Chapter 4 – Comparative Review of Study Results

The farming systems of Syria evolved in response to a range of internal and external factors and household types within them are the result of the socio-economic stratification like in any agricultural and rural system of the world.

The previous chapter presents the regional differentiation of Syrian Agriculture, which includes a basic description of the socio-economic stratification of the livelihood system of typical producers and the potential and vulnerabilities to adapt to a changing agro-economic environment. This compilation summarizes the broad features within each of the six major farming systems as well as a first level differentiation into sub-units (which are themselves geographically based farming systems at a finer level of dis-aggregation). More detail on the structure, dynamics and differentiation of each of these systems is found in the individual farming systems reports presented as separate documents by NAPC. This chapter, in contrast, presents a comparative review of the agricultural sector. It starts with a presentation of the general characteristics of the farming systems, with a focus on

- their major contributions to total production of their most important crops, focussing on strategic/non-strategic crops;
- their rural population, share of irrigated land, average holding size etc.;

These systems characteristics are followed by the comparison of typical households, their structure, recent developments and vulnerability to policy changes. In the last part follows a discussion of cross-cutting system affecting the potential of farming systems to respond to new opportunities, including

- land tenure, access to credit/inputs;
- market integration (public compared to private market integration)
- dependence on public sector decisions and exposure to market dynamic
- system integration, competition between systems and integration through agricultural labour flows.

Comparative characterization of farming systems

Based on the methodology to define a small number of relatively homogenous farming systems in terms of their socio-economic and agro-ecologic characteristics, the following Table 18 provides a basic characterization of the six major farming systems of Syria. The largest FS in terms of total area is the pastoral and agro-pastoral farming system (FS6), which includes 55% of the national area, followed by the farming systems of the northern and north-eastern plains (FS3) (26%). Three systems are relatively similar in total area, each covering 6%-6.5% of the national area: the mountainous and hilly rainfed farming system (FS2), the farming systems of the central rainfed and irrigated plains (FS4) and the farming systems of the southern semi-arid

mountains and plains (FS5). The smallest area of all occupies the intensive irrigated coastal farming system (FS1) at less than 1% of the national area, which is set apart by its peculiar cropping pattern and market integration.

Table 18: The six farming systems and their share of total area, holders and crop water sources

	Syria	% of	FS 1	% of	FS 2	% of	FS 3	% of
	Area	National		national		national		national
Area (ha)	18,517,971	100%	141,557	0.76%	1,194,849	6.45%	4,723,591	25.51%
Rural Popu-lation (No.)	8,531,000	100%	373,422	4.38%	1,306,728	15.32%	2,447,904	28.69%
Holders (No.)	938,748	100%	54,618	5.82%	265,001	28.23%	293,295	31.24%
cultivable l.(ha)	5,911,020	% of culti-	74,517	% of culti-	586,205	% of culti-	2,759,685	% of culti-
cultivated l.(ha)	5,420,656	vated land	70,909	vated land	540,409	vated land	2,694,991	vated land
a) Land under crops (ha)	4,590,899	84.7%	70,262	99%	527,693	97.6%	2,330,598	86.5%
of which rainfed (ha)	3,258,115	60.1%	42,582	60%	438,532	81.1%	1,602,078	59.4%
of which irrigated (ha)	1,332,783	24.6%	27,680	39%	89,161	16.5%	728,520	27.0%
b) Fallow (ha)	829,757	15.3%	647	0.9%	12,715	2.4%	364,392	13.5%
	Syria	% of	FS 4	% of	FS 5	% of	FS 6	% of
	Area	National		national		national		national
Area (ha)	18,517,971	100%	1,155,945	6.2%	1,079,290	5.83%	10,159,099	54.9%
Rural Popu-lation (No.)	8,531,000	100%	1,723,164	20.2%	1,639,115	19.21%	1,035,314	12.1%
Holders (No.)	938,748	100%	162,187	17.3%	114,698	12.22%	46,349	4.9%
cultivable l.(ha)	5,911,020	% of culti-	772,628	% of culti-	668,493	% of culti-	1,018,540	% of culti-
cultivated l.(ha)	5,420,656	vated land	736,096	vated land	433,654	vated land	928,943	vated land
a) Land under crops (ha)	4,590,899	84.7%	663,226	90.1%	341,371	78.7%	650,066	70.0%
of which rainfed (ha)	3,258,115	60.1%	466,393	63.4%	283,359	65.3%	417,795	45.0%
of which irrigated (ha)	1,332,783	24.6%	196,833	26.7%	58,012	13.4%	232,271*	25.0%*
b) Fallow (ha)	829,757	15.3%	72,870	9.9%	92,283	21.3%	278,878	30.0%

*: includes parts of irrigated FS from major FS3, which cannot be associated with larger irrigation schemes. N. B. The sum of systems does not add up to the national figure due to rounding in underlying calculations.

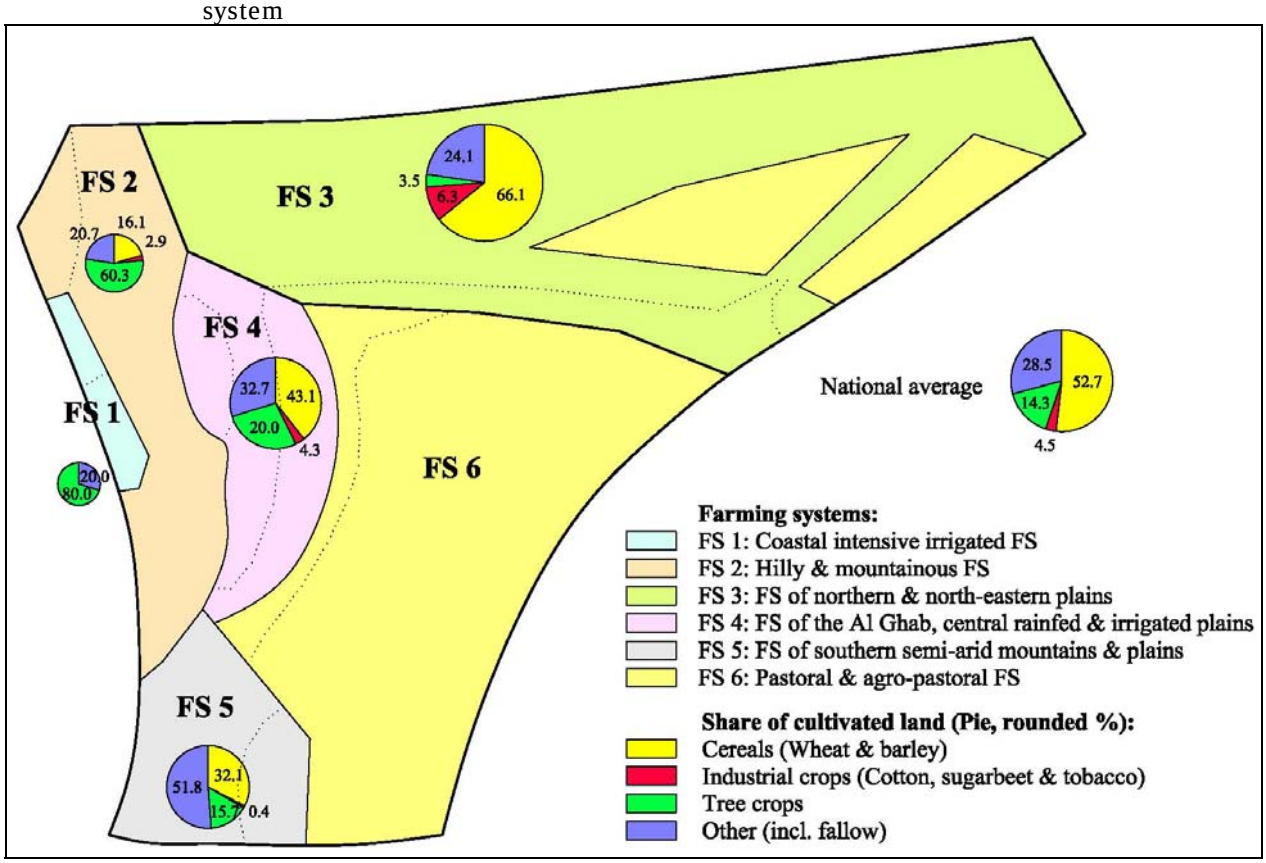
Source: constructed based on MAAR statistics for 2002.

Comparing the distribution of the agricultural holders between the farming systems indicates the huge variation in holding size and agricultural population density. The largest FS by area (FS6) accommodates only approximately 5% of the holders, while FS3 accommodates the

highest share of all holders with close to one third, but is closely followed by the much smaller mountainous and hilly FS (28%). All smaller farming systems naturally show a relatively higher share of holders than area because of the low population density in the largest farming system (FS6). This effect is particularly noticeable for the smallest system (FS1), which accommodates almost 6% of holders on 0.8% of national area as well as FS2 (28% of holders on 6.5% of area).

At the national level, approximately 85% of the cultivated land is under crops (60% under rainfed and 25% under irrigated cultivation), 15% remain fallow. This picture varies considerably between the farming systems. The densely populated FS 1 & 2 have the lowest share of fallow land (below 3%) due to the high share of perennial and horticultural crops. In contrast, the share of fallow land is highest in the cereal crop dominated farming systems with a high share of land in the drier agro-climatic zones, i.e. FS 3, 5 and 6 (due to the agro-pastoral farming system).

Figure 7: Share of cultivated land under so-called strategic crops and average holding size by farming system

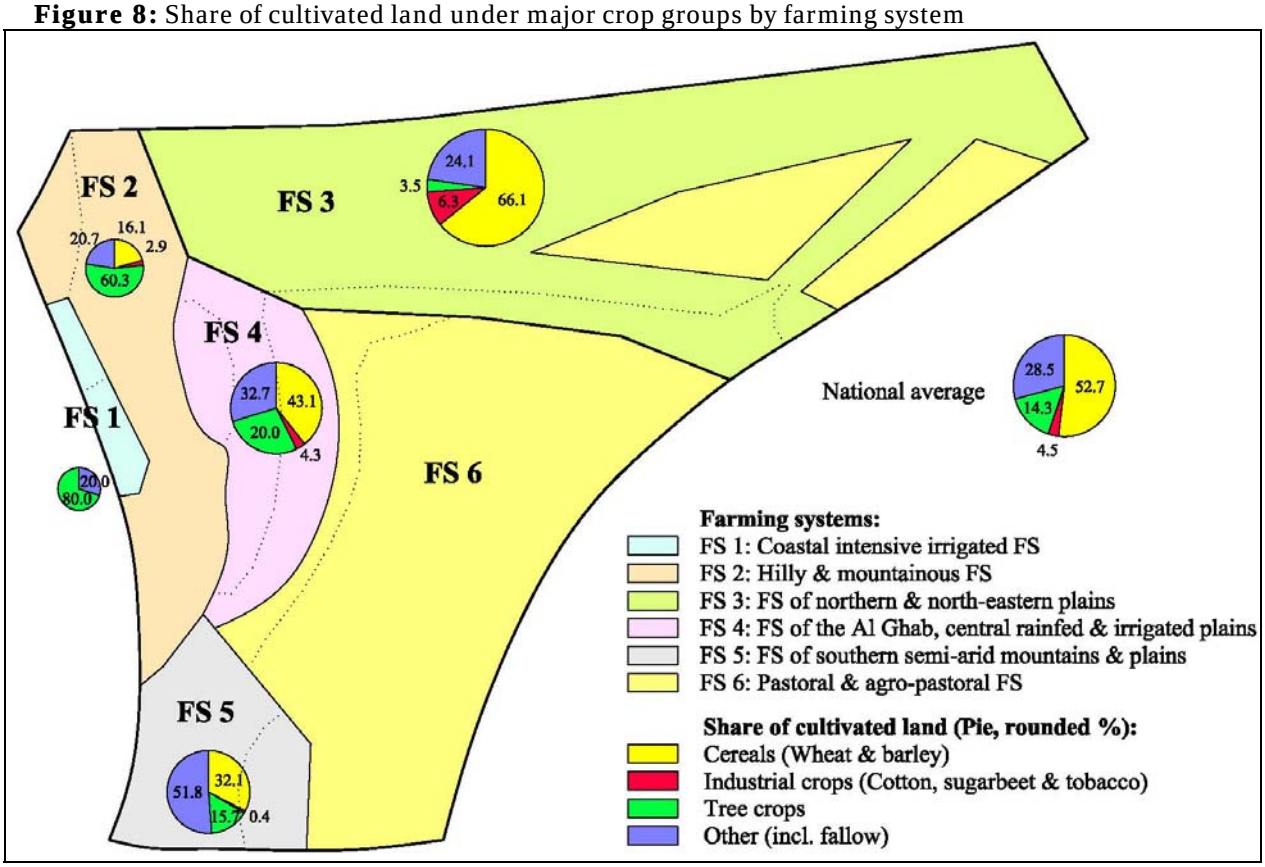


Irrigation is relatively most important in FS 1 with almost 40% of cultivated land, followed by above-average shares of irrigated land in FS 3 and FS 4. However, the role of irrigation within the major farming system is not evenly distributed within the farming systems and the role of irrigation is an important criterion for their sub-division, such as the separation of the intensive irrigated farming system of Al Ghab within FS4. However, it has to be noted that in the FS 3, the role of irrigation has a less differentiating role on the structure of the farming system than in other systems, where irrigation access considerably determines the cultivation pattern. In the FS 3, there is a relatively strong tendency to compensate with irrigation water the deficiencies of rainfall reliability when moving from north to south, but using the irrigation facility to retain a similar production orientation. At the same time, the reliability of rainfall as well as of irrigation water provision will heavily determine the success with which this strategy can be followed (i.e. the probability of crop failure and the yield that can be achieved). The interpretation of the share of irrigated land in FS6 (see Table 18) has to be read in light with only 10% of the FS being

cultivable, but the remaining areas are under grazing and hence the 25% of cultivated land being shown as irrigated represent effectively 2.5% of the systems area. Furthermore, part of the irrigated areas classified within the system falls into the land use type of irrigated FS3 but could not clearly determined by the calculation method, which included therefore as irrigated FS3 only those parts registered under public irrigation schemes.

