

Joint Pre-Harvest Assessment Mission and Drought Impact Report

Syria Arab Republic, 10-21 May 2009

1. Objective

The joint mission was launched, as requested by the Government of the Syrian Arab Republic, to review the situation of the main winter crops (wheat and barley) and livestock in the three affected areas Al-Hasakah, Ar-Raqqah and Deir-Ezzor (shown on the map in Figure 1) as a result of the drought and identify relevant constraints and issues. The drought is still affecting the north-eastern and eastern provinces and the Badia region of the Syrian Arab Republic for the fourth year in a row.

2. Participants

The mission was conducted by the Food and Agriculture Organization of the United Nations (FAO) and the World Food Programme (WFP) in collaboration with the Ministry of Agriculture and Agrarian Reform (MAAR) of the Syrian Arab Republic. Representatives from the United Nations Development Programme (UNDP) and World Health Organization (WHO) attended the preliminary meetings, and WHO provided the mission with relevant information on the health situation. The Office for the Coordination of Humanitarian Affairs (OCHA) coordinated the mission activities.

3. Preliminary Review

The preliminary desk review showed the need to expand the assessment to other areas in agro-climatic zones 4 and 5 in four more provinces which received very low levels of rainfall (i.e. Rural Damascus, Homs, Hama and Aleppo). Daraa governorate was included as a recipient governorate of labour migrants from the affected Al-Jazera areas.

4. Data Collection

Preliminary data on areas planted was collected at the central level through MAAR in late 2008 based on area planted and expected yield as per normal cropping years. The data included the area cultivated with wheat and barley, type of irrigation, production, yield, rainfall level, temperature, number of animals, human population and government support. Government estimates were based on surveys conducted by district at the village level in late 2008 at the early planting stages and confirmed by a random sampling method conducted by joint committees (central/governorate).

The mission was able to update the MAAR estimated figures based on actual changes that took place in the areas cultivated and on the yield per hectare. Estimates of production were provided by each governorate (information relating to the production of wheat and barley is included in Tables 1 and 2). Field visits were conducted to nine affected areas. Male and female beneficiary herders and farmers in the affected locations/centres were interviewed. This was then followed by meetings with members of the Societies of Agriculture and Livestock. These figures will be further updated by a forthcoming survey to be done by a Joint Committee towards end June/early September.

