual sales are about 20 heads of beef cattle, of 550 kg weight and the market price is between 3 and 4 BAM/kg, and pigs, about 30 heads, weighing up to 30 kg at 3 to 3.5 BAM/kg.

Production, product management and standards

Crop production is in a conventional production system. In the period 2005–2011 a multi-year average of wheat yields have ranged around 3.9 tonnes/ha, maize 8.5 tonnes/ha and soybeans around 2.5 tonnes/ha. Until 2009 the production of maize was based on the production of whole crop, and in the last three years exclusively on the grain.

Table 1: Areas and average yields of crops on the farm

Crops	2011	2010	2009	2008	2007	2006	2005	Average 2005–2011
Wheat (ha)	10	9	13	13	8	6	7	9.4
tonne/ha	4	4	3.5	3.9	4	4	4	3.9
Maize (ha)	17	14	18	18	9	7	9	13.1
tonne/ha		8	8	9	9	9	9	8.5
Soya (ha)	3	6	9	3	2	2	2	3.9
tonne/ha		2.5	2.5	2.5	2.5	2.5	2.5	2.5

⁹⁹Note: Calcification is a priority due to widespread podzola or pepeljuša.

¹⁰⁰Note: out of total sold value of soya, the input costs are deducted. The remaining amount is the final income of the producer.

Harvesting of the crops is undertaken with their own agricultural machinery. Upon harvesting the crop from the field, the products are transported, by their own tractor-trailer, to the storage space within the agricultural farm. One part of the crops (maize grain, wheat and soybeans) are stored after harvest in the warehouse and left for feeding livestock on the farm, and the remainder is put on the market. For maize, in addition to grain production, one part of the crops is used in the production of silage. In the milk-wax maturity stage of maize, the whole plant is used for silage making.

Economic performances of production

	Wheat		Maize		Soya	
	2009	2010	2009	2010	2009	2010
Area (ha)	13	9	18	14	9	6
Size of production (tonnes)	45.5	36	144	112	22.5	15
on the market (tonnes)	40	31.7	86.4	67.2	22.5	15
Value of production	13.200	11.088	30.240	26.208	11.700	8.850
Subsidies for area BAM/ha	300	300	250	250	400	400
Total value of production	13.500	11.388	30.490	26.458	12.100	9.250
Variable costs	8,255	7,380	14,112	11,984	7,020	4,680
GVA	5,245	4,008	16,378	14,474	5,080	4,570

Overall agricultural production on the agricultural farm is inconsistent with the principles of “good agricultural practices”. The reason for the lack of a certificate of Global GAP standards, as the producer says, is the high cost of introducing it.

In addition to agricultural production, the farm generates a portion of its revenue through the provision of machinery services. Revenues generated from the sowing, on an annual basis, are about 3,600 BAM (60 ha sown area/year x 60 BAM/ha), and from the harvest in the amount of 15,000 BAM (100 ha/year x 150 BAM/ha).

Deficiencies and needs for investment, training and information to comply with the acquis:

Given that the overall production is not consistent with the principles of application of good agricultural practice, one can conclude that the farmer does not meet the agri-environmental and quality standards of products. The producer reported a need for training and information relating to the application of good agricultural practices.

Success Factors

The producer mentioned several factors for the success in production:

- (1) Was able to place his products on the market and the high purchase price for certain products, notably soybeans
- (2) The use of their own agricultural mechanization has a significant impact on reducing production costs
- (3) Significant support by the Government of the Brčko District in the form of subsidies for crop production
- (4) Financial potential of agricultural producer to implement majority capital investments from his own funds

Case Study reference number: RS – 4

Type of producer: Commercial producer of cereals.

Human Resources: 7 family members and 3–4 workers per year during the harvesting season

Economic activity: Cereals and oilseeds (main activity). Other Activities: Animal production and service provision of machinery

Background of the agricultural farm

The farm is located in the municipality of Srbac. In 1996 the farm began intensive agricultural production on an area of 70 ha, which was eventually reduced to 50 or 40 ha. The reason for reducing the production area was the inability to sell the product. As an illustration of this, in 1997, the farm could not sell 100 tonnes of soya. Currently, the farm is engaged in crop and livestock production. As far as crop production is concerned, the most common production is of wheat, corn and soybeans. Livestock production is focused on producing pigs.

The present situation and management of the agricultural farm

The farm, for the purpose of organizing agricultural production, has a total of 23 ha of arable land. Of the total 23 ha, 3 ha are owned by the farm, while 20 ha is rented. Land is rented from private persons and according to the location, rent ranges from 100–200 BAM/ ha. The entire cultivable area of 23 ha is under crop production, i.e. grain and soybeans. Crops are not under irrigation. As far as cereals are concerned cereals, the structure of sowing is dominated by wheat and corn, a very small area is under barley and oats. The structure of arable land use is dominated by soya, given the existing livestock production.

The structure of the livestock farm has 10 breeding sows with 200 piglets annually, 2 dairy cows, mixed production (Simmental), 3 sheep and 50 poultry.

Equipment on the farm i.e. agricultural mechanization is satisfactory. The age of agricultural machinery is about 20 years. In addition to revenues generated through the sale of agricultural and livestock products, as an additional source of farm income there is the provision of own machinery.

In addition to barns (barns for swine have an area of 100 m²), the farm owns so called “wooden storage barns” for storage of corn (up to 100 tonnes of the crop) and wheat (capacity 20–30 tonnes of grain). The farm does not have adequate space for storage and maintenance of products after harvest. The agricultural farm is an ownermanaged farm. The work on the farm is actively participated in by almost all family members, and in the course of the year, at the time of seasonal work, the farm hires additional manpower (3–4 seasonal workers). The farm is not in the VAT system. It is entered into the Register of Agricultural Farms of the relevant Ministry, enabling it to obtain state aid/ subsidies, usually in the form of subsidized fertilizer and oil crop production. It is a member of the Association of Republic of Srpska farmers from Derventa.

Like most farms in the Republic of Srpska, the main motive of the farm in dealing with agricultural production lies in providing an income and security for their families.