From a policy perspective, the orientation of crop production in the major farming systems is important. Table 19 indicates the share of cultivated land by farming system of so-called strategic crops (wheat, barley, lentil, chickpea, cotton, sugar beet and tobacco) as well as the three most strongly regulated crops among them, i.e. the industrial crops (cotton, sugar beet and tobacco) (see also Figure 8). In addition, the table indicates at the national level as well as for each of the farming systems the crops with the highest share in cultivated land. At the national level, slightly above 60% of the cultivated land is under the so-called strategic crops. Of these, however, the vast majority are food crops with little Government intervention and vastly reduced control, and only 4.5% of the cultivated land is under industrial crops. Considering the crop water regime as a distinguishing feature (i.e. rainfed and irrigated crops are regarded separately), then barley occupies the largest share of crops at the national level (22% of cultivated land). Wheat occupies slightly above 30% of cultivated land, with the larger part being under rainfed cultivation (17% of cultivated land is rainfed and 14% is irrigated wheat). Rainfed olive is the most important perennial crop and occupies 8.5% of the national cultivated land, followed by cotton as the most important industrial crop in terms of cultivated land (3.7%).

Figure 8: Share of cultivated land under major crop groups by farming system



Naturally, the farming systems show a marked variation in all of these features. In terms of importance of so-called strategic crops as well as industrial crops (see also Figure 4), the highly specialized FS 1 shows the least dependence on them, where both groups are basically absent. Overall, only two crops dominate cultivation in this farming system, i.e. olives (rainfed due to the high rainfall level: 44%) and citrus (36%; under irrigation due to its good response to additional crop water provision). Greenhouses, which give name to the southern part of the

zone, follow third in share of cultivated land; their importance stems however more from the income generation potential through several harvests per year. The 3.3% of cultivated land are therefore more to be seen in light of their role for income generation than compared through their area.

The hilly and mountainous farming system (FS 2) has the highest dependence on one single crop, rainfed olives (52%), complemented by wheat cultivation mostly for home consumption (due to the small holding sizes it leaves little surplus production for sale). Other perennials occupy much smaller areas across the system, but are highly important in parts of the system and occur at very high shares of cultivated land in their respective niches.

The cereal-dominated FS 3 indicated the highest overall reliance on "strategic" crops at 75% as well as on industrial crops (6.3%). This is mainly due to the relatively homogenous prevalence of cotton, as efforts are made by the extension units to exercise relatively strict control over the agricultural plan on the relatively large holdings in this farming system. Tobacco is of little relevance in FS 3, while sugar beet has importance near factories, but is of little importance across the farming system.

Table 19: Share of cultivated land by crop groups and main crops by share of cultivated land in the major farming systems of Syria

	Syria	**% of culti-**	**FS 1**	**% of culti-**	**FS 2**	**% of culti-**	**FS 3**	**% of culti-**
	(1000 ha)	**vated land**	**(1000 ha)**	**vated land**	**(1000 ha)**	**vated land**	**(1000 ha)**	**vated land**
Cultivated	5420	100.0%	71	100.0%	540	100.0%	2694	100.0%
Strategic Crops	3321	61.3%	0	0.0%	120	22.2%	2059	76.4%
Industrial C.	245	4.5%	0	0.0%	16	2.9%	168	6.3%
Main crop	Barley	21.9%	Rf. Olive	43.9%	Rf. Olive	51.7%	Rf. Wheat	26.8%
2nd crop	Rf. Wheat	16.9%	Ir. Citrus	35.8%	Rf. Wheat	10.6%	Ir. Wheat	21.7%
3rd crop	Ir. Wheat	13.9%	Greenh.	3.3%	Ir. Wheat	4.5%	Rf. Barley	17.6%
4th crop	Rf. Olive	8.5%	Ir. Cucum.	2.8%	Rf. Cherry	2.2%	Cotton	5.9%
5th crop	Cotton	3.7%	Ir. Tomato	2.0%	Rf. Apple	2.1%	Rf. Lentil	3.1%
	Syria	% of culti-	FS 4	% of culti-	FS 5	% of culti-	FS 6	% of culti-
	(1000 ha)	vated land	(1000 ha)	vated land	(1000 ha)	vated land	(1000 ha)	vated land
Cultivated	5420	100.0%	737	100%	434	100%	929	100%
Strategic Crops	3321	61.4%	380	51.6%	205	47.2%	446	48.0%
Industrial C.	245	4.5%	32	4.3%	2	0.4%	0	0.0%
Main crop	Barley	21.9%	Rf. Barley	19.6%	Rf. Wheat	18.8%	Rf. Barley	46.5%
2nd crop	Rf. Wheat	16.9%	Ir. Wheat	13.8%	Chickpea	13.0%	Ir. Wheat	1.1%
3rd crop	Ir. Wheat	13.9%	Rf. Wheat	9.7%	Rf. Barley	8.9%	Rf. Wheat	0.4%
4th crop	Rf. Olive	8.5%	Rf. Olive	7.4%	Rf. Olive	7.2%	NA	
5th crop	Cotton	3.7%	Rf. Cumin	5.4%	Ir. Wheat	4.4%	NA	

Source: Calculated based on MAAR statistics for 2002. (rounded figures do not add in Table)

The farming system second in dependence on strategic and industrial crops is FS 4, with 52% and 4.3%, respectively. This broad farming system has been subdivided into three separate farming systems with highly variable importance of these crops (see below). At the crop level,

none of the industrial crops alone ranks among the five most importance crops in terms of their share in cultivated land, where barley, wheat, olive and cumin rank higher (see the Table for details).

In the FS 5, industrial crops play a minor role, but in their large rainfed and irrigated plains, cereal crops make jointly up approximately one third of the cultivated land, complemented by the highest share of cultivated land under chickpeas in this farming system (13%). The larger number of cash crops of local importance, i.e. the horticultural field crops (tomato and cucumber) as well as perennial crops are cultivated in their specific farming systems (the mountains and irrigated plains respectively), that they do not figure prominently as overall share of cultivated land across the major farming system.

The pastoral and agro-pastoral farming system contains only one major field crop, i.e. barley due to the legal framework and the agro-climatic conditions. Overall, 46% of the cultivated land in this farming system is under barley (complemented by a high share of fallow land).

The share of cultivated land within a system is an unreliability indicator for the specialization of a farming system on the production of some minor crops for the national market or the potential agricultural exports of Syria. This is partly caused by crop rotation requirements, home consumption needs or small overall markets for minor crops. For that reason, the following Table 20 focuses on the share of the five most important crops to the total national production area. This change of focus of analysis strongly supports the above statement of the greenhouse importance in FS 1, which contributes over 98% of the national greenhouse area of Syria and over 90% of all irrigated citrus areas. Some irrigated field vegetables play a very high role as well, given the traditional specialization in the coastal areas (e.g. irrigated cucumber), but other farming systems have taken part of the share of this system over time (particularly FS 5).

Even though in terms of cultivated land, olives dominate FS 2 by far, other perennial crops are similarly characteristics for this system and generate a very high share of the national production, such as cherries (57%), irrigated apple (52%) and rainfed apple (37%). Due to Government intervention and the location of processing plants, this farming system is by far the dominant producer of tobacco in Syria, with 85% of the national rainfed cultivation.

The size of the farming system and the relatively homogenous cultivation across it make FS 3 the by far dominant producer of cotton in Syria, with almost 80% of the total production area. Due to the systems' size, it generates a high share of all crops important in its crop rotation, such as wheat (rainfed: 79%, irrigated 78%) and lentil (68%).

The highest relative importance of FS 4 from the perspective of individual crops lies in its pistachio and almond cultivation (82% and 67%, respectively), which is mostly due to the specialized niches located within this farming system. The high share of the national sugar beet cultivation area in this system stems from the specialization and policy effect of maintaining the processing plant in Al Ghab intensive irrigated plain (i.e. a specialized farming system on its own; see FS 4 report and below).

The most dominant role of FS 5 in the national context lies in its high share of chickpea area (56%), followed by field tomato cultivation (irrigated tomato: 38% and rainfed cucumber: 35%) in its irrigated plains and apple cultivation as the specialization on the mountain (37%).

The barley cultivation, which dominates the cropping areas in the agro-pastoral part of FS 6 nevertheless contributes only 36% of the national barley area, which is influenced by the size of FS 3 and the resulting high share of barley cultivated there (40%).

Table 20: Crops with major share of national production area at main FS level

	Syria Area	% of culti-vated land	FS 1	% of culti-vated land	FS 2	% of culti-vated land	FS 3	% of culti-vated land
Cultivated	5420656	100.0%	70909		540409		2604961	
Strategic Crops	3321637	61.3%		0.0%		22.2%		79.0%
Industrial C.	245223	4.5%		0.0%		2.9%		6.5%
	Syria Area	% of National	FS 1	% of National	FS 2	% of National	FS 3	% of National
Main crop	Barley	21.9%	Greenh.	98.2%	R.Tobacco	85.0%	Cotton	79.5%
2nd crop	Rf. Wheat	16.9%	Ir. Citrus	90.3%	Rf. Olive	60.7%	Rf. Wheat	78.8%
3rd crop	Ir. Wheat	13.9%	Ir. Cucum.	30.4%	Rf. Cherry	56.8%	Ir. Wheat	77.6%
4th crop	Rf. Olive	8.5%	Ir. Tomato	11.5%	Ir. Apple	51.7%	Lentil	68.0%
5th crop	Cotton	3.7%	NA		Rf. Apple	37.1%	Rf. Pistachio	49.0%

	Syria Area	% of culti-vated land	FS 4	% of culti-vated land	FS 5	% of culti-vated land	FS 6	% of culti-vated land
Cultivated	5412890		736096		450529		993276	
Strategic Crops	12315111	61.4%		51.6%		45.4%		44.9%
Industrial C.	973376	4.5%		4.3%		0.4%		0.0%
	Syria Area	% of National	FS 4	% of National	FS 5	% of National	FS 6	% of National
Main crop	Barley	21.9%	IrPistachio	81.7%	R.Chickpea	55.8%	Rf. Barley	36.4%
2nd crop	Rf. Wheat	16.9%	Rf.Almond	67.1%	Ir.Tomato	38.4%	Ir. Wheat	1.3%
3rd crop	Ir. Wheat	13.9%	Ir.Potato	51.1%	Rf. Apple	37.4%	Rf. Wheat	0.4%
4th crop	Rf. Olive	8.5%	Sugar beet	48.3%	Rf. Cucum.	35.5%	NA	
5th crop	Cotton	3.7%	Rf. Grape	43.0%	Ir. Grape	35.2%	NA	

Source: Calculated based on MAAR statistics for 2002.

Within the major farming systems of Syria, the study provides the analysis for the first level of disaggregation into 11 lower-level (geographically based) farming systems. A similarly detailed presentation of their salient features exceeds the scope of this section[38], but a few features are highlighted here, based on the example of the FS 4 and FS 5.

The central plains of Syria share the characteristic of strong market integration and urban-rural integration as well as generally a long cultivation history resulting in relatively strong local specialization. At the same time, it is sub-divided into three farming systems, named the farming systems of Al Ghab, the irrigated and rainfed central plains. These lower level farming systems are defined on the degree of Government intervention in the cropping system and investment support for land reclamation and irrigation infrastructure. Al Ghab is marked by the heavy Government investment in drainage of the former swamp area, but also by intervention through the following land reform process and the agricultural plan, which includes in this area

[38] Chapter 4 provides some detail on the characteristics of these 11 farming systems, while full descriptions are presented in the individual reports on each major farming system.

a high share of industrial crop because of the presence of a noticeable processing industry. The remainder is classified according to the prevalence of irrigation, which defines cropping intensity as well as obtainable yields. Both the rainfed and irrigated central plains have moved towards specialized production systems under free market arrangements and they produce very little industrial crops.

The differentiation within the farming systems of Al Ghab and the rainfed and irrigated central plains is noticeable only to a limited extent at the level of the share of cultivated in total land area. This is surprising for the densely populated Al Ghab, but is explained by the occupation of a noticeable part of total area by infrastructure and populated centres. The strongest distinguishing feature is the high share of industrial crops, which exceed one quarter of the cultivated land in Al Ghab, with cotton slightly exceeding sugar beet. In consequence, Al Ghab is most dependent among all Syrian farming systems on Government decisions on the processing factory of sugar beet or the purchase conditions of cotton. In the other two farming systems, industrial crops play some role in the irrigated part (2.6%), while in the rainfed part the cultivation conditions are unsuitable for industrial crop production.