**Figure 1. Map of Syria
Agriculture Stabilization Zones and Syrian Provinces**

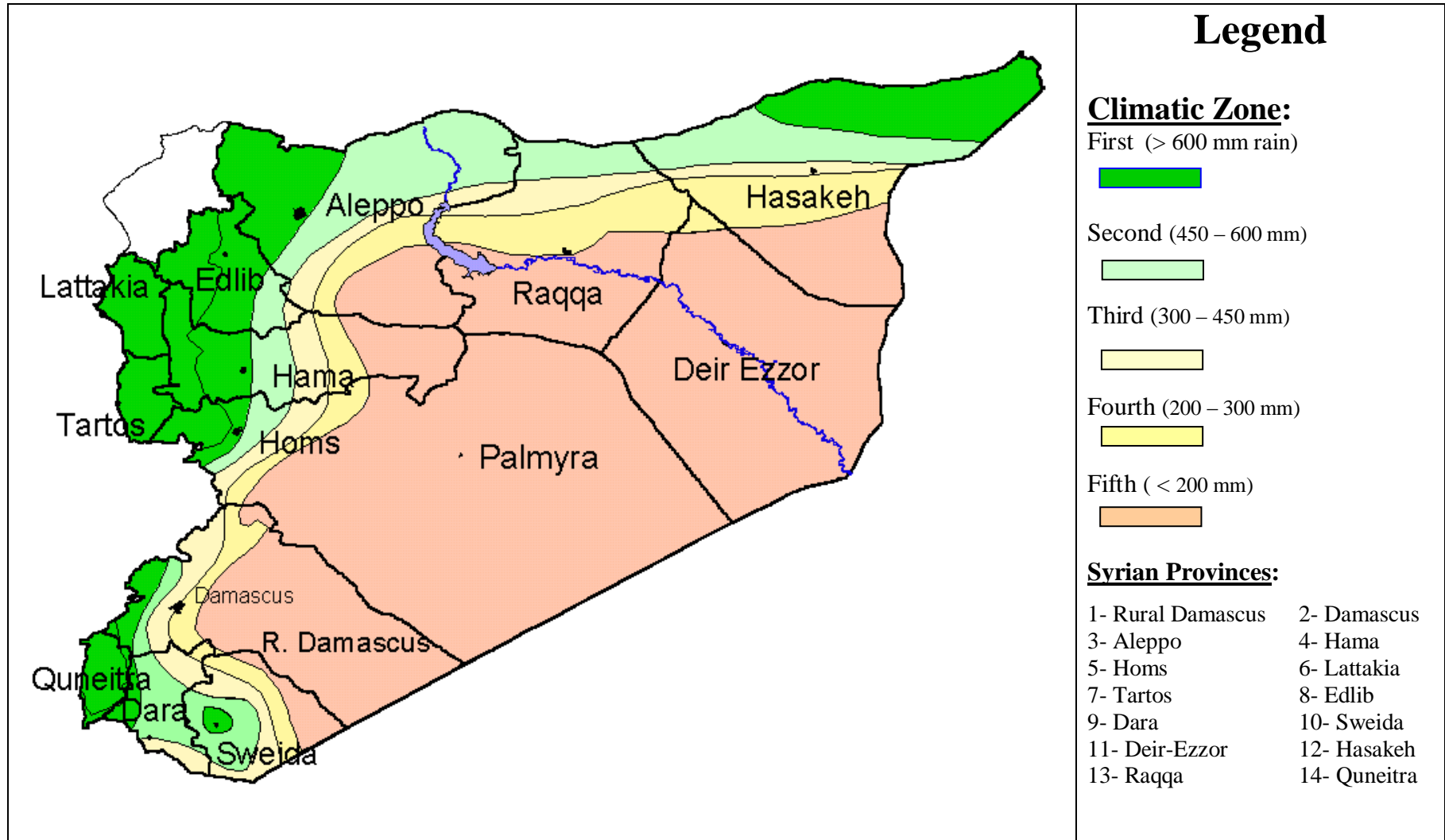


Table 1. MAAR data - wheat area, production and yield, 2005-2009.

Year	Irrigated			Non-irrigated/rain-fed			Total		
	Area (ha)	Production (MT)	Yield (kg/ha)	Area (ha)	Production (MT)	Yield (kg/ha)	Area (ha)	Production (MT)	Yield (kg/ha)
2005	855 876	3 471 110	4 056	1 047 950	1 197 636	1 143	1 903 826	4 668 746	2 452
2006	810 127	3 567 671	4 404	976 532	1 363 854	1 397	1 786 659	4 931 525	2 760
2007	791 358	3 130 010	3 955	876 374	911 090	1 040	1 667 732	4 041 100	2 423
2008	730 334	1 973 906	2 702	755 657	165 407	219	1 485 991	2 139 313	1 440
2009 (estimate)	657 134	2 590 361	3 941	779 151	722 014	927	1 436 284	3 312 375	2 306

Table 2. MAAR data - barley area, production and yield, 2005-2009.

Year	Irrigated			Non-irrigated/rain-fed			Total		
	Area (ha)	Production (MT)	Yield (kg/ha)	Area (ha)	Production (MT)	Yield (kg/ha)	Area (ha)	Production (MT)	Yield (kg/ha)
2005	20 592	51 363	2 494	1 306 603	716 053	548	1 327 195	767 416	578
2006	51 206	112 539	2 198	1 256 165	1 089 863	868	1 307 371	1 202 402	920
2007	63 428	140 508	2 215	1 299 345	643 971	496	1 362 773	784 479	576
2008	62 752	89 271	1 423	1 350 463	171 865	127	1 433 215	261 136	182
2009 (estimate)	61 812	161 683	2 616	1 228 408	789 659	643	1 290 220	951 342	737

It can be seen in Table 1 above that the estimated wheat yield is relatively high in both the irrigated (3 941 kg/ha) and rain-fed (927 kg/ha) areas. Such yield will most probably not materialize as explained below.