Investments

In the period 2005–2010, the farm invested in construction of a building for the pigs. Construction of the barn began in 2007 and it was completed in 2008. The barn size is 10 m x 10m = 100m², capacity 30–40 sows. One part of the space is designed to accommodate the offspring of 20 heads/box. The construction and equipping of the space for the pigs cost 40,000 BAM, of which 50 percent are own, and the remaining 50 percent borrowed funds. The loan was provided through commercial banks for a period of 5 years.

Given the average age of their own agricultural machinery (20 years), the future plans of the farm are to obtain a new tractor and implements machines. In addition to procurement of farm mechanization, construction of new warehouse space is planned. One of the problems that the farm faces is the problem of fragmentation of land, and it is necessary to start enlargement of them.

Given the current and future livestock production, the farm is planning to expand the space for the sows and build a new barn for bulls, with a capacity of up to 20 animals.

Planned investments will be financed from their own and borrowed funds.

Market

After harvesting of crops, the products are stored in the so-called “wooden storage barns”. Of the total production of corn, about 70 percent is for the market, and 30 percent is used for feeding livestock. For wheat, a significant portion of the production is for the market (80 percent), and the rest of it, the farm uses for feeding livestock. Produced soya, given the existing livestock production, is not sold but is used as input for feeding livestock. For wheat and corn there is no agreed sales. Wheat, immediately after the harvesting of the crop is transported to the mills, and the producer receives the money immediately for the delivered goods. One part of wheat production is delivered to Commodity Reserves, for the approved subsidy of fertilizers and fuel. Price at which wheat is sold to mills is defined in accordance with legal regulations, issued by the Government of the Republic of Srpska. Maize after harvesting is not sold immediately, but stored until April or May, when the supply of this product is small and the demand is high, and the producer has an opportunity to achieve higher selling prices and thus higher profits. Corn is sold indirectly, through traders

Production, product management and standards

Farming is on a conventional production system. In 2011, the sowing areas were under corn and soybeans, while wheat was sown in autumn 2010 on 4 ha, and due to frequent rainfall it was ploughed and on the same area in spring 2011 corn was sown. There were low yields of corn in 2010 as a result of huge floods that gripped this region (October), which are generally very common in this area due to the closeness of the Vrbas and Sava Rivers Basin. Multi-year average yields (2005–2010) of wheat were about 3.8 tonnes/ha, maize 9,6 tonnes/ha and soybean 2.4 tonnes/ha. The structure of the wheat varieties is represented by domestic varieties of wheat, as well as varieties of seed producers in the region (mostly NS-seed). For planting corn, the producer uses only hybrid seed of NS-seed.

Table 1: Areas and average yields on the farm

CROPS	2011	2010	2009	2008	2007	2006	2005	Average 2005–2010
Wheat (tonnes/ha)		3.0	3.8	3.8	3.8	3.8	3.8	3.7
Maize (tonnes/ha)		5	10	10	11	11	11	9.6
Soya (tonnes/ha)		2	2.5	2.5	2.5	2.5	2.5	2.4

Harvesting of crops is undertaken by own agricultural mechanization. Upon harvesting the crops from the field, the products are transported by own tractor-trailer to storage facilities (barns) within agricultural farm.

As noted, agricultural production is according to a conventional production system. Due to the closeness of the wetland complex of “Bardača”, which has been declared a “protected area”, the producer, in the near future, plans to switch from conventional production systems and to accept and apply the principles of “good agricultural practices” and the introduction of the standard of Global Gap.

Economic performances of production

Economic performance of the production is presented for the production of wheat and maize. Production values refer to the total sales volume of wheat and maize for the period 2009–2010. Bearing in mind that the marketability of wheat is 80 percent and 20 percent is intended for feeding livestock on the farm, it appears that in 2009 production value amounted to 5414,4 BAM (13.68 x 280 BAM/tonne, counting the premium for wheat sold at 50 BAM/tonne. In 2010 the amount of 5040 BAM (18.24 x 350 BAM/tonne). For the period of 2010, the total variable costs included subsidies for inputs (NPK 5:15:15, and KAN (27 percent)). Of the total amount of corn produced in the period 2009–2010, approximately 70 percent was placed on the market, hence the value of production in 2009 was 31,360 BAM (112 x 280 BAM/tonne) and 14,700 BAM (42 x 350 BAM/tonne) in 2010.

CROPS	Wheat		Maize	
	2009	2010	2009	2010
Area (ha)	4.5	6	16	12
Size of production (tonnes)	17.1	18	160	60
Value of production BAM	3,830.4	5,040	31,360	14,700
Subsidies for wheat (BAM)	684			
Subsidies for sown area (BAM)	900	0	0	0
Total value of production	5,414.4	5,040	31,360	14,700
Variable costs ¹⁰¹	3,290	3,354	12,553	8,629
GVA	2,124.4	1,686	18,807	6,071

In addition to agricultural production, one of the sources of income is generated through the provision of equipment. At the annual level, the farm's own machinery, cultivates about 30 ha of land. Revenue from the cultivation is 6,000 BAM/year (30 ha/year x 200 BAM/h). In addition to preparing the land, the farm generates revenue in sowing and spraying of crops to the value of 9,000 BAM. Thanks to owning their own machines for harvesting of maize (corn head) the corn harvester brings revenue in the amount of 17,000 BAM (85 ha/year x 200 BAM/h).

Deficiencies and needs for investment, training and information to comply with the acquis:

The producer mentioned several shortcomings in alignment with the acquis:

- (1) Non compliance of crop production with the principles of "good agricultural practices"
- (2) Unregulated markets and the need to define the legal framework, that will establish the specific mechanisms of control and order of the market
- (3) The problem of the functioning of market institutions (RS Commodity Reserves).

The producer reported a great need for training and information relating to the application of good agricultural practices, as well as support for funding the costs of standardization of production and construction of adequate storage facilities for storing agricultural products (silos).

Factors of success

Factors of success, or survival of the agricultural holdings are:

- The engagement of own labour in production
- Engagement of their own agricultural machinery,
- Reducing production costs

¹⁰¹Note: Variable costs for wheat in 2010 were calculated on the basis of subsidized mineral fertilizers and fuel (NPK 15:15:15 – 250 kg/ha and fuel 100 l/ha). Variable costs for maize for 2009 and 2010 were calculated on the basis of subsidized mineral fertilizers and fuel (250 kg/ha NPK 15:15:15 and fuel 120 l/ha).