Table 21: Differentiation of major farming systems 4 & 5

	Syria	**% of culti-**	**FS 5**	**% of culti-**	**FS 51**	**% of culti-**	**FS 52**	**% of culti-**
	Area	**vated land**	**Total**	**vated land**	**Mountain**	**vated land**	**Plains**	**vated land**
Area (ha)	18517971		1079290		342036		737254	
Cultivated	5420656	29.7%	433654	40.2%	153050	44.7%	280604	38.1%
Strategic Crops	3321637	61.4%	204660	47.2%	80159	52.4%	122821	43.8%
Industrial C.	245223	4.5%	1680	0.4%	0	0.0%	1680	0.6%
Main crop	Barley	21.9%	Rf. Wheat	18.8%	Rf. Wheat	19.6%	Rf. Wheat	18.3%
2nd crop	Rf. Wheat	16.9%	Chickpea	13.0%	R.Chickpea	18.5%	Rf. Chickpea	10.0%
3rd crop	Ir. Wheat	13.9%	Rf. Barley	8.9%	Rf. Barley	12.9%	Rf. Olive	8.6%
4th crop	Rf. Olive	8.5%	Rf. Olive	7.2%	Rf. Apple	7.1%	Ir. Wheat	6.8%
5th crop	Cotton	3.7%	Ir. Wheat	4.4%	Rf. Grape	6.8%	Rf. Barley	6.7%
	FS 4	% of culti-	FS 4	% of culti-	FS 4	% of culti-	FS 4	% of culti-
	Total	vated land	Irrigated	vated land	Rainfed	vated land	Al Ghab	vated land
Area (ha)	1155945		474185		540961		140799	
Cultivated	736096	63.7%	286494	60.4%	362297	67.0%	87306	62.0%
Strategic Crops	379970	51.6%	125091	43.7%	187020	51.6%	67859	77.7%
Industrial C.	31531	4.3%	7407	2.6%	1743	0.5%	22381	25.6%
Main crop	Rf. Barley	19.6%	Ir. Wheat	17.5%	Rf. Barley	34.1%	Ir. Wheat	47.3%
2nd crop	Ir. Wheat	13.8%	Rf. Wheat	11.8%	Rf. Wheat	9.3%	Cotton	13.6%
3rd crop	Rf. Wheat	9.7%	Rf. Olive	9.5%	Rf. Cumin	7.5%	Sugar beet	11.1%
4th crop	Rf. Olive	7.4%	Rf Barley	7.3%	Rf.Almond	7.5%	Rf. Wheat	4.2%
5th crop	Rf. Cumin	5.4%	Pistachio	6.3%	Rf. Olive	7.1%	Ir. Potato	2.5%

Source: Calculated based on MAAR statistics for 2002.

By definition, irrigated crops play a minor role in the rainfed system, hence traditional rainfed annual crops dominate: Barley, wheat and cumin. Perennial crops nevertheless also play an increasing role, with emphasis on olives and almonds. In the irrigated farming system,

complementary crop water is primarily used for wheat cultivation, but rainfed wheat and barley likewise are important features in the cropping pattern. The most special crop is pistachio, which covers only slightly above 6% of the total cultivated land, but occurs primarily around Mourek and an exemplary niche system. Given the high differentiation and market integration, field vegetables and intensive crops under private marketing arrangements play an important role in income generation within this farming system.

Within farming system 5, a similar differentiation is indicated, based on the particular characteristics of land reclamation on the mountains in Sweida resulting in a specialized perennial crops system adapted to the strong winters. The southern plains are cultivated by a population with strong commercial orientation, who invested in drip irrigation systems and well based irrigation to the extent permitted by the public authorities. Where more water is available, field horticultural crops and perennials resulted in very intensive farming, while under rainfed conditions, intensive cereal and annual crop rotations dominate.

Similar differentiation was carried out for the other major farming systems, which are important for consideration by policy makers as well as agricultural support systems managers, as they shape the exposure to different types of risks and preparedness to respond to new opportunities. Perennial crop dominance will slow the response to price declines of farmers due to the asset fixity inherent in the long term investment in the growing trees, while annual crops under free market arrangements allow a more flexible response, if price information, market access and crop management skills are combined. The latter is a key distinguishing feature between the southern and the northern sub-system of the Intensive Irrigated Coastal Farming System (FS 1).

Additional livelihood sources such as livestock production or off-farm income has received less emphasis as a distinguishing feature here. However, the relative importance is correlated to some degree with crop production potential (i.e. its absence in the pastoral or the high importance of crop production with forage production in case of crop failure as an integral systems strategy; FS 6).

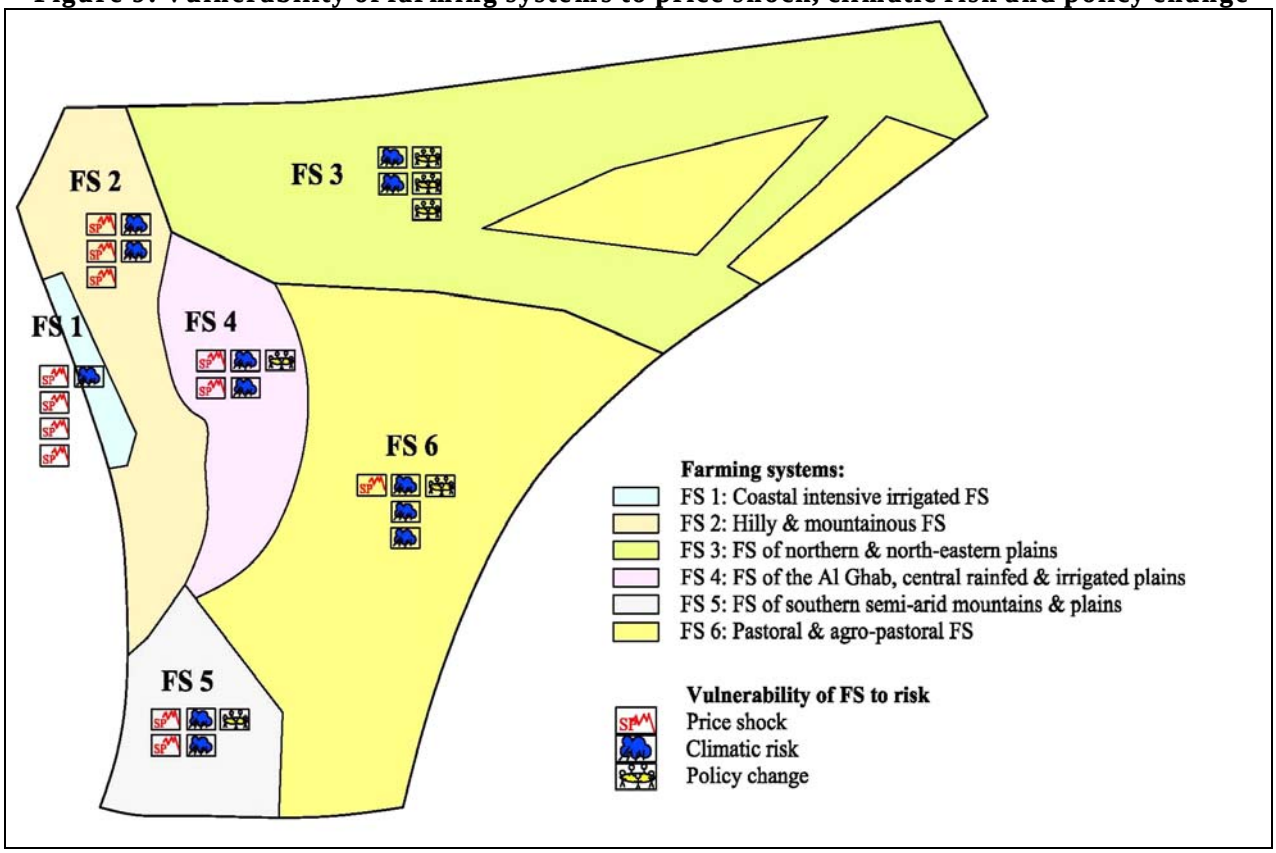
The above described production orientation in combination with the inherent market, policy and climatic risks results in a differentiated specific **vulnerability of the farming systems**, which is presented in Figure 9 and Table 22f, whereby five weighing points are attributed to each FS. Industrial crops are most vulnerable to policy decisions due to them being dominantly purchased by para-statal organizations (and private trading being illegal, even though existing).

Price fluctuations are to some degree associated with produce under private marketing arrangements, but are a risk factor particularly for perishable goods. For that reason, the FS 3 is little affected by price risk, even though the dominant cereal and other annual crops saw little Government market interventions in recent years. However, as they can be easily stored and traded across long distances and Government storage facilities are available, effective fluctuations are small even with variable production quantities between the years. Vegetables are the best example for risk-prone agricultural production due to the generally strongly seasonal production, high perishability of the produce and therefore a weak position of farmers in the marketing system. The FS 1 (particularly its southern FS) and the FS 5 (the western part of the irrigated FS) are known for their horticultural production. While FS 1 is most strongly specialized in it, which makes it most vulnerable at the livelihood systems level, many farmers in FS 5 can balance horticulture related risks (stemming mostly from field vegetable cultivation) with annual and perennial crops from their larger average holdings.

The relatively high rating of the price risk in FS 2 is of a slightly different nature than in the FS 1 and the western part of FS 5. With exception of those farmers specializing in cherry cultivation (which are highly exposed to short-term price risks), the high dependency of FS 2 on olive cultivation exposes it to long-term price declines, which may result from the sharp expansion of olive cultivation in other farming systems, particularly in FS 3. Production conditions in the new olive areas offer the potential of lower production costs on flat or gently sloping land, while FS 2

requires labour intensive maintenance of terraces and faces potentially lower yields and higher yield alternation between the years. In this case, the long-term prospect for the olive prices obtained by farmers will be affected by the possibilities of farmers of FS 2 to obtain premium prices for their know product quality as well as by obtaining access to international markets for the expected overall production increase. The price risk in FS 6 is primarily an indirect one in case of stress sales of sheep in drought years.

Figure 9: Vulnerability of farming systems to price shock, climatic risk and policy change



Agricultural production is generally exposed to climate risks, but several mitigating factors lead to a relatively differentiated exposure of the major farming systems. Irrigation water is one important factor reducing the yield variation resulting from variable crop water availability in the semi-arid to sub-humid parts of Syria. For that reason, climatic risk is the second important risk factor in FS 3, but ranks below the exposure to possible policy changes. The most vulnerable to climate risks of all major farming systems is the agro-pastoral and pastoral farming system (FS 6), where only the small irrigated niches provide some protection, while the recent drought years have brought the general vulnerability of the system to the public attention. Many of the inhabitants of this system have lost their small ruminant herds and hence their productive capital.

Table 22: Relative vulnerability of major farming systems to price shocks, climatic risk and policy change

	FS 1	FS 2	FS 3	FS 4	FS 5	FS 6
Price	3	3	0	2	2	1
Climate	2	2	2	2	2	3
Political	0	0	3	1	1	1

Note: Relative vulnerability is based on five risk points being assigned to teach farming system.

Table 23: Relative risk factors in the Syrian Farming Systems

Main Farming System	Farming system	Relative importance of risk factors				
		Climatic risk	Price shocks	Casual labour availability	Strategic crop dependency	Dependency on few income sources
1: Coastal intensive irrigated FS	North	--	+	-	-	++
	South	--	++	-	-	-
2: Hilly & Mountain. FS	Hilly	O	O	+	+	+
	Mount.	O	O	+	-	+
3: FS of north. & north-e. plains	Irrigated	O	-	O	+++	+++
	Mixed	++	O	O	++	++
4 FS Al-Ghab & central plains	Al-Ghab	-	-	+	+++	++
	Irrigated	+	O	O	++	O
5 FS of southern mountains & plains	Mountain	+	+	O	--	+
	Rf plain	O	++	-	-/+	-
	Ir plain	O				
6 Pastoral & agro-pastoral FS	Agro-past.	+++	O	++	--	++
	Pastoral	+++	+	-	---	+++

Source: Field study information

In FS 1, climate risks are to some extent mitigated by the greenhouse protection and high irrigation water use, hence the remaining weather risk (such as damages caused by strong winds etc) are considered relatively moderate compared to the price risks. In FS 4, the specialization of niches leads at the local level to a more differentiated picture than present at the overall systems level. Therefore, the general risk rating is balanced between climatic and price risks, while the policy related vulnerability is across the system generally less important. It is very high, though, for the small farming system of Al Ghab.

Household level considerations

The quantitative part of the above analysis of the farming systems is based on available statistical information at the Mantika level and their re-classification by farming systems boundaries derived from field observations and expert judgement. For a deeper understanding of the differences in the livelihood sources (i.e. the relative importance of crop, livestock, agricultural off-farm and non-agricultural income including transfer payments) of the different households, mostly three household types were developed for each farming system.

The population density, or more precisely, the number of registered holders in relation to the size of cultivated land defines the average holding size, which varies largely across farming system. Table 24 presents the average holding size by major farming system of Syria, indicating that the largest average holding (FS 3: 9.2 ha) is over five times the average holding size in the most densely populated farming system (FS 1: 1.3 ha). This difference increases further, if one compares the level of the sub-systems. At that level, the largest farming system (the rainfed central plains farming systems in FS 4) reaches even almost eight times the average holding size of the smallest one (the northern coastal farming system in FS 1).

Table 24: Average size of cultivated land per holder by farming system (**ha)**

FS 1	FS 2	FS 3	FS 4	FS 5	FS 6	Average
1.3 ha	2.0 ha	9.2 ha	4.5 ha	3.8 ha	"NA"/ 21.4 ha[39]	5.8 ha including holders in FS6
Northern FS: 1.1	Hilly FS: 3.1	Mixed FS: 11.9	Irrigated FS: 3.7	Mountain FS: 4.1	NA	
Southern FS: 1.6	Mountain. FS: 1.5	Irrigated FS: ca 2	Rainfed FS: 8.2	Plains FS: 3.6	NA	4.7 ha excluding holders in FS6
			Al Ghab FS: 2.1			

Source: Calculated based on MAAR statistics for 2002

The main purpose of the household classification lies in a better reflection of the socio-economic stratification of agricultural production within a farming system. As it is not to be expected that all household types within a farming system depend to the same degree on land holding as their main income source, the relative importance of the main livelihood sources was determined for each household type during the field study. This information is based on rapid rural appraisal methods, but were recorded during multiple group discussions and are cross-checked with village authorities as well as extension unit personnel. The criteria for defining household types were adapted to the specific conditions of each farming system and included mostly key production assets such as holding size, but also crop water access (i.e. irrigation type and reliability), livestock assets and dependence on off-farm income and casual employment. The detailed presentation of livelihood sources, recent changes in livelihood composition and cropping patter issues by household type is presented in the individual farming systems reports.

The present overview focuses on the contrast between three household types: the relative importance of income sources for poor (Table 25), the medium (Table 26) and the better-off households (Table 27).