5. Issues Related to Crop Production

Affected population

The population affected by the recurrent drought that was compounded this year by other factors (as explained below) is estimated at about 1.3 million people, mostly women and children. Table 3 shows the numbers of affected people in the affected governorates.

Table 3. Affected populations in different governorates in zones 4 and 5.

Governorate	Population	Affected population
Rural Damascus	1 765 622	164 806
Homs	2 033 337	143 018
Hama	1 997 870	112 379
Aleppo	5 499 451	403 781
Ar-Raqqa	934 897	117 206
Deir-Ezzor	1 566 691	180 941
Al-Hasakah	1 495 276	150 000
Total	15 293 144	1 272 131
Total households		182 456

Factors affecting crop production

Climatic conditions

The 2007/08 planting season was the worst in Al- Jazera region (Al-Hasakah, Deir-Ezzor and Ar-Raqqah), where the rainfall was about 15 to 25 percent of the annual average level. Moreover, there were 44 days of very cold weather and then high temperatures that reached 42°C in April 2008, damaging the wheat and barley production. As a result, the crop production was very poor compared to the 2005 base-year production.

During the current planting season 2008/09, the rainfall levels were better than last season's, but still much below the annual average. The rainfall pattern (cumulative versus annual average) varied between the eastern and western parts of the country. The rainfall level in Al-Hasakah, Deir-Ezzor, Ar-Raqqah, Rural Damascus and the southern parts of Homs was as low as 35-55 percent of the annual average (Figure 2). Temperature, on the other hand, was relatively favourable, in the range of 27-32°C.

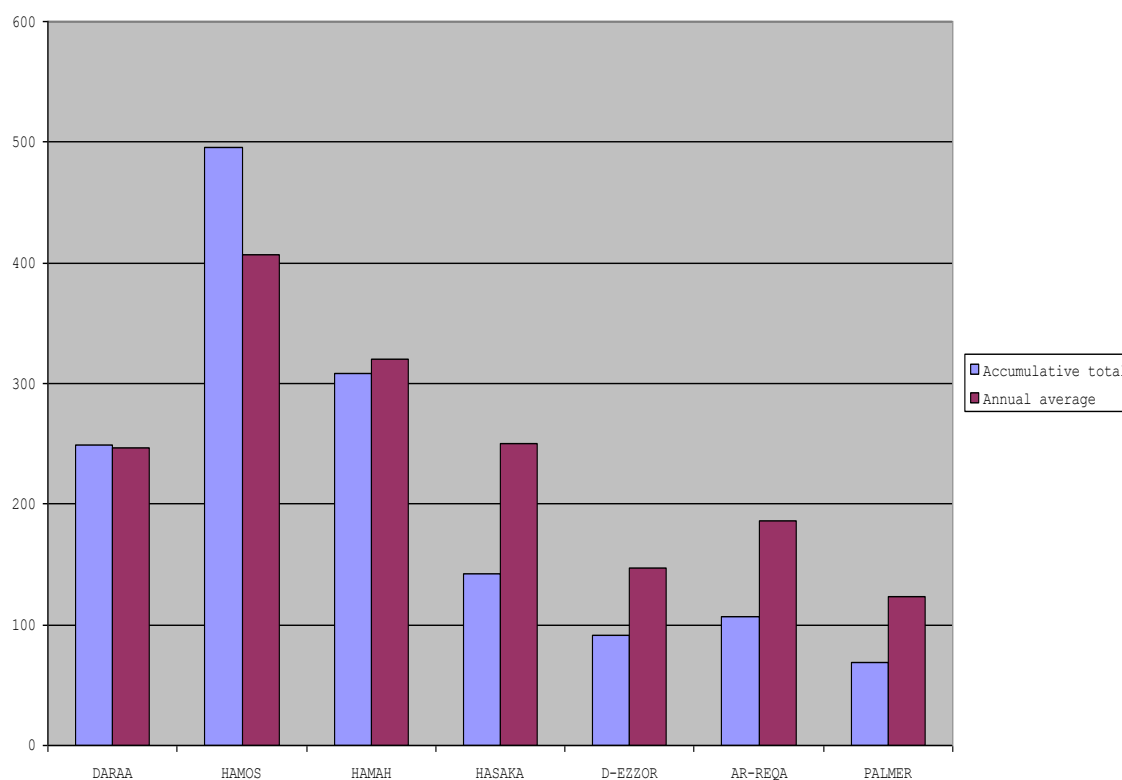


Figure 2. Cumulative and annual rainfall in the eastern and western parts of the Syrian Arab Republic, 2008/09.