Case Study reference number: RS – 5

Type of Producer: Commercial producer

Human Resources: 2 family members, 10 full-time employees and 2 seasonal workers

Economic activity: Cereals and oilseeds (main activity)

Other Activities: Animal production

Background of the agricultural farm

The farm is located in the municipality of Gradiska. The farm has been registered as a limited liability company since 1993, which in addition to dealing with agriculture started dealing with trade, and since 2001 the only and exclusive production is agricultural production. The farm is of a combined type, and has agricultural and livestock production. Crop production, is dominated by grain production (wheat and corn) and oilseeds (rapeseed), and by livestock production, fattening pigs and cattle.

The present situation and management of agricultural farm

The farm has a total of 30 hectares of own land, of which 0.6 ha is forest land, 2.4 hectares is under oil crops, while the remaining 27 ha are cereals. Their own area under oilseeds and grains is under irrigation. Given the existing livestock production; fattening of pigs and calves, in 2007 the farm took 229 ha of arable land under concession. The period of use of land under concession is up to 15 years, with the possibility of extension of the contract. The concession fee, which the producer pays is 83 BAM/ha. The concession structure of the arable land consists of 36 ha under oilseed rape; 70 ha wheat and 123 ha of maize. On the contrary of their own arable land, the land under concession is not currently covered with an irrigation systems. For the purposes of keeping and storage of crops, the farm has storage space – metal silos with a total capacity of 1,000 tonnes. In addition to metal silos, the farm has a floor warehouse with a capacity of 500 tonnes and dryers for crop drying. Harvesting of the crops is done by their own machinery. The level of equipment of the farm with their own machinery is very satisfactory.

Own machinery is used for the purpose of performing all operations in the agro-technical production on the farm. In addition, the farm provides services to other producers through the use of their equipment, and generates additional income. On average, the annual value of the machinery service is 40,000 BAM–50.000 BAM. Also, thanks to the existing dryer for drying crops, for the provision of drying services, the farm generates 60,000–70,000 BAM. On the agricultural farm there are barns for fattening pigs and cattle. One barn is 900 m² and is used for cattle with a capacity for 300 animals, while another barn of 1,200 m² is for fattening pigs, 1500 heads. The farm has space for storing raw materials, a fertilizer warehouse, an area of 150 m², for seeds 194 m² and for chemicals 25 m². The farm i.e. enterprise is an owner-managed farm. The work on the farm actively involves 2 members of the family, and during the year, at the time of seasonal work, 2 additional seasonal workers are hired as farm labour force. There are 10 full-time employees on the farm.

The farm is in the VAT system (17 percent). It is also in the Register of Agricultural Farms of the relevant Ministry, enabling it to obtain state aid/subsidies, usually in the form of subsidized fertilizer and oil crop production. The producer/owner of the company each makes a proper plan of production every year. For the purposes of concluding business contracts and the provision of certain services and regulating other legal activities of the enterprises, the owner of the company hires a legal consultant.

Investments

In the period 2005–2010, the farm/company had a significant capital investment in storage facilities for cereals (silos), the buildings for fattening pigs (2) and heifers (1) and it invested in the construction of the facility for the pigs, and agricultural equipment (seeding machines, ploughs, spreaders of mineral fertilizers, etc.). Total funding for listed investments is estimated at about 500,000 BAM and this funding was provided from its own resources.

In the future, the farm/investment company plans to expand storage space, which is primarily dependent on obtaining additional arable land under concession. The aim of the agricultural farm is 1,000 ha of arable land under concession. The second planned investment is related to the construction of a mini slaughterhouse and a meat processing plant, and creating their own product. Priority investment is the purchase of the farm irrigation system – TIFON system. For 100 ha under irrigation, from the start, the farm intends to allocate between 220,000 to 240,000 BAM. Planned investment will be carried out of their own and borrowed funds.

Market

After harvesting, farming products are transported to the dryer (flow), where they are dried and then stored in silos. Except for soybeans, which are exclusively used for fattening pigs and calves, other arable products, wheat and corn are sold on the market. In order to achieve better sales prices for wheat and corn, crops do not find their way to the market immediately after harvest, but to the warehouse. Based on calculations of production, the price is formulated and the farmer waits for a favourable moment for the market. To illustrate this, in 2011, the producer sold 15 tonnes of wheat at 0.50 BAM/kg, although the purchase price of wheat stood at 0.38 BAM/kg. In the last two years, the production of wheat was exported to Turkey. In 2009, the export price of wheat was EUR 149/tonne and in 2010 it amounted to EUR 233/tonne. The producer has not made contracts to sell wheat and corn. Customers for wheat are traders and private farms. For wheat and corn, the producer has no problem with charging the goods supplied. Payment is made immediately.

Production, product management and standards

Manufacturing, product management and standard farming takes place according to a conventional system. Planting for the period 2005–2011 was dominated by corn and wheat, except for the 2006, when wheat was sown. Soybean planting in the structure of agricultural cultures represented the years 2011 and 2006: the average soybean yields were between 2.8 to 3 tonnes/ha. Average yields of perennial wheat amounted to 4.6 tonnes/ha and maize 7.2 tonnes/ha. The producer expects that the average yields of corn in 2011 were moving around 8 tonnes/ha.

Table 1: Areas and average yields on the farm

CROPS	2011	2010	2009	2008	2007	2006	2005	Average
Wheat (ha)	70	110	100	50	40		60	71.7
(tonnes/ha)	4	3.7	5	5	4.5		5.5	4.6
Maize (ha)	140	130	130	180	90	90	90	121.4
(tonnes/ha)		8.5	6	8	7	6.8	7	7.2
Soya (ha)	38.4					60		49.2
(tonnes/ha)	3					2.8		2.9

Harvesting of crops is done by the farmer's own agricultural mechanization. Upon harvesting the crop from the field, they are taken to storage facilities (silos) on the agricultural farm. Primary production is not standardized, and the introduction of quality management, namely the adoption and application of principles of good agricultural practice itself is one of the priorities for future investment of the farm.

Economic performance of the production

Economic performance is shown for wheat and corn. The obtained value of production is related to the total sales volume of wheat and maize for the period 2009–2010. The value of the production of wheat and corn is for the period 2009–2010 calculated on the basis of the following prices: wheat 2009 (291.8 BAM/tonne) 2010 (456.3 BAM/tonne) and maize in 2009 (264.4 K/tonne). In 2010, the entire yield of corn was not sold as well as the previous one. Very small quantities are sold, 50 tonnes at 470 BAM/tonne (including VAT of 17 percent).