Poor households or smallholders form the largest socio-economic group within the farming systems of Syria, even though their share among the local population varies between farming systems. They are considered most prevalent in Al Ghab FS due to extreme land scarcity since establishment of the system, the inability to accommodate the growing population and the inflexibility of the tenure regime. Poverty in FS 1 is a relative term and given the high prevalence of (partly even formal) employment outside the agricultural sector in this very small and highly urbanized system, a salient feature of this socio-economic group is the ownership of only one or two greenhouses and failure to cope with the high market risk in the past. Farmers partly lost capital and may only remain in the agricultural sector by resorting to expensive informal credit or be forced to cultivate only sporadically. Off-farm income possibilities and relatively high education levels reduce the prevalence of destitution to much lower levels than in other farming systems.

[39] The boundaries between FS3 and FS6 are particularly difficult to define based on Mantika level statistical information. Partly for that reason as well as due to holders of sheep registered outside the Badia areas, the cultivated land in FS6 per registered holder indicates average holding sizes of 21.4 hectares, which clearly is an over-estimation. For that reason, the national average holding size is presented based on all the registered holders, i.e. 5.8 ha/holder as well as after exclusion of FS 6, resulting in a national average holding size of 4.7 ha/holder.

Table 25: Comparison between livelihood sources of poor or small households by Farming System

Main Farming System	**Farming system**	**% of HH**	**Relative importance of income sources**				
			crop	**livestock**	**casual**	**non-agric.**	**remittance**
1: Coastal intensive irrigated FS *	North	75*	60	10	0	30	0
	South	70*	24	0	43	33	0
2: Hilly & Mountain. FS	Hilly	60	20	5	35	30	10
	Mount.	60	20	0	40	40	0
3: FS of north. & north-e. plains	Irrigated	40	35	3	47	15	0
	Mixed	50	40	15	30	15	0
4 FS Al-Ghab & central plains	Al-Ghab	80	40	5	50	5	0
	Irrigated	50	20	5	15	45	15
5 FS of southern mount. & plains	Mountain	30	20	30	0	0	50
	Plain	12	10	0	10	80	0
6 Pastoral & agro-pastoral FS	Agro-past.	70	10	20	50	0	20
	Pastoral	60	0	10	60	10	20

NB: Income sources specify the relative importance within a farming system, but should be considered as indicative only. Casual work refers to casual agricultural employment on other farms, while non-agricultural employment includes daily casual work and fixed employment. In the pastoral and agro-pastoral systems, the figures are preliminary. (*: this category refers in this farming system to smallholders more than to poor households in the sense of the other farming systems)
Source: Field study information

In the pastoral and agro-pastoral farming systems, the poverty prevalence is high and drastically increased during the drought, when many families lost their most valuable assets when sheep died or had to be sold at heavily depressed prices. The relatively lowest prevalence of poor households was found in FS 5, particularly in the entrepreneurial-oriented plains. One of the particular characteristics of this system is the highly dynamic structure, the prevalence of investors but also migration of parts of the population. Non-agricultural employment attracted poor groups, who benefited from good education, which facilitated exit from agriculture. The active land market supports this observation. In the marginal production area of the mountain farming system (FS 5), marginal producers are located at the geographical margin of the production system, were the public investment in land reclamation was less promising and both marginal cereal cultivation as well as the perennials typical for this system produce low returns. Remittances are therefore the most important of all income sources, with some complementary income from livestock.

Comparing the relative importance of livelihood sources of poor households, it is noticeable that crop or livestock income is only mentioned in one FS, being the special case of the northern coastal FS. In five of the 12 farming system of the table, close to or more than half the income is derived from casual agricultural employment, in two systems non-agricultural employment generates the mainstay of income and in one system, remittances dominate the income sources. In no system is livestock income the dominant source of livelihoods of the poor, while it is relatively most important in the mountains of FS 5, based on a combination of milk sales and small ruminants.

The medium household type represents the second largest socio-economic group in most farming systems, even though their differentiation as a separate household type was inconclusive in two farming systems. Generally, medium households are sufficiently educated and own sufficient assets to escape the imminent livelihood risks of their respective systems.

Resource availability is often a limiting factor to increased income and less farm management skills. However, failure to repay earlier credit is an important contributor to low investment possibilities in this group.

Table 26: Comparison between livelihood sources of medium households by Farming System

Main Farming System	**Farming system**	**% of HH**	**Relative importance of income sources**				
			crop	**livestock**	**casual**	**non-agric.**	**remittance**
1: Coastal intensive irrigated FS	North	14	60	10	0	0	30
	South	19	15	15	0	43	30
2: Hilly & Mountain. FS	Hilly*	28	NA	NA	NA	NA	NA
	Mount.*	30	NA	NA	NA	NA	NA
3: FS of north. & north-e. plains	Irrigated	50	60	12	20	8	0
	Mixed	40	65	20	5	10	0
4 FS Al-Ghab & central plains	Al-Ghab	17	50	5	25	20	0
	Irrigated	35	40	5	7	33	15
5 FS of southern mountains & plains	Mountain	60	33	11	0	56	0
	Rf plain	33	40	5	5	20	30
	Ir plain	90	40	40	0	20	0
6 Pastoral & agro-pastoral FS	Agro-past.*		NA	NA	NA	NA	NA
	Pastoral*	30	0	NA	NA	NA	NA

NB: Income sources specify the relative importance within a farming system, but should be considered as indicative only. Casual work refers to casual agricultural employment on other farms, while non-agricultural employment includes daily casual work and fixed employment. (*: in the FS 2 and FS 6, no meaningful differentiation into three household types was obtained; the combination of livelihood sources in the pastoral farming system hugely varied and was not fully developed)
Source: Field study information

In the densely populated farming systems, especially in Al Ghab as well as FS 2, part of the farms will become economically unviable in many families if several sons must base their future livelihoods on them. Similar threats exist likewise in other farming system for large families.

The better-off households represent the smallest socio-economic group with exception of part of the plains in FS 5, where the majority of agricultural producers were found to be investors who combine agricultural with non-agricultural income sources.

In general terms, the better-off households show the highest reliance on crop production of all household types. The obvious exception are the agro-pastoral and pastoral farming systems, whereby trade is the dominant livelihood source among agro-pastoralists; the better-off in the pastoral farming system is the only case with livestock as the dominant livelihood source. In several farming systems, the better-off households exceed their agricultural income by trade and most importantly non-agricultural employment. The reason for this differ: while in the southern coastal farming system and the irrigated central plains the considerable crop income is topped by additional, higher income sources, the FS 2 presents a slightly different picture. Due to the small farm sizes and the difficult production conditions on the sloping terrain, the better off have considerably higher agricultural income than the other household types within the system; however, agricultural income levels might nevertheless lie below those of the commercialized farming systems (FS 1, plains of FS 5 and some niches in FS 4).

Table 27: Comparison between livelihood sources of better-off households by Farming System

Main Farming System	Farming system	% of HH	Relative importance of income sources				
			crop	livestock	casual	non-agric.	trade
1: Coastal intensive irrigated FS	North	11	100	0	0	0	0
	South	11	25	10	0	35	30
2: Hilly & Mountain. FS	Hilly	12	40	10	0	40	10
	Mount.	10	40	10	0	40	10
3: FS of north. & north-e. plains	Irrigated	10	65	26	4	0	5
	Mixed	10	70	30	0	0	0
4 FS Al-Ghab & central plains	Al-Ghab	3	75	0	0	25	0
	Irrigated	10	60	0	0	0	40
5 FS of southern mountains & plains	Mountain	10	60	20	0	20	0
	Rf plain	55	40	20	0	40	0
	Ir plain	10	40	40	0	20	0
6 Pastoral & agro-pastoral FS	Agro-past.	30	10	20	0	20	50
	Pastoral	10	0	80	0	0	20

NB: Income sources specify the relative importance within a farming system, but should be considered as indicative only. Casual work refers to casual agricultural employment on other farms, while non-agricultural employment includes daily casual work and fixed employment. The example for the agro-pastoral system refers to the northern region, while in the western part, a considerable shift in strategy towards investment in poultry and olive leads to a different composition of livelihood sources. In the pastoral and agro-pastoral systems, the figures are preliminary.
Source: Field study information

Crosscutting themes and policy areas

Several themes indicate the integration between the major farming systems, such as labour force movements, marketing arrangements and developments affecting the expansion of some crops, resulting in increasing competition of farming systems in the limited national market for agricultural produce.

Factor markets

Land tenure and land market

The land tenure regime consists of several elements, most importantly the arrangements governing rent of land, sharecropping and the type of land ownership. The rental arrangements follow an extremely varied pattern, whereby direct rent against monetary payment plays a relatively minor role compared to the share cropping arrangements. The following Table 28 provides a comparative overview on the relative importance of agrarian reform land, sharecropping arrangements and the relative importance of absentee ownership across the farming systems of Syria. It is to be noted that no statistical information on these issues was available for conversion to the farming systems classification, hence the classification is a qualitative one based on the discussions held with the local population as well as researchers and experts in the public administration.

Agricultural Holding

Property ceilings for permitted holdings sizes exempted from agrarian reform in 1963 were established according to land use type and water availability. Examples of established size limits are:	
Coastal irrigated farms:	15-25 hectare/holder
Farms irrigated by flood irrigation:	30 hectare/holder
Farms irrigated by wells and rivers:	40-45 hectare/holder
Farm under rainfed cultivation (depending on rainfall level):	55-200 hectare/holder
Source: Al Hindi and Khazma 1998 - The impact of economic reform on agricultural conditions in the Syrian Arab Republic. MAAR, Damascus 1998. pp 18-21.	

At the farming systems level, agrarian land reform land is most important in overall land access in Al Ghab (in FS 4) and the irrigated farming system of the north and north-eastern plains (in FS 3). Agrarian reform has led to a lower degree of ownership reform also in FS 1 and the remainder of FS 4 and FS 3. Even though the reform took place up to four decades ago, the consequences remain important because of the specific implications of agrarian reform land on the possibilities of transferring ownership and using this land as credit collateral. The precise legal provisions governing ownership transfer of agrarian reform land even to the next generation are a matter of great uncertainty among the farming population as well as in the lower public administration, which negatively affects the dynamics of agricultural development. Farmers feel or effectively are unable to use their agrarian reform land as collateral to obtain seasonal or longer term credit, which includes in many cases even original agrarian reform beneficiaries who lack documented evidence of their land ownership. The inheritance of agrarian reform land will become an increasingly urgent issue to be addressed by the land administration in the future and the uncertainty and inconsistency with registered land ownership and effective land management might increasingly complicate agricultural production and potential growth in the above farming systems.

For example in Al Ghab, a number of extended families already manage the 25 dunums of land originally assigned through land reform, which in the meantime effectively represent several families. In other villages, land remains to be concentrated in the hand of absentee families, who effectively block agricultural investment in land improvement or perennial crops. Nevertheless, even land reform land is openly sold within the villages in other cases to circumvent burning problems of land distribution with the consent of the village authorities, effectively demonstrating that market forces are progressing more rapidly than the documented legal process seems to indicate.

Table 28: Relative importance of agrarian reform land, absentee & part-time farming and share cropping arrangements by farming system

Main Farming System	Farming system	Importance of agrarian reform land	Importance of absentee & part-time farming	Importance of share cropping arrangements
1: Coastal intensive irrigated FS	Northern	*	**	-
	Southern	*	* (commuting)	*
2: Hilly & Mountainous FS	Hilly	-	-/* (seasonal)	-
	Mountainous	-	-/* (seasonal)	-
3: FS of northern & north-eastern plains	Irrigated	***	-	***
	Mixed	*	***	**
4 FS Al-Ghab & central rainfed and irrigated plains	Al-Ghab	***	* (south)	-
	Irrigated Plain	-/*	**	**
	Rainfed Plain	-/*	*	**
5 FS of southern mountains & plains	Mountain	-	* (seasonal)	-
	Irrigated Plain	*	**	***
	Rainfed Plain	-	*	-
6 Pastoral & agro-pastoral FS	Agro-pastoral	-	-	*
	Pastoral	-	-	-

NB: Indications refer to the relative importance between farming systems only, whereby zero to three weighing points are assigned. Sharecropping arrangements include regularly renewed arrangements as well as long-term sharecropping resulting from the law of agrarian arrangements (FS4). Seasonal absenteeism in systems with a high importance of perennial crops (FS2 & FS5) includes poorer households who seek employment outside the FS, while in FS3 it refers to larger holdings.

Source: Field study information and expert judgement

The importance of land markets varies considerably between farming systems and between villages within a zone. The long-term effects of land reform land are a critical issue in some parts of Syria, as the population increase since the original assignation of land has led to considerable land fragmentation. The sale of land reform land is illegal, and even its´ inheritance appears to be not yet legally solved.

In some cases, the law of agrarian relations has led to the effective transfer of land to former rentees, which obtained continuous land use rights, after renting it for consecutive years. However, they are nevertheless obliged to continue to pay rent. More detail on the complex rental arrangements is presented in the individual farming systems reports.

In the rainfed part of FS3, part-time farming is relatively common in the larger holding group, whereby owners visit the farm for important operations to supervise them and return to their urban base. Furthermore, old (un-revocable) share cropping arrangements are relatively common.

The lack of updated title deeds generally presents for many farmers a constraint to access credit through the formal channels and hence reduces investment. Slow administrative procedures related to the land registration affects tenure arrangements. Legal and practical restrictions on changing ownership of agrarian reform land aggravate the situation. An increasing number of

holders will operate on land with title deeds issued in the name of deceased parents. The resulting restricted credit access will affect production and farm income. The regulations governing the transfer of registered land and issuing updated title deeds require for that reason urgent attention. The development of parallel arrangements is otherwise the only viable solution for farmers, but these will tend to favour the stronger negotiation partner at the detriment of the weaker one, i.e. the poor.

In the agro-pastoral farming system, the role of the sheep co-operatives in access to land and grazing resources has undergone repeated changes over time. Individual access to grazing land in the marginal production conditions is not a feasible and viable solution and has rightly not been on the policy agenda in Syria. The changes between traditional tribal structures, co-operatives and intervention of the Government bodies in defining access to grazing land has lead to considerable confusion among the sheep herders. In principle, arrangements at different levels are possible but the resilience of the natural resources against overgrazing is insufficient to allow unregulated access to the Badia. The policy decisions to grant open access to improved range areas near Palmyra, which had been established as a model of co-operative level management of improved Badia land was detrimental to the confidence of local populations to have secure access rights following improved resource management.