During the 2008/9 cropping season, dust through the eastern winds increased. Moreover, sand waves coming from the south were seen in different parts, blocking the roads and access to social and agriculture service facilities and damaging crops before harvest. This was clearly observed in Deir-Ezzor, Al-Hasakah and Rural Damascus.

The inadequate distribution of rain together with the rainfall shortage in April 2009, the hot eastern weather and southern sand waves did not allow for near-normal crop production.

Other factors

The current planting season 2008/09 was affected primarily by the drought, but there were other agriculture and economic factors and policies that also had an influence. Some farmers therefore deserted their agriculture activities in search for other sources of income.

Fuel

In mid-April 2008, the government increased the fuel prices, just before the harvest that coincided with the last irrigation cycles of the wheat crop. The farmers interviewed by the mission pointed out that the fuel price's hike from SYP 7 per litre to SYP 25 was the second major reason for the decline in the rural economy after the shortage of rain, especially for farmers of irrigated crops. This price increase had an impact on increasing the cost of irrigation for farmers in irrigated land (including in settlement zones 1, 2 and 3), as well as the cost of renting machinery and transport costs.

The recent reduction of fuel price in April 2009 by SYP 5 per litre did not have a tangible effect on reducing the cost of transport of individuals and goods but did reduce the cost of irrigation. However, it came too late to have an effect on the irrigated planting season 2008/09 and to prevent borrowing. Additionally, the government is now providing SYP 2 500 of fuel subsidy for each 1 000 m² planted by strategic crops under irrigation in Al-Hasakah province.

Another detrimental effect of the increase of fuel price is that it led to the use of tree logs and firewood for heating and cooking, endangering the environment and natural vegetation. Rural populations collected firewood from a distance for free and transported it to their locations at a high cost ranging from SYP 1 500 to 3 500 per MT.

Fertilizer

In April 2009, the government decided to lift its intervention from controlling the price of fertilizer (the price increased from SYP 8 200 to 24 000), which again negatively affected the winter planting season, especially in the irrigated sub-sector. This effect is being assessed on the cotton crop, the planting of which started in April. However, the government has started another system of fertilizer subsidy for strategic crops; e.g. for each 1 000 m² of planted cotton, the government provides SYP 800 for fertilizer. This subsidy will be applied only to farmers who plant their lands in accordance with the yearly plan and deliver to the government the estimated yield per hectare.

Irrigation wells

In 2001, the government requested the residents to apply for a license for their existing wells in order to increase the total of licensed irrigated areas in the yearly plan. This was also meant to enable farmers to receive their agricultural inputs in loans through the Agricultural Credit Bank and to benefit from cash payments during the growing season. Most of the users did not apply due to the lack of proof of ownership of the land and wells. By 2008, out of an estimated 220 000 wells, only 40 percent were licensed. In areas like Rural Damascus, Aleppo and Deir-Ezzor, the percentage of unlicensed wells was even larger: about two-thirds of the total number of wells. It is to be noted that not having a licensed well does not qualify farmers to benefit from the government's agriculture support, i.e. subsidy and loans, as their lands are excluded from the yearly plan for irrigated crops.

The recurrent drought during the past three to four years has resulted in increasing the depth of the water level in the wells from 90-100 meters to 120-150 meters at the best cases, requiring more time and cost for pumping out water.

Soil

The years of drought have also affected the quality of the soil, requiring two additional irrigation cycles during the planting season (five to six cycles for wheat and three to four cycles for barley).

Updated crop production estimates (May 2009)

About 32 percent of the land (6 million hectares) in the Syrian Arab Republic is cultivable and 45 percent is steppe and pastureland. The source of water has been mostly from rainfall and is only complemented by irrigation mainly from rivers, lakes and underground sources. However, with the current years of drought, the percentage of planted rain-fed land dropped from 73 percent in 2004/05 to 52 percent at present.