CROPS	Wheat		Maize	
	2009	2010	2009	2010
Area (ha)	100	110	130	130
Size of production (tonnes)	500	407	780	1,105
Value of production BAM	146,000	185,592	205,920	27,500
Wheat subsidies (BAM)	20,000			
Sown area subsidies (BAM)				
Total value of production	166,000	185,592	205,920	27,500
Variable costs ¹⁰²	129,900	114,164	121,820	138,762
GVA	36,100	71,428	84,100	111,262

¹⁰²Note: Variable costs for wheat in 2010 included subsidy (NPK 15:15:15 – 250 kg/ha and euro dizelom – 120 l/ha). Variable costs for maize for 2009–2010 included subsidy (NPK 15:15:15 – 250 kg/ha and euro dizelom od 100 l/ha).

In addition to agricultural production, one of the sources of income, is generated through the provision of machinery and drying services. At the annual level, farm income generated from providing services with their own machinery amounted to 40,000–50,000 BAM, and drying 60,000–70,000 BAM. In addition, significant additional income is generated through the sale of fattened pigs and beef cattle. At the annual level, the farm produces about 4,000 pigs (3 rounds per year). The market price is formed primarily on the basis of supply and demand. During the year the farm produces between 250 and 300 beef cattle. Beef cattle price is dictated by supply and demand for the product on the market. Since the farm has a mixer for animal feed, a significant portion of income is generated through the sale of animal feed. Annual production is around 500 tonnes.

Deficiencies and needs for investment, training and information to comply with the acquis:

The producer noted several shortcomings in alignment with the acquis:

- (1) Incompliance of crop production with the principles of “good agricultural practices”
- (2) Unregulated markets and the need to define the legal framework, that will establish the specific mechanisms of control and arrangement of the market
- (3) Existing legal regulations on subsidies in agriculture, the necessity for a clear definition of subsidies for crop production (clearly defining the amount of subsidies per hectare of sown area)
- (4) And finally the problem of the functioning of market institutions (Commodity Reserves RS).

In particular, it highlights the need for enlargement of the land and the increase of arable land. Increase of the cultivated area would significantly affect the increase in livestock production. The producer reported a great need for training and information, and acquiring new skills, to enhance existing production on the farm and significantly affect competitiveness.

Success Factors

Factors of success of the agricultural farm/enterprises lie in the following:

- A safe product market, whereby the company, thanks to the available storage infrastructure (silos) can achieve significantly high incomes
- Use of own agricultural mechanization
- Reducing production costs
- Good organization and functioning of the entire production

Producers’ investments in the past include these investments (summary):

- Storage building of 10 x 8 m in size and capacity of 50 tonnes, constructed for BAM 20,000
- Tractor for BAM 50,000
- ⇒ No credit
- ⇒ Annual investment of BAM 7,000
-
- Two-row maize picker for BAM 16,000
- Second-hand tractor for BAM 15,000
- Implements such as disk harrow, plough, sprinkler for BAM 11,000
- Another tractor for BAM 20,500
- Combine for BAM 25,000
- Two tractor trailers for BAM 20,000
- Planter for BAM 3,500
- ⇒ No credit
- ⇒ Annual investment of BAM 11,000
-
- Stable for pigs for BAM 12,000
- Tractor for BAM 22,000
- Tractor for BAM 15,100
- Tractor for BAM 64,000
- Tractor for BAM 40,000
- Tractor implements for BAM 16,400
- ⇒ No credit
- ⇒ Annual investment of BAM 17,000
-
- Second-hand combine for BAM 12,000
- Rotary cultivator for BAM 5,000
- Second-hand combine for BAM 16,000
- Second-hand tractor for BAM 18,000
- 0.8 ha of land was purchased for BAM 8,000
- ⇒ No credit
- ⇒ Annual investment of BAM 5,000 plus one purchase of land

- Garage for combine of 10 x 6 m for BAM 8,000
- Garage for tractor of 8 x 6 m for BAM 6,000
- Garage for smaller tractor of 5 x 4 m for BAM 4,000
- Sheds for BAM 3,000
- Combine for BAM 50,000
- Tractor for BAM 20,000
- Smaller tractor for BAM 12,000
- Picker for BAM 36,000
- Grain and maize drilling machine for BAM 6,000
- Soya drilling machine for BAM 4,000
- Combination seed harrows for BAM 350
- Two tillers for BAM 900
- Three ploughs for BAM 800
- Sprinkler for BAM 1,200
- ⇒ No credit
- ⇒ Annual investment of BAM 15,000
-
- Reconstruction of existing facilities for farm machinery
- Barns for cattle fattening (2 buildings)
- Storage room of 50m²
- 5 tractors for BAM 301,000
- Harvester for BAM 333,000
- 2 maize sowing machines (2 seeders) for BAM 30,000
- 4 ploughs (4-fold) for BAM 50,000
- Sowing machine for wheat (3 meter operation) for BAM 18,000
- 2 sprinklers (sprayers with 600 litre volume each) for BAM 7,000
- 2 harrows for BAM 3,000
- Driller for channels for drain water from the depression for BAM 7,000
- Manure spreaders
- Mineral fertilizer spreaders
- Spreaders for calcium (capacity 5 tonnes)
- ⇒ Credits from commercial banks
- ⇒ Annual investment of BAM 75,000
-
- Barn for cattle fattening for BAM 15,000
- Fodder storage facilities for BAM 5,500
- Driller for BAM 750
- Ploughs for BAM 750
- Hay collectors for BAM 1,300
- Tractor pulled driller and plough-3 XS for BAM 21,500
- Manure storage tanks for BAM 6,000
- ⇒ No credit
- ⇒ Annual investment of BAM 5,200
- Stables for pigs (100 m², 30–40 sows) for BAM 40,000
- ⇒ Annual investment of BAM 4,000
-
- Silos
- 2 stables for fattening pigs
- Stable for heifers
- Seeders
- Ploughs
- Spreaders of mineral fertilizers and other equipment
- ⇒ No credit
- ⇒ Annual investment of BAM 50,000
- Farm equipment and terminals
- Construction of 2 barns for dairy cows plus milking equipment
- ⇒ Credits from commercial banks and governmental subsidies
- ⇒ Annual investment of BAM 75,000