Produce marketing

The marketing arrangements were heavily influenced by Government policies until the opening of the economy in the last decade. Since then, an increasing number of crop groups are under private marketing arrangements (e.g. fruits and vegetables) or under floor price arrangements (cereals). The interventions continue to rein for industrial crops in order to combine the needs for supplying the processing industries and ensuring “desirable” income levels for the farming community. Area controls and quantity-of-delivery regulations are important characteristics of the production of cotton, tobacco and sugar beet. For technical reasons, the marketing arrangements for sugar beet also include the setting of delivery dates for the produce to the factories, which from the farmers’ perspective is often not transparent and causes problems for those called last for delivery. In the latter case, farmers state difficulties with planning their next cultivation season and hence prefer cultivating other crops (if the possibility arises). Farmers face considerable difficulties in obtaining the produce delivery cards.

Bribery appears to play a factor in the process of determining the quality of delivered produce for several crops, including cotton and tobacco, which allows farmers with the ability to pay for favours with the means of receiving higher grades for their crops.

The waiting period at the cotton delivery points is unpredictable for farmers. This adds uncertainty for cotton producers, especially in remote areas where rental costs for transport are high: transport costs for them increase dramatically, if they have to pay truck renting costs for several days while waiting for trucks to be accepted and unloaded at the establishment.

Prior to the start of the field assessment, it was expected that only minor areas of unlicensed cotton would be observed as a consequence of the new policy to pay only world market prices for unlicensed cotton in the last cropping season. In the North-East, however, farmers showed little concern for the price risk associated with unlicensed cotton. Mechanisms are apparently in existence through which traders pay farmers almost official prices, and the cotton is fed by co-operatives into the official channels for licensed cotton. This is possible, as co-operatives receive preferential treatment by the Government in the sense that they are allowed to deliver almost unrestricted quantities of cotton at the official price.

In brief it can be said, that based on the history of state and parastatal involvement in input and produce marketing, farming systems with high reliance on industrial crops are partly still under state marketing arrangements. Preliminary observations suggest that marketing arrangements are partly rather inefficient due to the administrative procedures for delivery, quality

assessment and payment. These inefficiencies partly considerably affect farmers´ view on relative advantage of cultivating these crops.

The vast majority of farmers in Syria are heavily market integrated, and home consumption is only a partial concern for production decisions, except in the pastoral farming system. To some extent, the orientation to cereal self-sufficiency is of concern with respect to wheat cultivation. However, even in the case of wheat it was noted that cultivating soft wheat for home consumption compared to durum wheat for marketing was stated in the North-East (and a focus of one dunum per family member under complementary irrigated conditions seems to emerge). In the South, farmers stated instead that bread baking in the family has long been based on durum wheat. At the same time, home consumption needs are less of a determinant to the wheat areas there.

Private traders dominate the marketing arrangements of perennials, horticultural crops as well as most food crops. However, market access for producers in remote areas is affected by high transport costs, farmers preferably rely on traditional annual crops of the region, for which marketing in bulk, and storage possibilities reduce marketing risk. The lack of price information reduces the bargaining power of small producers, which is most serious for perishable goods, but affects sometime even storable goods as farmers in cash need may not afford to delay crop sales. The establishment of a well-functioning price information system, for which accuracy, timeliness and speed of information provision are key determinants, could improve the income of many farmers.

Labour market

Rural labour markets have long been considered an important part of the livelihood system, particularly of families with little own farm land and where farm land for rent is scarce. During the fieldwork for the farming systems study, the labour market was therefore an explicit point of discussion, both for hiring labour in peak labour seasons as well as an employment strategy for income generation by the interviewed farmers in low seasons and for land scarce farmers. There are no particularly contentious issues involved in the functioning of the labour market, as labour markets operate free of public intervention.

The degree of mechanization of farm operations varies between the farming systems and obviously between the dominant crops. Cereal farming is a fully mechanized system except in small areas of wheat cultivation for home consumption on steep slopes or on stony terrain (e.g. FS 5). Cereal cultivation is therefore an entry point for integrated rural development through service provision, but is irrelevant for the rural labour market. In contrast, pulses and oilseeds provide small employment opportunities on larger farms, while most smaller farms will not engage higher labour for these crops.

Industrial crops are the highest providers of agricultural casual employment, and among them the large cotton producing areas attract during the picking season large flows of casual labour across the country (see Figure 10). Given the labour intensity of picking, which is mostly carried out by women and girls, even medium sized farms often employ additional labour to complement available family labour.

The second main provider for seasonal employment in the agricultural sector is the perennial sub-sector, with emphasis on harvesting for unskilled agricultural labour and for pruning for skilled agricultural labour. For that purpose, the FS 1 attracts in winter many farmers from FS 2 for the pruning of olives and citrus on the coast, which is an particularly important income source in this hilly and mountainous farming system due to its' very small average farm size.

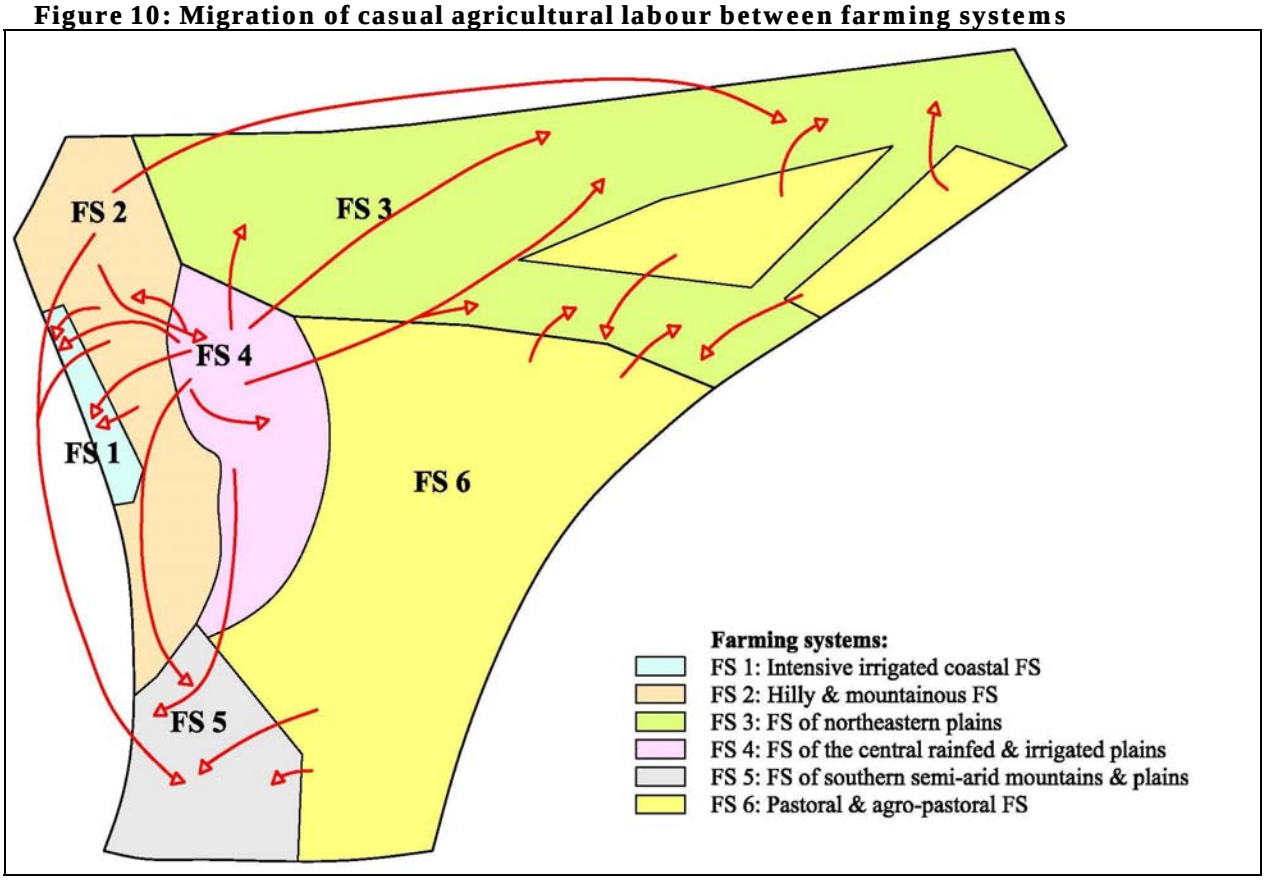
The third major element in Syrias' agricultural casual labour market is vegetable cultivation, especially the seasonally available employment in harvesting of field vegetables. The southern plains (of FS 5) are famous among the poor in many farming systems for their employment possibilities. Particularly harvesting is generating employment, while many poor families engage

in share cropping arrangements with investors for specific crops, such as cucumber cultivation. Given the lack of cash, the contractual arrangements tend to be of a very simple nature with all inputs being generally provided by the investor, while the share cropper guarantees high quality supervision of the crops, as he lives in a tent next to “his” field for one season. The quality of irrigation and prevention of theft are important additional duties.

Non-agricultural casual labour is mostly attracted by the construction sector in Lebanon and given the relative openness of borders, this has become the more active non-agricultural casual labour market compared to the Gulf states. For some poor and landless families, the annual employment has become a veritable migration cycle. For example, landless families from FS 2 retain their residence in the system and seek casual employment in pruning orchards for part of the family in winter, while men seek employment in the construction sector abroad and the family lives separated in that period. In the summer season, the entire family moves to FS 5 and seeks contracts as share croppers and appreciates this situation for having an employment opportunity for the entire family, followed again by a return of the head of household to work abroad in winter, while the rest of the family returns to their residence in FS 2.

Share cropping arrangements also exist in other farming systems. In FS 3 (Rakka, Deir-Ezzor and Aleppo), they are more prevalent in the irrigated part, as labour requirements per hectare are higher for these crops and the relative saving on supervision cost is larger compared to rainfed crops.

Figure 10: Migration of casual agricultural labour between farming systems



In brief, casual labour provides a high share of household income to the poor, and seasonal labour migration is an important feature of the agricultural sector. The population growth results in a declining need for migrant labour and an increasing recruitment from within the farming systems. This results in pressure on those poor households who already rely on seasonal migration to other farming systems for their livelihoods. First indications on the effects of the increased availability of casual labour within farming systems were observed in the northern

and north-eastern plains (FS 3). Poor households from the northern agro-pastoral FS quoted increasing difficulties to be employed in cotton harvesting, as sufficient job seekers are available from within the irrigated FS 3, which are given preference by employers for their specific experience in picking. In the rainfed part of FS3, the major labour flows are now within the system, while in the past they were between the systems and included north-south migration.

The importance of off-farm and non-agricultural income in the livelihood system of the different household types in the farming systems under consideration are therefore the only point of interest, as are their changing importance over time. Under the drought situation of recent years and the loss of livestock, farmers particular in the pastoral and agro-pastoral areas north of the Euphrates river shifted their main source of income from barley growing and sheep keeping to seasonal migration and partly to employment as herders. Even though agricultural employment along the intensive irrigated farming systems along the river is (at least seasonally) relatively easily available, the traditional agro-pastoral population is treated as secondary employees only due to their lack of experience in tasks considered as sensitive, such as irrigation and cotton harvesting.

Migratory work is a traditional source of employment, with changes in the destination countries over time and depending on the level of skill of the employees. Skilled labour from the south is more focussed on Gulf countries, while the unskilled from the north seek sharecropping arrangements in the south or employment in construction work abroad.

Agricultural support system

Role of extension unit

Given that the extension unit is the branch of the agricultural support system with the most regular and direct contact with the farming community, it is heavily involved in implementing decisions made at the national and governorate level. Therefore, the extension unit performs a dual role of administrative and support functions. In areas, where industrial crops are important, the heavy workload associated with preparation and execution of the agricultural plan and the issuance of licenses leaves little room for the support functions commonly expected from an extension service. Statistical information collected at the farm level in these areas is also influenced by this control function.

Procedures to implement and control the agricultural plan are demanding and exceed the capacities of many extension units to follow them up (e.g. procedures for estimating cotton yields are unrealistically complex). Out of lack of control possibilities and possibly social considerations, it is frequently accepted at the local level that poor households exceed licensed areas. The resulting excess production partly influences official average yield estimates.

Where strategic and particularly industrial crops play a minor role, the extension units are in a better position to provide extension services, even though limited resources remain a constraint. The strongest support role is provided where staff of the extension unit itself is involved in farming crops under private marketing arrangements (see for example Mourek). Promoting access to updated technical and crop management information could be an effective improvement of extension services. The flow of information to the poorer farmers within the farming community should be a particular concern.

The agricultural plan as source of information

The agricultural plan is annually prepared for major and minor crops expected to be cultivated. Detailed procedures have changed over time, and for some crops the planning responsibility even lay with different Ministries (e.g. cotton). The agricultural plan, always considering experiences from past production years, is adjusted annually with the intention to match national objectives (including supply for industry, food needs and foreign trade concerns and

lately increasingly water use and economic efficiency) with distributional objectives. The national plan is distributed to the Governorates and re-calculated in a stepwise process, until it finally reaches the level of the Nahia and village.

In practice, depending on the crop concerned, these plans are mere indications for minor crops or may be relatively strictly monitored down to the farm level, such as in case of subsidized crops such as cotton. The level of theoretical control also depends on the number of outlets for the produce, and therefore requires in principle a higher level of monitoring for cotton than it does for tobacco or sugar beet.

Depending on the farmers perception of profitability of each crop, in combination with past experiences of inefficiencies of institutional arrangements in processing licenses, input supply, marketing arrangements and time loss for administrative procedures at the different steps, farmers will attempt to exceed or also to avoid cultivating crops according to the planned areas.