The drought of 2007/08 has resulted in serious reductions in crop production, especially of wheat, barley, lentil and chickpea, leaving more than 150 000 poor farming household with zero crop.

During December 2008 and January 2009, the level of rainfall was better than that in 2007/08. However, rainfall level continued to be poor to moderate, which did not help seed germination. By March/April 2009, it was apparent to the farmers that production during the current planting season would be unfavourable, especially in climatic zones 3 and 4 and for rangeland vegetation in zone 5.

At the national level, the preliminary MAAR estimate for wheat production in 2009 was 3.31 million MT (Table 1) (versus the planned 4.7 million MT) and for barley 0.951 million MT (Table 2) (versus the planned 1.5 million MT)¹. However, the mission believes that due to the lower than expected yields, the forecasted production of wheat will most likely be in the range of 2.7-2.8 million MT and barley about 0.7-0.8 million MT. These reduced estimates are due to the shortage of rain at the critical production stage in April and the continuous sand and dust waves before harvest.

As the 2007/08 harvest of both wheat and barley was the worst in the past ten years, the 2008/09 level of production is expected to be slightly higher: wheat production is expected to be 50 percent higher and barley 260 percent higher than in 2007/08. However, in actual terms, the current season's production is expected to be about 40 percent less than in a normal average year, representing almost half of the national requirement. The analysis showed that due to the lower irrigation requirements and cost of cultivating barley, many farmers opted to plant barley instead of wheat. This year's barley production is expected to be equal to that of 2004/05, mostly in the irrigated areas, which represents 50 percent of the national needs.

Wheat is normally planted in both rain-fed and irrigated land, but only 77 percent of the area was planted this year compared to that in 2004/05. Al-Hasakah is the largest producer of wheat, followed by Aleppo, Ar-Raqqah and then Deir-Ezzor. The three eastern governorates of Al-Hasakah, Ar-Raqqah and Deir-Ezzor are expected to produce 45 percent of the total wheat production compared to 56.6 percent in 2004/05, mostly from irrigated farming.

¹ Source: Planning and Statistics Directorate, MAAR

Imports

The net available wheat and barley crops resulting from local production and imports minus exports and losses ranged from 4.1 to 5 million MT of wheat and 1.6 million MT of barley in the good years of 2005 and 2006 (Table 4).

Table 4. Availability of wheat and barley in 2005 and 2006, and the forecast for 2009 (in 1 000 MT).

Wheat				Barley			
	2005	2006	2009 forecast		2005	2006	2009 forecast
Production	4669	4932	2800	Production	767	1202.0	800
Imports	188	155	2000	Imports	803	415.0	800
Exports	753	92		Exports	2	0.4	
Total supply	4104	4995	4800	Total supply	1568	1616.6	1600

Wheat production in 2009 is estimated at 2.8 million MT, which is 40-50 percent less than that in normal years. For barley, the estimate stands at 0.8 million MT.

At the household level, there is zero stock of food and seeds. Additionally, due to the poor natural pastures and crop residues as a result of the drought, there will be a need for grain feed and barley. The government will also need to replenish its strategic reserve of wheat and barley to cover its current needs and those during the next two to three seasons, mostly through imports to complement the low level of locally produced crops. This means that a minimum of 1.8 to 2 million MT of wheat and 800 000 MT of barley will need to be imported.

6. Livestock and Animal Production

Livestock numbers and animal feed

The drought has had a severe impact on livestock and herders' livelihoods. The extensive sale of livestock in late 2008 and early 2009 caused a decline in the market price of animals. At the same time, the cost of feed has increased.

With the poor 2007/08 harvest of barley, wheat and cotton, the available crop residues were not enough to maintain the livestock during the period after the harvest until the rainy season when the pastures regenerated. Even in the case when crop residues were available, their cost was too high for herders to pay in order to allow their animals to graze, unlike in the past years when this was free in areas such as Al-Hasakah. The cost of grazing an area of 1 000 m² of barley residue has recently been in the range of SYP 150-200 and wheat residue SYP 200-300, depending on the composition and quantity of the residue. Grazing of this area (1 000 m²) by two herds of 25 head of sheep each lasts only two days; therefore, crop residues cannot be considered as an important feed source at present.