Mills in FBiH, capacities, t/day, 2011

	Mills with substantial capacity	Capacities, tonnes/day
1.	KLAS, Sarajevo	450
2.	HUSINSKI RUDAR, Ljubače	150
3.	ŽITOPROMET, Mostar	150
4.	DUKAT, Tešanj	150
5.	ŽITOPRERADA, Bihać	120
6.	MLIN MAJIĆ, Odžak (novi mlin)	120
7.	MLINPEK, Bugojno	100
8.	MLINPEK-ŽITAR, Jajce	60
9.	USTIKOLINA, Ustikolina	50
10.	ZLATAN DOLINA, Sanski Most	50
	Mills with middle capacity	Capacities, tonnes/day
1.	MAJIĆ, Prud – Odžak	30
2.	KOPIĆ, Orašje	25
3.	REBRONJA, Brijesnica Velika	24
4.	BOKŠIĆ, Čapljina	24
5.	MLINOLES, Gračanica	20
6.	PLANE, Tuzla	20
7.	MLINKOMERC, Miljanovci-Kalesija	20
8.	MLINORAD, Nahvioci	15
9.	BBcommerc, Olovo	15–16
10.	IVO I BELE, Oštra Luka	15
11.	PURAČIĆ, Tuzla	10–15
12.	MLINPEX, Brijesnica Mala	12
13.	ŠPIONJACI, Oštra Luka	10
14.	ŽIVKOVIĆ, D. Mahala	10
15.	KEKEC, Orašje	10
16.	ZLATNA DOLINA, Stolac t/g	8
17.	HAIM, Cazin	5
18.	EUROTRANS, GRADAČAC	100

Source: Ministry of Agriculture, FBiH, May 2012

List of mills and bakeries in RS

Name of company	Place
"Kraina Klas" d.o.o.	Banja Luka
DELTA MAXI doo	Banja Luka
"MILBO KOMERC" DOO	Bijeljina
AD "GRANDCOMMERCE"	Kozarska Dubica
ZR "TANACKOVIĆ-PAK"	Šamac
Pekarska radnja "BELI"	Šamac
DOO "MLADOST"	Istočna Ilidza-Sarajevo
DOO "KLAS"	Pale
Pekara "BISER"	Banja Luka
SZR "OZ"	Šamac
SZPR "MADONA"	Banja Luka
SPZR "TADIĆ"	Banja Luka
SZ PEK "MILD"	Banja Luka
SZ PEK "BORIK"	Banja Luka
SZ PEK "ŽITOPEKA"	Banja Luka
"KRAINA KLAS" d.o.o.	Banja Luka
SZTR Pekara "CVIJETA" I, "CVIJETA 2"	Prnjavor
DOO "MATPAN"	Sokolac
DOO "RAŠEVIĆ"	Foča
Pekara "DAN I NOĆ"	Kostajnica
S.Z.P.R. "BAKAL"	Banja Luka
SZPR "SILVA ĐURIĆ"	Banja Luka
DOO "VARDAR COMMERCE"	Bijeljina
SZPR "PECIVO"	Pale
AD "DOBOJKA"	Doboj
SZPR "KLAS"	Banja Luka
DOO "MAČVANKA"	Bijeljina
SZPR "FEĐA"	Banja Luka
DOO "MARIĆ PRODUKT"	Laktaši
SZR PEKARA "DUJAKOVIĆ"	Doboj
SZPR "MITROVIĆ"	Doboj
SZPR "SARKIĆ"	Doboj
SZ PEK "DUJAKOVIĆ"	Banja Luka
SZR Pekara "HURTIĆ"	Doboj
SZTR "PALMA PLUS"	Višegrad
SZTR "PERECA"	Višegrad

Pekoteka "ZRNO"	Višegrad
"TODIĆ" pekara	Laktaši
"BMD KOMERC" d.o.o.	Doboj
SZPR "MILICA"	Banja Luka
DOO "ĐURIĆ"	Modriča
SZPR "SUNCE"	Pale
SZPR "ILIĆ"	Doboj
SZPR "MAGISTRALA"	Bijeljina
SUZR "Pekoteka QUI-QUI"	Srbac
Ugostiteljska radnja-iydvojeni poslovni prostor pekoteka- "KLAS2"	Modriča
Zanatsko trgovinska radnja PEKARA "KLAS"	Modriča
SZR PEKARA "GORDANA"	Doboj
Zanatska radnja-pekara "24.NOVEMBAR"	Zvornik
Pekara "PEKOVITA"	Banja Luka
SZPR "GLUMČEVIĆ"	Doboj
"Mane komerc" doo	Srbac
"LIM PEK" DOO	Mrkonjić Grad
SZPR "KLAS"	Banja Luka
SZUR "EVITA" PRNJAVOR	Prnjavor
doo "PEKARA ILIĆ" DERVENTA	Derventa
"MLADOST ĆIĆO" d.o.o.	Šamac
DELTA MAXI doo	Laktaši
"ŽELJO" doo	Pale
AD Industrijska pekara "TREBINJE"	Trebinje
"MIL BORI" doo	Trnovo
"DEZOSANIT" doo	Banja Luka
"ADRIA" doo	Višegrad
SZR "BOJANIĆ"	Trebinje
ZZPR "ZLATNO ZRNO"	Banja Luka
SZR "Pekara NATURAL PECK"	Banja Luka
SZR pekara "BISER" Doboj	Doboj
ZTSR "CROISSANT"	Foča
ZTR pekara "EVROPA"	Zvornik
SZR pekara "GLUMIČEVIĆ"	Doboj
SZR pekara "NEDA"	Doboj
SZR pekara "MN"	Doboj
STZR pekara "ALJO"	Doboj
SZTR pekara "CENTAR"	Doboj
SZR pekara "MILIČEVIĆ"	Doboj
SZR pekara "MAGISTRALA"	Doboj
SZTR pekara "GAMA"	Prijedor