There are cases, where part of the crops recorded in the village level agricultural plan are not cultivated in the village at all, and part of these crop areas later become part of the agricultural statistics. In other cases, planned areas per crop in the village are not enforced at the farm level, but farmers make arrangements to satisfy plan requirements in turns between the years to avoid sanctions, and are free to determine their cropping preferences in the other years. In cotton production, surprisingly flexible arrangements exist partly at the village level of how unlicensed areas are treated. Some villages implement their own social plans in not sanctioning (i.e. reporting unlicensed areas) smaller farmers, small percentages in areas beyond the plan etc.

Crop finance and agricultural credit

Liquidity is among the primary constraints of poor and medium household and influences the production decisions in most farming systems. Constrained access to crop finance has a serious impact on their possibilities to improve agricultural incomes. Frequent failure to repay earlier credit leaves many poor household excluded from formal credit trough the ACB. At present, their possibilities to invest in agricultural production and effectively contribute to agricultural and rural development depend on informal credit access. These informal credits are expensive and the high figures suggest cases of abuse by traders and input providers. However, such credit necessarily contains a risk premium, as the enforcement possibilities of the credit given outside the formal legal framework are low and risks for the creditor are high as not guaranteed though a collateral. Effectively (if that was possible) imposing a ban on such practices, while not providing alternative access to credit, would further hurt particularly the poor households. Diversification of poor farmers would be made easier, if better credit access makes them less reliant on arrangements of combined credit and advance-sales of crops (particularly for cotton). Clear policies on dealing with drought-caused credit failure are needed in order to permit drought stricken systems to recover. It is often overlooked that livestock loss in the pastoral and agro-pastoral farming system is not only equivalent to the loss of a harvest in a crop based farming system, but is equivalent to the loss of farm assets such as land or machinery.

Price determination, price intervention and farmers' response

Industrial and to a lesser degree the other so-called strategic crops provide much appreciated price security and stability to farmers. Where market opportunities for other crops exist, there is a tendency for smallholders to diversify into these new crops to the extent possible given their low capital availability (and resilience to price risk) (e.g. FS 4). Where direct market access is weak or absent (large parts of FS 3), diversification is not feasible and a social element of plan enforcement appears to have developed, permitting poor farmers to considerably exceed their permitted share of industrial crops. Payment delays for industrial crops are a concern for farmers with liquidity constraints, i.e. all poor and most medium households, which makes parallel market arrangements more attractive, despite the lower prices. In-transparent procedures to establish product grades affect farmers and procedures should be reviewed. The role of industrial crops in the cropping calendar should be given higher consideration: their long

growing period restricts increased land use intensity on irrigated land. The return to public investment in irrigation schemes needs to be assessed in light of the obtained additional production and under consideration of the achieved land use intensities (e.g. the land use intensity in Al Ghab is considerably lower than in the irrigated central plains of FS 4, partly explicable by the focus on industrial crops in the former). Offering income from an additional cultivation season through the expansion of short season crops might reduce poverty levels in Al Ghab and would contribute to employment generation in this and other irrigated farming systems.

Privately marketed crops and livestock produce are subject to natural price fluctuations, which successful farm managers can use to their benefit it they possess the corresponding information and possibilities to schedule production (e.g. in greenhouse cultivation) or adjust marketing. Farmers in their search to improve income have often copied successful strategies in many farming systems dominated by crops under private marketing arrangements (greenhouses in FS 1, cherries in FS 2, field tomato in FS 4, apple in FS 5). The resulting production increase has lead to price declines, unless market differentiation (e.g. varieties to meet differentiated consumer demand) or vertical integration into processing prevented it. A successful example of escaping price pressure is the pistachio niche system of Mourek, where the production centre has over time evolved into a regional and international trading centre. The local market of Syria allows further differentiation of production, particularly in the fruit and vegetable sector, which would reduce price pressure. Further market opportunities exist with increased access to international markets and the expectations of positive benefits from the implementation of EU-Syria association agreements are justifiably high. A functioning price information system would benefit particularly smallholders in strengthening their bargaining power. Farmers have a high preference for price security and tend to prefer crops with guaranteed prices, as long as the unit-profit allows sufficient income form the holding. Large holdings capture a high share of the overall benefit from public price guarantees and subsidized prices due to their large production areas. Poor farmers in farming systems with difficult market access are particularly vulnerable to price adjustments of industrial crops, as they lack the possibilities to diversify into high-value niche products, while the same household type in farming systems with high market integration partly already followed this diversification strategy.

Ways Forward – Conclusions and Recommendations

The characterisation and analysis of agriculture in Syria based on the farming systems methodology defined for this study proved to be better suited to present and understand the agricultural differentiation than is possible based on statistics based on administrative boundaries. The latter can be used as a starting point for generating farming systems relevant information, but requires re-classification of the statistical information based on lower level administrative units into FS units. For the purpose of the present study, Mantika-level information was entered into a spreadsheet and to some degree, a further differentiation from this level was done for the definition of farming systems. In the future, the definition of boundaries based on the Nahia level statistical information in combination with agro-climatic zones (so called "stabilization zones") would further improve the definition of systems boundaries. This process would be further facilitated if MAAR made their annual agricultural statistics available at the Nahia level and in electronic form for research purposes.

In order to reflect the socio-economic differentiation within each farming system, statistical information is impractical to generate a household typology, though. The knowledge about household types per farming system helps planners and policy makers to reflect on the potential impact of policy change from a social perspective. For that purpose, the field study generated a (mostly three-tier) household characterisation, complemented by information on their composition of livelihood sources, cropping pattern, changes in the recent decade and development options based on farmer perception of likely developments and ongoing trends.

The results of this dual approach of analysing the structural differentiation of the agricultural sector allow several general conclusions valid across the farming systems, as well as a few others specifically relevant to particular farming systems.

NAPC researchers have gained the experience and access to the farming community representing all farming systems of Syria, which should be used for a regular monitoring of ongoing developments and adjustments to changes in the agricultural planning system and agricultural markets. Based on these skills, NAPC researchers are likewise well prepared to apply a similar methodology to investigate trends in niche systems of specific relevance to policy questions (e.g. in FS 4) and to further subdivide large systems into smaller units (e.g. FS 3).

In all farming systems, liquidity constraints and the lack of access to crop finance is a serious constraint to all poor and many medium income households. Offering a functioning credit market could be an important first step to revive the rural economy and to increase the profitability of production for the considerable share of the producers who pay very high capital costs to finance their farming operations. Industrial crops are generally the best protection against liquidity constraints, as crop finance is in principle provided through the ACB outlets. However, repayment of earlier credit was partly not satisfactory and many farmers are no longer entitled to crop finance even for industrial crops (particularly in FS 3).

Better-off farmers are generally less affected by these credit constraints and in the irrigated plains of FS 5, the system has reached a degree of commercialization that investors partly declared their independence from any credit needs.

In some farming systems, particularly where agrarian reform land represents a high share of total cultivated land (e.g. in Al Ghab FS), addressing administrative constraints in the land administration and registration process are particularly important to allow the use of agricultural land as collateral. However, slow administrative procedures affect the efficiency of the agrarian relations in many more farming systems of private held land.

Credit reliance as well as information on arising opportunities are (next to technical and financial skills) the main constraints of farmers with sufficient agricultural assets to improve their livelihoods. Consequently, stimulating information access on market prices and market opportunities is therefore a second key policy area directly aiming at the farmers to stimulate agricultural growth. The latter would gain increased relevance if it can be successfully complemented by improved access for Syrian agricultural produce to international markets, for which important prerequisites were reached through the Great Arab Free Trade Agreement and the technical negotiations for the Syria-EU association agreement.

Farmers have generally shown a strong response to market opportunities, particularly in those farming systems with a high degree of market access and market integration (FS 4, FS 2). Remoteness from markets has considerably reduced the access of farmers to new market opportunities, as the degree of competition between traders leaves little entry points for smaller produce quantities to be sold at competitive prices, particularly if they are of a perishable nature. Improved infrastructure in these areas (FS 3) would partly reduce marketing costs, but the overall economic impact of such investments should be carefully considered.

The development of strengthened local markets and their differentiation will be an important growth determinant for some farming systems and for remote areas in others. Broad based rural development is for these areas important to strengthen the local rural economy and the inclusion of the poor household category are important in this context not only from the social perspective but also by strengthening their role as consumers.

Lack of basic productive assets such as land in the crop based farming systems as well as livestock (mostly sheep) leave an important share of the rural population strongly exposed to developments in the agricultural as well as the off-farm labour markets. Labour intensive (productive!) employment generation is of high importance for most poor households. In the past, a strong migration between farming systems occupied poor households as casual labour in industrial (mostly cotton) cultivation as well as in the cultivation of crops under private marketing arrangements (field vegetables, greenhouse cultivation and perennials). Increasingly, local labour from the poor household type within a farming system is sufficient to meet the demand for casual agricultural labour. Poor households of farming systems with very high population densities (e.g. Al Ghab or FS 2) or those without specific skill (e.g. traditional migrants from FS 6 into FS 3) face difficulties in finding employment through migratory labour. Given the high population growth rate, this trend is likely to continue. Considerable growth potential exists in systems were population densities are lower, but the poorest strata in high population density farming systems will increasingly fail to guarantee their livelihoods through primary sector employment. Again, rural development policies will have to promote access to new income opportunities. These include the development of the local tourism potential (e.g. in parts of FS 2 for visitors from Damascus and Aleppo) as well as new opportunities in generating income through international tourism (e.g. near the major cultural and archeological heritage sites all across the country).

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Annex

Survey instruments for Rapid Field Assessment and Questionnaires

Syria Farming Systems Study

Guidelines for field work

When carrying out the field work, please keep the overall study objectives in mind, which are to analyse the structure of the farming systems and their geographical and social variation. However, we also need to document the flexibility and possibilities for the systems to adjust to future challenges. Particularly the latter is not a direct matter of questions and answers, but of interpretations and a combination of different sources of information and statements. Be aware of particular challenges within subsystems and niche systems to current issues in agricultural policy or emerging technologies which you may identify during the discussions with Mantika level officials or at the extension unit. Consider discussing these issues in the survey instruments.

You should also consider discussing preliminary results and impression from the villages with local authorities in the appropriate manner to fine tune internal and external perspectives on the system.

Village level information

The first source of information on the village came through the initial visit to the Governorates. After deciding on the village, the extension unit shall provide some additional information, as specified in the beginning of the respective form. The data give (if necessary quickly calculate what is the average holding size, share of rainfed and irrigated land etc) a reference point in the discussions in the village. Complete the rest in the village with the authorities there.

The extension agent should give you also an initial idea of how household can possibly be grouped in the village, but this is open to confirmation and adjustment in the village. It is also acceptable if the extension unit can even provide some numbers for a household typology they have developed for other purposes. Review its´ purpose carefully, though.

The information requested in the form also covers the existence and role of co-operative by crops and types of services provided: inputs (seed and fertilizer), services (which mechanized services, also water?), marketing. Discuss also aspects such as “Who of the holders in the village is NOT member? Or particularly the small farmers? Large farms with own machinery?” Credit sources other than ACB?

Rapid Field Assessment

General rule:

Listen to the discussion partners and do not assume you know what is happening

Crosscheck responses on key issues with other responses or in group discussions; summarize statements when discussions drag too long, before moving on to other subjects.

Be flexible in implementing the order of instruments!

The second staff should take notes immediately and not be engaged in the discussion. This requires discipline. The two team members should review key issues immediately after the discussion or latest in the evening. It is not possible to summarize the range of issues 3 days later any more.

Rapid field assessment instruments are key informant interviews and group discussions. Group discussions are in part supported with PRA-derived visualisation aids to guide discussion and to obtain consensus within a group of participants. The use of such instruments depends on circumstances and the receptiveness of respondents. Do not impose them in an interview.

Particular on the notes from the discussion it is very important that the team checks their notes afterwards. Do not accumulate notes from several discussions, and leave summarizing to the end. You will have accumulated too many details and will have great difficulties in making clear statements on differences between household types and systems. Clarity that you have NOT reached when summarizing your notes needs to be sought while in the area, so approach people again to seek clarification. A summary of notes from one household type helps you focussing the discussion with the next household type and points to particularly critical issues to be discussed.

Instrument 1 Develop household typology for village (Muhtar+Ext agent+farmer)

Instrument 2 Discuss changes in cropping pattern and livelihood sources by HH type

Instrument 3 Discuss return to production factors and changes over time by HH type

Instrument 4 Discuss development perspectives for household types based on five possible strategies by HH type & in the end with KI (Muhtar & key farmer & ext agent)

Keep a summary on what you have completed (and what you think is unnecessary in that system)

Household Interviews

Household selection:

Do household interviews in 2 villages per selected Mantika usually. An exception could be places were villages are extremely small (Al Ghab).

Obtain a list of holders in village from extension unit agent. Ask him to group preliminarily all farmers in three groups. Select at random the number of households required for interview. Afterwards, select from the remaining ones four per household type to invite to group discussions (every fifth name, for example, within the household group). Confirm with extension agents that this farmer is not likely to be reluctant, uninformed about developments in farming etc. In that case replace farmer with another from the same group.

The extension agent shall assist in contacting farmers and finding them, but should not be present during the discussions. If that cannot be avoided, he shall not participate in the discussion. Point out that his views are explicitly considered in separate discussions with him, but not during interviews with farmers. In case he cannot be silenced, the second team member needs to send him out on an errand.

Carrying out a few household interviews before group discussions could help you better understand key village related issues as a starting point.

Gross Margin Interviews

Always keep your list of completed crop and livestock gross margins updated. Indicate crop, technology (rainfed, irrigated or other indicators relevant for that crop) to quickly identify gaps and shortage of some crops. Do not hesitate to mark gross margin calculations as NOT TO BE USED if you have doubts about the validity of the information. Some gaps, for example on standardized items such as hired services, can be filled from village level sources.