SZTR pekara "KLAS"	Prijedor
SZR pekara "VUČJAK"	Vukosavlje
SZTR "ANJA"	Prijedor
"CRNA GORA" doo	Zvornik
SZR "CIPOVKA"	Bratunac
SZPR "MAGISTRALA-A" Janja	Bijeljina
"FRUCTA TRADE" PJ "HIPER KORT"	Banja Luka
"IMPES" a.d.	Foča
"BRAĆA LAZIĆ" DOO	Bijeljina
OPZ "Zlatne kapi Potkozarja" PO	Gradiška
SZTR pekara "RADIĆ"	Banja Luka
"PRIMUS CRNIC" d.o.o.	Laktaši
SZTR pekara "ZLATNO KLASJE"	Bijeljina
SZPR "PODRINJE" Janja	Bijeljina
ZTP pekara "KLAS 2"	Prijedor
SZR "PEKARA"	Šamac
SZTR pekara "JANKOVIĆ"	Banja Luka
Pekara "DIJANA"	Zvornik
Pekara "VUKOVIĆ"	Zvornik
SZTR Pekara "KULA"	Istočno Sarajevo
ZTP Pekara "SUNCE"	Modriča
Pekara SIMANOVIĆ	Gradiška
"EURO LIMUN"	Doboj
Preduzetnička djelatnost "DUKI"	Banja Luka

Source: Information from RS MoA, 2012

List of mills and bakeries in BD

Name of company
Mlinoprodukt Cosic d.o.o.
MPP Klas
Mlin Vujicici
S.P.Stokic
S.P. Mlin Stevic
Pekara Danijel
Pekara Erletic
Pekara IN
Todex
Pekata HiT
Pekara Magistrala
Pekara Lid Pek
Pekara Smajic
Pekara Sloga
Pekara Benini
S.P. Sunce
S.P. Galaksija
Pekara Dan I Noc
Pekara Malahit Celic
Pekara Fatimi
Silos Promet
Pekara Mladost
Mlin Majic
Mlin Pavlovic
Zitoposavina Pelagicevo
Zitopromet s.p.

Source: Information from SBD Department of Agriculture, 2012

List of fodder mills

- Savic Co., Bijeljina
- Mix d.o.o., Orasje
- Brovis, Visoko (outdated technology and very reduced capacity)
- Agrokomerc, Kladusa (outdated technology and very reduced capacity)
- Agro–biser d.o.o., Kalesija
- Agrojata, Konjic
- Farma – land, Posusje
- Hondo-prom d.o.o.
- Pirija d.o.o.
- Poljogradnja d.o.o.
- Poljomarket d.o.o., Zivinice
- Agro-profi d.o.o., Cazin
- Ely d.o.o., Buzim
- Fixkraft d.o.o., Gracanica
- Floraco comerc, Gradacac
- Dames, Busovaca (closed)
- Rebronija d.o.o., Brijesnica (stopped livestock feed production)
- Ig-Maric, Bijeljina
- Dds Komerc, Kotor Varos
- Kiko, Bijeljina
- Nutritio d.o.o., Bijeljina
- Zitoposavina, Pelagicevo
- Gold-Mg, Donji Zabar
- Mmb inexcoop, Samac
- Compastor, Laktasi
- Trgovet, Gradiska
- Farmavit, Ljubinje
- Tera-vita d.o.o.
- Slavinic d.o.o. , Banja Luka
- Dalprom d.o.o. , Zvornik
- DD mix, Trebinje
- Božic d.o.o., Samac
- MPT-centar d.o.o. , Kozarska Dubica
- Premium d.o.o., Bijeljina
- Savic Kompani, Bijeljina
- Super premix, Banja Luka

**List of most important bread-baking and confectionery companies
in BiH**

Major bread-baking companies in BiH

- Adria M, Banja Luka
- INPEK, Trebinje
- Žitopromet A.D., Bijeljina
- KLAS d.d., Sarajevo
- Aspek Ilidza, Sarajevo
- MBA Centar, Sarajevo
- Sprind, Sarajevo
- Mopek Mostar, Mostar
- PTD, Zenica
- Subasic d.o.o., Tesanj
- Zitopromet Mostar, Mostar
- Pekara MPM, Vares
- Hukic, Tuzla
- Dukat d.o.o., Jelah
- Pekara Sunce, Srbac

Major confectionery companies in BiH

- Alpiko, Sarajevo
- AM Komerc Consul, Bugojno
- Barpeh, Citluk
- Kondisa, Ilijas
- Mak Zara, Vogosca
- Mira, Prijedor
- Vispak, Visoko
- Zvečevo, Capljina
- Twins Prom, Gradiska
- Argo, Banja Luka
- AS, Tešanj
- Gomex, Laktasi

EU comparison for wheat and maize production

Table 1: Wheat, harvested area, EU, 2005–2010, hectares

Wheat, hectare harvested	2005	2006	2007	2008	2009	2010	5 year average
Austria	288,960	284,577	292,976	296,775	309,034	302,852	297,242
Belgium	213,748	201,330	199,897	211,270	201,768	209,532	204,759
Bulgaria	1,101,810	970,392	1,088,000	1,111,530	1,247,720	1,108,700	1,105,268
Cyprus	5,264	5,389	5,287	4,990	5,761	7,438	5,773
Czech Republic	820,440	780,902	810,478	802,325	831,300	833,600	811,721
Denmark	675,700	686,300	688,800	638,200	739,100	763,600	703,200
Estonia	85,473	90,842	99,500	107,600	113,619	119,700	106,252
Finland	214,800	192,300	202,600	216,300	216,200	211,200	207,720
France	5,277,900	5,245,740	5,238,600	5,492,440	5,147,400	5,426,000	5,310,036
Germany	3,173,800	3,114,700	2,992,080	3,213,490	3,226,040	3,297,700	3,168,802
Greece	843,900	777,901	728,795	657,100	698,000	510,000	674,359
Hungary	1,130,720	1,074,740	1,111,270	1,130,240	1,146,460	1,011,180	1,094,778
Ireland	95,200	87,500	84,300	110,700	84,500	77,800	88,960
Italy	2,122,900	1,925,650	2,100,440	2,288,850	1,795,500	1,865,000	1,995,088
Latvia	187,400	215,100	224,600	256,600	285,700	307,600	257,920
Lithuania	369,500	343,800	354,600	403,500	500,000	525,500	425,480
Luxembourg	11,927	12,665	12,586	14,675	13,841	14,009	13,555
Malta	2,394	2,600	2,800	2,800	2,800	2,700	2,740
Netherlands	136,700	141,100	140,000	156,500	150,900	153,723	148,444
Poland	2,218,090	2,175,730	2,111,980	2,277,950	2,346,200	2,406,100	2,263,592
Portugal	122,727	104,700	62,300	88,300	59,400	60,400	75,020
Romania	2,448,130	1,992,360	1,890,920	2,098,370	2,140,550	2,152,520	2,054,944
Slovakia	372,962	350,900	360,698	373,662	379,195	350,300	362,951
Slovenia	30,059	32,083	31,900	35,413	34,534	31,946	33,175
Spain	2,274,110	1,920,230	1,803,310	2,067,000	1,767,800	1,907,300	1,893,128
Sweden	354,755	360,150	360,500	360,500	374,800	404,300	372,050
United Kingdom	1,867,000	1,835,000	1,830,000	2,080,210	1,992,000	1,937,000	1,934,842
EU Total							25,611,802
EU Average							948,585

Source: FAOSTAT, 2012

Table 2: Wheat, production, EU, 2005–2010, tonnes

Wheat, production, tonnes	2005	2006	2007	2008	2009	2010	5 year average
Austria	1,453,070	1,396,300	1,399,340	1,689,690	1,523,370	1,517,810	1,505,302
Belgium	1,768,410	1,661,960	1,577,340	1,850,410	1,909,770	1,849,580	1,769,812
Bulgaria	3,478,070	3,301,880	2,390,610	4,632,210	3,976,850	3,994,900	3,659,290
Cyprus	9,249	7,518	10,712	2,472	14,690	14,843	10,047
Czech Republic	4,145,040	3,506,250	3,938,920	4,631,500	4,358,070	4,161,600	4,119,268
Denmark	4,887,200	4,801,600	4,519,200	5,018,700	5,940,400	5,059,900	5,067,960
Estonia	263,408	219,590	345,726	342,500	342,520	324,400	314,947
Finland	801,300	684,100	796,800	787,500	887,000	724,400	775,960
France	36,885,500	35,363,600	32,763,500	39,006,400	38,332,200	38,207,000	36,734,540
Germany	23,692,700	22,427,900	20,828,100	25,988,600	25,192,400	24,106,700	23,708,740
Greece	2,044,150	1,778,170	1,629,070	1,939,300	1,830,000	1,600,000	1,755,308
Hungary	5,088,220	4,376,240	3,986,710	5,630,830	4,419,160	3,763,680	4,435,324
Ireland	802,700	801,000	713,400	993,000	690,000	669,000	773,280
Italy	7,717,130	7,181,720	7,170,180	8,855,440	6,341,000	6,900,000	7,289,668
Latvia	676,500	598,300	807,300	989,600	1,036,400	973,000	880,920
Lithuania	1,379,400	809,800	1,390,700	1,722,500	2,100,200	1,708,200	1,546,280
Luxembourg	71,745	75,603	70,469	97,760	90,903	83,474	83,641
Malta	10,344	10,500	12,000	14,000	14,000	13,100	12,720
Netherlands	1,174,690	1,184,400	990,000	1,366,160	1,402,040	1,369,550	1,262,430
Poland	8,771,430	7,059,670	8,317,270	9,274,920	9,789,590	9,487,800	8,785,850
Portugal	81,554	249,600	135,800	203,300	110,200	111,700	162,120
Romania	7,340,660	5,526,190	3,044,460	7,180,980	5,202,530	5,811,810	5,353,194
Slovakia	1,607,870	1,342,690	1,379,640	1,819,480	1,537,910	1,227,800	1,461,504
Slovenia	141,293	134,449	133,339	160,297	136,904	153,481	143,694
Spain	4,026,690	5,521,580	6,436,360	6,714,300	4,723,900	5,610,700	5,801,368
Sweden	2,246,800	1,967,400	2,255,700	2,202,200	2,284,000	2,184,400	2,178,740
United Kingdom	14,863,000	14,747,000	13,221,000	17,227,000	14,076,000	14,878,000	14,829,800
EU Total	135,428,123	126,735,010	120,263,646	150,341,049	138,262,007	136,506,828	134,421,708
EU Average							4,978,582

Source: FAOSTAT, 2012

Table 3: Wheat, yields, EU, 2005–2010, tonnes/hectare

Wheat, yield, tonnes/ha	2005	2006	2007	2008	2009	2010	5 year average
Austria	5.03	4.91	4.78	5.69	4.93	5.01	5.06
Belgium	8.27	8.25	7.89	8.76	9.47	8.83	8.64
Bulgaria	3.16	3.40	2.20	4.17	3.19	3.60	3.31
Cyprus	1.76	1.40	2.03	4.95	2.55	2.00	2.58
Czech Republic	5.05	4.49	4.86	5.77	5.24	4.99	5.07
Denmark	7.23	7.00	6.56	7.86	8.04	6.63	7.22
Estonia	3.08	2.42	3.47	3.18	3.01	2.71	2.96
Finland	3.73	3.56	3.93	3.64	4.10	3.43	3.73
France	6.99	6.74	6.25	7.10	7.45	7.04	6.92
Germany	7.47	7.20	6.96	8.09	7.81	7.31	7.47
Greece	2.42	2.29	2.24	2.95	2.62	3.14	2.65
Hungary	4.50	4.07	3.59	4.98	3.85	3.72	4.04
Ireland	8.43	9.15	8.46	8.97	8.17	8.60	8.67
Italy	3.64	3.73	3.41	3.87	3.53	3.70	3.65
Latvia	3.61	2.78	3.59	3.86	3.63	3.16	3.40
Lithuania	3.73	2.36	3.92	4.27	4.20	3.25	3.60
Luxembourg	6.02	5.97	5.60	6.66	6.57	5.96	6.15
Malta	4.32	4.04	4.29	5.00	5.00	4.85	4.64
Netherlands	8.59	8.39	7.07	8.73	9.29	8.91	8.48
Poland	3.95	3.24	3.94	4.07	4.17	3.94	3.87
Portugal	n.a	2.38	2.18	2.30	1.86	1.85	2.11
Romania	3.00	2.77	1.61	3.42	2.43	2.70	2.59
Slovakia	4.31	3.83	3.82	4.87	4.06	3.50	4.02
Slovenia	4.70	4.19	4.18	4.53	3.96	4.80	4.33
Spain	1.77	2.88	3.57	3.25	2.67	2.94	3.06
Sweden	6.33	5.46	6.26	6.11	6.09	5.40	5.87
United Kingdom	7.96	8.04	7.22	8.28	7.07	7.68	7.66
EU Average							4,88