A gross margin assessment can be done in form of a closed questionnaire, using the form sheet as questionnaire. The best interviews are done, however, if the information could become more like a dialogue and discussion about the production of that crop. This would mean adjusting the sequence of issues to be discussed to the respondent, while you try to guide the discussion where it stocks, or return the focus on the subject to avoid diversion. To ensure that no gaps remain in the end is a matter of experience. Therefore, if you feel uncertain, following a clear sequence is recommended.

State clearly that this is not done as a cost-of-production exercise, but to analyse for NAPC the variation of cultivation under different conditions of farming. Carry enough sheets with you to ensure that you can share some with interested farmers also.

The GM information should give you in the end an understanding, which cost items are particularly important for farmer decision making. You will notice that some are different from the importance of items such as land rent in the cost of production estimates.

1 First of all, ALWAYS define the field you are discussing, even asking for its name can help. This helps to avoid confusion during the interview. Then record the size of the field on the sheet. **Key issue!!** All other numbers will be wrong by the error of the field size they are related to!!! Clearly define the TECHNOLOGY LEVEL, especially when even different crop prices are associated with it (eg hard and soft wheat is more important than the actual variety; grapes for wine processing and table grapes will have a very different price etc).

2 Always start with costs, and discuss outputs at the end. Within outputs, start with quantities (was the yield good, how much ... and prices are asked last)

Inputs:

3 In most cases it will work best if you first invite the farmer to present the cultivation practices as they are carried out in the field, and go through inputs needed, hired machinery, and labour needs for each of them. Then distinguish between hired and family labour. For manual labour, particularly for hand harvesting, you need to ask several questions to determine how many people participated in harvesting on the different days. Check that you receive number of units and unit values. Sometimes, the farmer better remembers how much an operation cost than units used. BE FLEXIBLE. Do NOT impose one way of doing it. Take the best information he remembers (total value or units) and work your way back from there. In the form, one activity is recorded in one line for labour requirements, with a field to the left for the family labour, and in the centre there is a column for the hired quantity together with the unit value and total cost.

Note that in some villages, important parts of cultivation practices are mechanised and costs are standardised per unit of land. In that case, there is no need to record these items in the village during each interview. The paid price for a service such as ploughing can be used to check the areas of the given field, though.

Where input items are not relevant, mark that. Otherwise questions might arise if something is forgotten.

Output:

When discussing output, talk about quantities at the different harvesting points separately. Ask prices obtained better in context of talking about price variations during the year, and then check in the end that these were the prices received by the farmer.

Take care to cover by-products, particularly where they are also grazed by livestock and there is a price for it. Mark the value for grazing in the comment field, where farmers used it for own animals but where an equivalent market value exists. It is not necessary to complete this for all farms, but establish an equivalent value for a good and an average crop yield.

Special case: Barley in marginal areas

Barley is probably the only crop which is cultivated by agropastoralist families accepting a high risk of crop failure, as it is intended to serve for sheep grazing in these cases. Therefore, a gross margin in that system should include in the two lines of output one line indicating expected harvest in a good year, as well as the number of good grain yields in the last decade. In the second output line, indicate that number of years the fields were grazed (even distinguishing between total failure even for grazing and good grazing years could be tried).

Special case: Perennial crops

Perennial crops are mostly distinguished by different periods of high investment and high output. The inputs and outputs related to these different production phases are recorded in different parts of the same sheet.

When recording earlier phases, such as establishing one hectare of olives, the time and inputs required for the establishment and the production may come from different fields, where available. Only make sure that all prices relate to last year! (Do not mix farmers which remember how much they paid when they started their field with other who did it last year!)

When available and for alternating crops, you should record two subsequent harvests. Where only one year is available, indicate whether this is a high or a low production year as a comment!

The expected useful life and number of years before full production is important to be recorded!!!

Many blocks of costs will remain identical or very similar in the different phases and do not need to be determined in detail again. Questions on differences in weeding, fertilization and irrigation between the years of immediately after planting and early yielding would be sufficient.

Special case: Greenhouses

Greenhouse cultivation is particularly marked by shorter production cycles and more than one production cycles per year, often of different crops (e.g. tomato and cucumber). One gross margin refers to one crop. The second gross margin could refer to the same greenhouse, making assessment of part of the costs easier.

In case that plastic coverage needs to be replaced frequently (i.e. more than every third year), the plastic sheets are better considered part of the variable costs (of course only the part belonging to one crop season).

The most critical issue in the GM of vegetables is the price fluctuation. Therefore, carefully assess the intervals between the different picking moments and the output. It is better to discuss the price fluctuation more general initially and then focus on specific prices obtained by the farmer.

Special case: Livestock

Animal losses of all relevant groups are very important (cows and calves)

We are only considering dairy cows for the CAS team, but record other animals (extensive raising of male animals also) only with their numbers.

Important is the number of years the cow has been kept on the farm, the number of calves it had and the number of years and calves it is expected the have before it is sold as an old cow (unless an accident occurs).

Milk production for small producers is best done by simulating the lactation curve, as presented earlier.

The highest cost item is the value of the replacement animal, i.e. the price of a young heifer to replace the old cow.

Feeding costs need to be determined by main feeding seasons. From forage crops, it is sufficient for our purpose to ask, for how many days was a cow (or several) be fed from a given area. For irrigated forage crops this should be easily determined.

Special case: Forage production

Forage provides often no output of monetary value, as it is used on the farm. When a market price exists, it can be treated as a traditional field crop with a positive gross margin, which is the easiest case. Otherwise, the quantity of forage is recorded in units, without price. Inputs are recorded the traditional way, but the GM will be negative.

However, where a market price exists, it is also possible to fully monetarize all production, even the one used on the farm. Attention must be paid that then also the consumption by livestock must be recorded as a cost.

From the Bedouin System

From the Bedouin system we discuss barley, where relevant (including number of grain yields and grazing within a decade!) and keeping of ewes and raising of yearlings. For the yearling, the age of first lambing is the key figure, as is the price of a yearling and female lambs.

For ewes, the lambing rate, losses of ewes and lambs (good and bad year) and milk offtake are the key figures. Feeding can usually only be determined for the entire flock.

Documentation of Niche Systems

Rule: Spent not more than one day to collect information on a niche system.

Information sources will be mostly key informants, which could also be an experienced farmer. It is important for those to approximately indicate the agro-ecological conditions of the system, main difference in crop or livestock (in general: livelihood) pattern compared to surroundings. What case formation of the system (factory? Tradition? Special input source etc)? Describe the area covered (could also be „in valley xxx for x km along both sides of the road, with the centre being village or town yyy). System stretches on the slopes several hundred meters up.“). Introduction of systems, indications what stabilises it or whether it is sensitive to changes in a particular setting. Describe the structure of production (based on a number of small farmers (approx x dunum of that particular crop grouped around a small number of key commercial producers, for example). Consider other livelihood sources of the typical producer, such as the role of livestock, off-farm income and migration. The structure of marketing and input provision should also be recorded.

Where you identify larger numbers of niches, assess one or two interesting ones (which illustrate a case that might be replicated, or which could be successful or expand) and list the other ones.

Assistance for the Capacity Building through Enhancing Operations of the National Agricultural Policy Centre
FAO Project GCP/SYR/006/ITA

Syria Farming Systems Study

Village Questionnaire

(Beginning to be filled by extension agent. Remainder by Muhtar or village authority)

Farming systems zone _____ Sub-system _____

Muhafaza _____Mantika _____

Nahia _____Village name: _____

Respondents Name: _____ Position _____

Interview Date: _____ Beginning: _____ End: _____

General Information

Village population: _____ Number of holders: _____

Total village land: _____ ha/km2 of which irrigated:

Cultivable _____ ha Cultivated _____ ha

Under crops _____ ha Fallow _____ ha

Rainfed _____ ha Irrigated _____ ha

Water related information

Irrigated areas by irrigation type:

flood irrigation _____ ha sprinkler irr. _____ ha drip irr. _____ha

Irrigated areas by water source: From

own wells _____ha river . _____ ha canal _____ha

What are the regular water related costs in the different systems, which are independent of consumption? Explain

_____
____

_____
____

What are the water costs, which are dependent of consumption? Explain and quantify (per m3 or per dunum per year or irrigation)

_____
____

_____
____

Has the water table sunk in the last decade, irrigation become less reliable? Yes__/No__

Are there restrictions on expansion of wells/irrigation? Yes__/No__

Use of village land

Area under main crops last summer and crops last winter season...

Crop 1 _____ _____ ha, _____ _____ ha

Crop 2 _____ _____ ha _____ _____ ha

Crop 3 _____ _____ ha _____ _____ ha

Crop 4 _____ _____ ha _____ _____ ha

Crop 5 _____ _____ ha _____ _____ ha

Crop 6 _____ _____ ha _____ _____ ha

Government restrictions determining cropping pattern, such as licensed areas for Government purchased crops or other restrictions, such as to limit water use (restrictions on vegetables etc)

_____
____

_____
____

_____
____

Get Cropping calendar filled for most important crops

Livestock

Number of livestock in village

Total cattle _____ of which cows _____

Sheep _____ of which ewes _____

Goats _____ of which does _____

Other livestock

_____

Is there seasonal out-migration of small ruminants outside the village land for grazing?

Yes __ / No __

Is there a seasonal in-migration of small ruminants on village land for grazing?

Yes __ / No __

Is there important forage cultivation in the village? Yes __ / No __

Is cow milk collected in the village by traders? Yes __ / No __

Is the manure used for the fields? Yes __ / No __

Which crops especially? _____

Employment and non-agricultural sector

How much is the daily wage rate for daily agricultural labour during different seasons or per different kind of work (if no food and other payment in kind is provided)?

Cleaning of irrigation canal _____ SP/day Sowing _____ SP/day

Weeding _____ SP/day Harvesting _____ SP/day

Light work _____ SP/day Hard work _____ SP/day

Price differences for men and women? _____

Most casual labour used in _____ and then _____.

Are many people regularly leaving the village to seek work on farms in other regions?

Which season? _____ Where? _____

What is the monthly wage there? _____ SP/month

Has the number of people seeking work outside increased or decreased in last years?

_____ Why?

_____

For what crop and what operation is the highest total number of casual labour employed in the village? Crop: _____ Operation: _____

Crop: _____ Operation: _____

Are there any traders or processors living in the village level? Which?

_____
___

Do farmers often process some of their produce? Which?

_____
___

What other sources of non-agricultural employment exist? _____

Important changes and innovations in the village last decade

Which were the most important innovations and changes in the village in the last decade?

_____
___

Which are particularly relevant to crop and livestock production in the village?

_____
___

Is there anything particular about the village compared to other villages in the area?

_____
___

Discuss farmers` reactions to recent major changes, in terms of adjusting their sources of income. Such changes are for example the reduction of water table, making summer vegetable cultivation unfeasible, the reduction in the cotton price, changes in licensing arrangements etc.

_____
___

_____
___

_____
___

Discuss the vision of the village elder or other key informants to future changes under population pressure/reduced farm sizes, reductions in licensed areas of key crops.

_____
_____
_____

Land market

Is there any renting Yes ___ / No ___ or selling of land Yes ___ / No ___ in the village?

How much is the rent and purchase price of rainfed land for average quality land?

_____ SP rent/du/year _____ SP/du purchase price

And for irrigated land?_____ SP rent/du/year _____ SP/du purchase price

How common is renting for each type? _____

What sharecropping arrangements are common in the village? (describe payment)

_____
_____

What is the common pattern for renting land in the village (including share cropping)?

_____
_____

What are the most important type of share cropping arrangements (for which crops)?

_____
_____

Cooperative:

How many holders are cooperative members? _____ of _____ total holders.

Which holders and why are <u>not</u> members? _____

_____
_____

(e.g. farmers having their own machines/tractors, farmers with very small plots only, farmers with no irrigated land, farmers producing small quantities only; i.e. not interested and not eligible)

What <u>services</u> does the co-operative provide? For what crops:
_____

Inputs (seeds, fertilizer, pesticides)	Yes ___ / No __
Organizes credit for above inputs	Yes ___ / No __
Tractor services for ploughing	Yes ___ / No __
Tractor services for other operations	Yes ___ / No __
Harvesting of major crops	Yes ___ / No __
Which : _____	
Marketing of produce:	Yes ___ / No __
Which crops: _____	
Transport of produce to market:	Yes ___ / No __
Other: Specify: _____	

What is the <u>standard fee per dunum</u> of the following services in the cooperative for...

Ploughing _____ SP/dunum or other unit (specify) : _____

Levelling _____ SP/dunum or other unit (specify) : _____

Seeding _____ SP/dunum or other unit (specify) : _____

Fertilizing _____ SP/dunum or other unit (specify) : _____

Spraying _____ SP/dunum or other unit (specify) : _____

Harvesting _____ SP/dunum or other unit (specify) : _____

Variations of the fee apply for _____

<u>General credit and crop financing arrangements</u>

<u>Using the word “credit” is critical and can be seen controversial. When assessing the sources of capital/loan/borrowed money for a fee or sharecropping arrangement play a similar function. Ensure that the word is used in this broader sense at the village and the household level.</u>

Which is the most important source of crop finance used in the village?

Crop	Source of credit	Inputs covered	Interest rate applied
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Other sources of credit available for major investments, livestock etc. indicate fee or interest rate.

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Syria Farming Systems Study

Data collection on fixed production costs

Approach:

Select in each Farming Systems Zone two good informants on each cost item, i.e. tractors, pumps and greenhouses. Due to the high concentration, in FSZ 1 (Lattakia, Tartous), FIVE sets on green houses should be collected. In Zone 3, FOUR sets of tractor data should be provided, but NONE on greenhouses. Zone 6 does not need to provide costs on either of the two, but on water pumps if found.

Tractor

Please note that the information should refer to equipment of the standard size commonly used in the area. State category clearly, avoid mixing hand-tractor with tractor.

Tractor owner 1: _____ Location: _____

For the sake of simplicity, durable goods such as tractors for ploughing will be included on a service-basis, i.e. at the rental cost for a plot manager. Collect this information from a tractor private owner (farmer or a person renting out services). Note that the type and age of the equipment referred to is recorded.