Source: FAOSTAT, 2012

Table 4: Maize, area harvested, EU, 2005–2010, hectares

Maize, ha harvested	2005	2006	2007	2008	2009	2010	5 year average
Austria	189,637	159,319	170,884	194,087	178,500	179,771	176,512
Belgium	54,255	56,500	53,238	72,015	66,670	62,531	62,191
Bulgaria	298,712	350,291	214,367	329,345	274,229	500,000	333,646
Czech Republic	98,044	89,798	111,660	113,777	105,268	105,300	105,161
France	1,658,330	1,465,010	1,484,310	1,701,020	1,679,870	1,571,000	1,580,242
Germany	443,100	401,000	403,210	520,478	464,333	463,600	450,524
Greece	246,900	232,683	237,900	240,000	240,000	187,200	227,557
Hungary	1,197,550	1,214,950	1,078,780	1,191,800	1,177,320	1,060,610	1,144,692
Italy	1,113,170	1,108,000	1,053,400	991,500	915,500	925,967	998,873
Lithuania	1,600	2,000	5,400	7,600	5,500	7,800	5,660
Luxembourg	23	12	12	16	17	16	14
Netherlands	20,748	19,797	19,300	22,100	18,846	16,733	19,355
Poland	339,342	302,977	261,975	317,193	274,100	298,700	290,989
Portugal	110,192	102,800	116,700	109,600	87,600	95,700	102,480
Romania	2,609,110	2,512,940	2,263,080	2,432,210	2,333,500	2,094,250	2,327,196
Slovakia	154,086	153,300	157,256	154,238	144,235	173,500	156,506
Slovenia	42,369	39,839	40,906	43,698	38,611	36,433	39,897
Spain	414,298	344,400	360,998	366,300	345,000	320,300	347,400
EU total	8,991,466	8,555,616	8,033,376	8,806,977	8,349,099	8,099,411	8,368,896
EU average							464,939

Source: FAOSTAT, 2012

Table 5: Maize, production, EU, 2005–2010, tonnes

Maize, production, tonnes	2005	2006	2007	2008	2009	2010	5 year average
Austria	2,020,960	1,471,670	1,696,490	2,147,240	1,890,500	2,168,840	1,874,948
Belgium	634,088	575,898	698,899	858,837	807,866	745,891	737,478
Bulgaria	1,585,700	1,587,800	312,860	1,368,350	1,290,830	2,044,100	1,320,788
Czech Republic	702,933	606,366	758,781	858,407	889,574	692,600	761,145
France	13,687,700	12,775,200	14,357,300	15,818,500	15,288,200	13,975,000	14,442,840
Germany	4,082,700	3,220,300	3,809,320	5,105,860	4,527,230	4,072,900	4,147,122
Greece	2,534,080	2,359,000	2,379,110	2,472,000	2,352,000	2,195,200	2,351,462
Hungary	9,050,000	8,281,670	4,026,730	8,897,140	7,528,380	6,967,170	7,140,218
Italy	10,427,900	9,671,210	9,809,270	9,491,200	7,877,700	8,827,810	9,135,438
Lithuania	4,900	4,700	26,000	32,000	23,800	47,300	26,760
Luxembourg	2,060	1,875	2,120	2,276	2,453	3,116	2,368
Netherlands	253,132	181,200	230,600	252,300	244,900	196,903	221,180
Poland	1,945,400	1,260,660	1,722,300	1,844,440	1,706,600	1,716,200	1,650,040
Portugal	513,118	513,700	646,500	699,700	635,700	658,000	630,720
Romania	10,388,500	8,984,730	3,853,920	7,849,080	7,973,260	9,042,030	7,540,604
Slovakia	1,074,040	838,326	623,907	1,260,620	988,053	952,300	932,641
Slovenia	351,168	276,106	308,259	319,902	302,600	311,117	303,596
Spain	3,981,370	3,355,720	3,610,940	3,628,600	3,492,100	3,178,800	3,453,232
EU total	63,239,749	55,966,131	48,873,306	62,906,452	57,821,746	57,795,277	56,672,582
EU average							3,148,477

Source: FAOSTAT, 2012

Table 6: Maize, yields, EU, 2005–2010, tonnes/hectare

Maize Yield, tonnes/ha	2005	2006	2007	2008	2009	2010	5 year average
Austria	10.66	9.24	9.93	11.06	10.59	12.06	10.58
Belgium	11.69	10.19	13.13	11.93	12.12	11.93	11.86
Bulgaria	5.31	4.53	1.46	4.15	4.71	4.09	3.79
Czech Republic	7.17	6.75	6.80	7.54	8.45	6.58	7.22
France	8.25	8.72	9.67	9.30	9.10	8.90	9.14
Germany	9.21	8.03	9.45	9.81	9.75	8.79	9.16
Greece	10.26	10.14	10.00	10.30	9.80	11.73	10.39
Hungary	7.56	6.82	3.73	7.47	6.39	6.57	6.20
Italy	9.37	8.73	9.31	9.57	8.60	9.53	9.15
Lithuania	3.06	2.35	4.81	4.21	4.33	6.06	4.35
Luxembourg	9.58	6.51	7.54	6.01	6.00	8.31	6.87
Netherlands	12.20	9.15	11.95	11.42	12.99	11.77	11.46
Poland	5.73	4.16	6.57	5.81	6.23	5.75	5.70
Portugal	4.66	5.00	5.54	6.38	7.26	6.88	6.21
Romania	3.98	3.58	1.70	3.23	3.42	4.32	3.25
Slovakia	6.97	5.47	3.97	8.17	6.85	5.49	5.99
Slovenia	8.29	6.93	7.54	7.32	7.84	8.54	7.63
Spain	9.61	9.74	10.00	9.91	10.12	9.92	9.94
EU average							7.72

Source: FAOSTAT, 2012

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