Tractor brand: _____ Horse power: _____ Purchase year: _____

Purchase price in year of purchase: _____ SP or actual price _____ SP

Number of hours of utilization per year: _____

Fuel consumption per hour: _____ litre (Price/litre: _____ SP)

Labour paid for maintenance and repairs last year (or season? specify): _____ SP

Labour paid for maintenance and repairs the year before: _____ SP

Spare part costs last year (or season? specify): _____ SP

Spare part costs the year before? _____ SP

Salary of tractor operator: _____ per day / month (tick appropriate)

How much would you receive, if you sold the tractor this year: _____ SP

Greenhouses

Greenhouse owner 1: _____ Location: _____

Type: _____

Size of greenhouse (surface covered) : _____

Purchase year: _____ Purchase price: _____

Number of crops grown per year:

Crop 1 (specify) _____ : _____ harvests/year
or
Crop 2 (specify) _____ : _____ harvests/year
or
explain typical rotation :
_____

Labour paid for maintenance and repairs last year (or season? Test): _____ SP

Labour paid for maintenance and repairs the year before: _____ SP

On average, after how many years is the plastic cover replaced: _____ years

Price of plastic cover this year (of size for this greenhouse): _____ SP

Spare part costs last year (or season? Test): _____ SP

Spare part costs the year before? _____ SP

How much would you receive, if you sold the construction this year: _____ SP

Water pumps

<u>Water pump data 1</u>

Type of pump
_____

Capacity of pump: _____ m3/hour

(or area covered, eg _____ ha of _____ cultivation)

Purchase year: _____ Purchase price: _____ SP

Cost of digging the well (where applicable): _____ SP

Labour paid for maintenance and repairs last year (or season? Test): _____ SP

Labour paid for maintenance and repairs the year before: _____ SP

Spare part costs last year (or season? Test): _____ SP

Spare part costs the year before? _____ SP

Cost of digging the well (for well pumping): _____ SP

Fuel or electricity consumption per hour: _____ at _____ SP per hour

How much would you receive, if you sold the pump this year: _____ SP

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Syria Farming Systems Study

Farmer Questionnaire

Farming systems zone _____ Sub-system _____

Muhafaza _____Mantika _____

Village name: _____Household type: _____

Farmer Name: _____ Interview Date: _____

Interview beginning: _____ Interview end: _____

Household information:

Number of adult family members: _____ males _____ females

Number of family members working on farm: _____ males _____ females

How many adults work only part of year on farm:_____ males _____ females

How many children are there on the farm: _____

Which main responsibilities do they have to participate in farm work?

_____
_____

General farm information:

a) Land resources

What is the total number of dunums owned by family? _____ dunums

How many dunums did cultivate this year: _____ dunums

Summer crops _____ du Winter crops _____ du

How many plots did you cultivate? _____

Plot information

Plot	Name/location	Area (dunums)	Tenure [1)]	Irrig.type/NA [2)]
1				
2				
3				
4				
5				

1) owned, rented, sharecropped, other 2) network, well, sprinkler irrigated, rainfed

b) Livestock ownership

Number of cattle:

Dairy cows: _____ Young cows (heifers): _____

Males raised for sale: _____

Sheep and goats (productive animals only):

Number of ewes: _____ Number of rams: _____

Number of does: _____ Number of bucks: _____

Are all animals kept on the farm all year round? Yes ___ / No ___ ;

if NO, when and where:

_____

Which other types of livestock are important on the farm?

_____

c) Other assets

Which are the most valuable assets on the farm (machinery and equipment)?

_____ _____

_____

Crops cultivated by plot last year

Plot	Winter crops (indicate share of area if more than one crop in plot	Yield (kg on plot)	Summer crops (indicate share of area if more than one crop in plot	Yield (kg on plot)
1				
2				
3				
4				
5				

For perennial crops, state year of planting!!!

Select the two - three most important crops (depending on complexity, two for perennials sufficient) and proceed with Gross Margin information.

Role of cooperative (brief check only)

Are you member of a cooperative? Yes ___ / No __

What services does the co-operative provide:

Inputs such as seeds, fertilzer, pesticides? Yes ___ / No __

Organizes credit for above inputs Yes ___ / No __

Tractor services for ploughing Yes ___ / No __

Tractor services for other operations Yes ___ / No __

Harvesting of major crops Yes ___ / No __

Which : _____

Marketing of produce: Yes ___ / No __

Which crops: _____

Transport of produce to market: Yes ___ / No __

Credit information:

Be aware of the difficulties associated with the word credit. Ensure to cover also similar arrangements, such as borrowing for a fee, expected donations in return and similar.

What sources of funding are available to you for purchasing inputs (seed, fertilizer, pesticides)?

_____

What other sources of PRIVATE credit are available? (specify if differences by type of use)

_____at what fee/interest e.g. per 10000 SP per year? _____

_____at what fee/interest e.g. per 10000 SP per year? _____

In which period of the year and for which activity would access to credit help MOST in increasing farm income from

Agriculture (crops)? _____ How much would be needed? _____ /du

Other activities? _____ How much would be needed? _____ /du

Marketing

Which of your crops do you sell through the cooperative? _____

Which of your crops are purchased by traders directly from the field?_____

Which of your crops do you take yourself to the market? _____

How far is the market from the farm? _____ km

What is the transport cost ? _____ SP/ton or per _____ (i.e. ..... tons)

Water related information

Irrigated areas by irrigation type:

flood irrigation _____ ha sprinkler irr. _____ ha drip irr. _____ha

Irrigated areas by water source: From

own wells _____ha river . _____ ha canal _____ha

What are your regular water related costs, which are independent of consumption? Explain

_____

_____

What are your water costs, which are dependent of consumption? Explain and quantify (per m3 or per dunum per year or irrigation)

_____

_____

Perspective of change

Have you invested in new tree crops, livestock or machinery last five years?

Trees: _____ _____ dunums

Livestock: _____ _____ number

Other _____ _____ dunums

Which is the most desirable investment a farmer can make to increase agricultural income?

_____
___

Which is the best investment in agriculture? _____

Which is the most profitable crop per dunum irrigated land at present? _____

Which is the most profitable crop per dunum rainfed land at present? _____

How was it ten years ago? Irrigated land _____ Rainfed land
_____

Which crops do you expect to expand if water becomes more expensive?
_____ and scarce? _____

Which crops are grown particularly to meet the food needs of the family?

_____
___

Most serious constraints in family to increase farm income? _____

Livestock

How important is livestock for the family income?

No livestock	____	Only for family needs	_____
Some income	____	Important	_____

How important is cow milk for the family?

No cows	____	Only for family needs	_____
Small, irregular income	____	Important	_____

Is there money spent to feed livestock? Yes ___ / No __

On what feed? _____Which period? _____

Is the livestock only grazed on communal land, or feed on by-products? Which months?

_____
___

Is there any forage cultivated on a field? Yes ___ / No __

What crop? _____ How many dunums? ____ dunums.

Are you processing milk? Yes ___ / No __ into what? _____

Is the milk of products sold to families in the village for home consumption? _____

To traders coming to you? _____

You take it to the market/traders _____

Is the income from the sale of milk or processed milk used particularly to buy inputs for farming during critical periods? Yes ___- No ____

which inputs, _____which season? _____

Crop-livestock integration

What is the livestock manure used for : _____

Is there a market for manure? _____ SP per unit _____

The by-products of which crop are most important for feeding the livestock (by type of animal, if possible) 1 _____ 2_____

3 _____ 4_____

Is there a market for these feeds? Add price per unit and mention unit

1 _____ 2_____

3 _____ 4_____

Are field with crop residues rented to sheep owners? _____yn

Type _____ Price per dunum _____ SP

Type _____ Price per dunum _____ SP

Type _____ Price per dunum _____ SP

Off-farm labour

Have you or somebody from your family worked for money on other peoples land?

Yes ___ / No __

For how many days and in which season/what work?

_____ work, for _____ days

_____ work, for _____ days

_____ work, for _____ days

Do you or another family labour have regular work outside the farm? Yes ___ / No __

If yes, which work?

_____

(for employment, indicate your estimate of approximate monthly income:_____)

Gross Margin calculation

Based on the cropping pattern and livestock information, select two gross margins for discussion based on the separate guidelines. Consider as well the main crops and technology levels required for the CAS. When several fields under the same crop, chose the larger field.

After Gross Margin discussion

What are the characteristics of a good and a less good farmer?

_____

Which is the limiting factor to expand the different crops you are cultivating?

_____

Which is the constraint to intensify cultivation of the fields?

_____

Which would be the first thing to invest in if untied credit became available? (fertilizer or production intensification, investment in expansion, new equipment)

_____

Price sensitivity of crops/to quality of produce

_____

_____

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Syria Farming Systems Study

Group discussion guidelines
(One group discussion per household type at least within both villages per Mantika)

Farming systems zone _____ Sub-system _____

Muhafaza _____ Mantika _____

Village name: _____ Household type: _____

Record for each discussion:

Discussion Date: _____ Beginning: _____ End: _____

Number and type of participants:

_____
_____

Explain reason for discussion:

Understanding different types of farms in the village - Role of different sources of income and activities of holders - Change by holder type over last decade - Possible developments by type of producers when institutions and arrangements for farming change

Discussion items:

We have in total four different elements of Field Assessment, where apart from filling the form or scoring sheet, recording the arguments provided by the participants is of the same importance than the result on paper. Therefore, the second team member is responsible for documenting the important arguments behind the scoring of the participants. The four instruments are:

1) Household typology

Background information: Suggestion from extension agent and Mazlaha proposals for household classification.

Participants: Muhtar and 2-3 village elders, preferably of different types of farmers

When: Beginning of field assessment

How to do: See example sketch. Ask participants to first discuss the best way to group the agricultural producers in three groups. Additional, non-producer groups in the village may exist, such as landless labourers, Government employees who only farm as hobby, or special households such as traders or fishermen. These are not part of the group. Be careful to consider other technical factors, not only size of holding (type of water source, machinery etc). Also the role of livestock and non-agricultural activities can be a criterion for classification.

Eventually, but carefully, the criteria used by the extension agent may be introduced and discussed.

After agreeing on the criteria, give each group a name and add how many of the holders belong to each group (add briefly, how many families are not part of the three groups and which they are).

Write down the main criteria below the name.

Introduce the village cropping pattern and livestock number. Mention that of course not everybody given the same importance to the same crop on his land, and the groups have different focus. Then discuss the cropping pattern by household type. Do it by summer and winter crops.

Add livestock.

Discuss the relative importance of five sources of income: crops, livestock, off-farm agricultural work (casual labour), non-agricultural employment (jobs), and self-employment outside agriculture (processing, trade, and transfer income). Distribute 10 scoring points each representing 10% of household income for each household type.

Take care to confirm the results and review classification in the end.

2) Cropping pattern & livelihood change by household type

Background information: Cropping pattern from first discussion.

Participants: 3-4 farmers belonging to the household type

When: After 1), but could be after first household interviews

How to do:

First present household classification, invite comments. Pay particular attention to the weighing of importance of livelihood sources. Record changes!

Draw share of summer and winter crops as bar on a paper and add at bottom livestock number as well as other sources of income which were mentioned.

Draw same bar next to it, and ask to discuss, how the shares under different crops have changed over the last decade.

Check for crops from the past which may have disappeared or other which did not exist in the past.

Write down reasons given for the change and identify types of reasons for change, such as prices, Government policies, diseases and other natural factors.

Discuss the same for other sources of income.

When possible, also ask whether farmers expect trends to continue and whether these trends led to differentiation of farmers.

3) Return to production factors by household type

Background information: Key crops from cropping pattern and HH interviews.

Participants: 3-4 farmers belonging to the household type, preferably different from first discussion

When: After 1), but could be after first household interviews

How to do: List major crops. Consider casual labour as an alternative activity and livestock. Draw columns on the paper. Ask to give 1-5 points to each crop, with 5 being very high and 1 very low. Using the same level for several crops is allowed.

Discuss first simple items, such as

- cash input and credit needs per dunum or animal unit,
- labour input and labour peaks critical for crop. For speed of discussion, consider grouping several items.
- Rank income and profit per dunum or animal unit.

Then discuss relative profit per unit, starting with

- Profit per UNIT of family labour
- Profit per Unit of water (eg m3)
- Profit related to credit needs

If farmers are still patient, consider discussing aspects of risk

- Price risk and marketing risk
- Weather risk

Discuss important changes in the factors for the most important crops by adding arrows for improvement of worsening relative to the factor. This can also be discussed immediately after finishing one item of ranking. There is no need to discuss obvious factors at length, for those ones move on quickly.

It is important not to allow the discussion to drag on too long on one issue, but recording the arguments by the second person is important, of course.

4) Development strategies by household type

Background information: Explain group the five possible development strategies diversification, intensification, expansion of farm size, increased off-farm work and exit from agriculture.

Participants: 3-4 farmers belonging to the household type, preferably different from earlier discussions. This can also be usefully done as a closing session with the Muhtar and village elders, but then comparing the strategies for different household types.

When: Flexible

Critical: Pay attention that the discussion refers to strategies for the type of producers, and not to individual family perspectives of those present.

How to do:

Explain the five strategies and show symbol cards. Ask if the strategies are clear, and ask for examples.

Discuss strategies for different families within the household type, considering expected changes in the conditions affecting farmers (prices, institutions), starting with

- Small family: what could be their future strategy (labour shortage, but land per family will not reduce rapidly in next generation)
- Large family: what could be their future strategy (now abundant labour, but land per family will reduce rapidly in next generation)
- Families who regularly receive small transfer from relatives (money to invest flexibly)
- Credit or large transfer occasionally being available.

Changes in farming conditions which can be considered are

- Emerging crops due to Government policies
- Changes in prices and market conditions
- New technologies/crops

- Increasing population
- Water scarcity and institutional change

Discuss diversification, intensification, expansion, off-farm, exit as strategy for future.

5) Cash flow Analysis

Oral description only