Because of the rain deficit, natural pastures, which are normally the source of over 60 percent of feeding for the animals, have not been providing sufficient grazing. Consequently, herders had to move their herds for long distances in search of relatively better pastures, where they stayed for short periods because of the poor condition of these pastures.

The increased feeding costs incurred as a result of the drought (shown in Table 5) had a high toll on the herders who had to sell large numbers of animals to meet the high cost of animal feed and household food. From November 2008 to February 2009, the price of one sheep sold by the herders bought them 7-10 kg of feed in return. All herders were affected regardless of the size of their herds. The medium-size herders (with 100-200 head), representing one-third of the herders, lost almost 70 percent of their animals to purchase animal feed and for household survival. The large-scale herders who sold their animal products in the market also sold large numbers of their animals in order to buy the expensive feed for the remaining animals. The most affected herders were those with 100 head or less who represent one third of the herders. These have lost over 70 percent of their livestock without even being able to meet the feeding costs and pay for the interest on the loans that were needed to help them purchase animal feed.

Table 5. Cost of sheep and livestock feed in 2008 and 2009.

	First half of 2008	Late 2008/early 2009	May 2009
Sheep (SYP/head)	5 000-6 000	2 000-4 000	7 000-10 000
Feed/barley (SYP/MT)	13 000	22 000	10 000-11 000
No. of sheep/MT	2	7	1

The government has availed more feed to partially meet the needs of the herders and stabilize the market price. The mission noted the improved conditions of the herders at present compared to the winter season. Also, the price of animals sold (weight approximately 40-45 kg) by the herders has increased from SYP 1 600 per head to about SYP 8 000 by the end of 2008/early 2009.

The low purchasing power to buy feed as well as the poor quality of the feed and absence of the green pasture component have negatively affected the mating, lambing and twinning rates and resulted in reducing the animal products. Animal breeding/lambing was as low as 10-15 percent during the current season compared to a good year's level of 70-80 percent.

The estimate of the number of sheep has varied over the past few years. In 2007, the total number of sheep was in the range of 22.8 million head. A figure of 19.2 million head was produced in early 2008. Towards late 2008, the government conducted a survey during a vaccine campaign, which resulted in a smaller number: 15.8 million head. There are further plans to have a comprehensive census by the end of 2009 to determine the actual size of the national herds.

With the uncertain estimate of the number of animals (mostly sheep) it was difficult to confirm earlier studies and analyses of the growth rate or extent of losses during the current drought period. However, through interviews with herders and associations it was evident that the losses and mortality rate were high.

It is estimated that the livelihoods of 130 000 herders has been affected by the continued drought. They have lost their capital and coping capacity and have no other means to continue with their livelihoods without the provision of animal feed to bridge the gap until the next rainy season and/or harvest. The most affected herders were those who had 200 head or less. The smaller the size of the herd the more disadvantaged the herder is.

Borrowing

Borrowing has been a traditional coping mechanism to meet present needs against future income. However, during the past few years of drought, farmers and herders were obliged to borrow larger sums of money to meet the changes in the local market prices. It has been reported that herders were buying animal feed at 30 percent above market price, to be paid at the end of the season.

7. Migration

Migration has been a seasonal practice when the male workers moved to the western or southern parts of the country or to Lebanon or Jordan seeking labour opportunities. However, during the past few years, migration became for longer periods and to farther destinations. It also recently included the whole family. In certain location at Al-Jazera (Ar-Raqqah, Deir-Ezzor and Al-Hasakah), the mission found that a good part of the population in some villages moved out seeking employment. In Al-Hasakah province, which is the largest crop producer, an estimated 4 642 families from 19 villages moved to the southern parts of the country.

Migration is not only out of the Badia region and settlement zone 4, but is also being seen out of settlement Zone 1, because of the reduced irrigated-agriculture activity due to the high cost of fuel and shortage of water, especially among families who depend on casual labour for family income.

In general, migration is caused by different reasons:

- recurrent droughts (the key reason);
- shortage of alternate sources of water (rivers and wells);
- increased cost of irrigating non-rain-fed land;
- spare time, as agriculture activity requires only 70 days of work;
- lack of working opportunities and the high rate of unemployment;
- inability to obtain permission to plant in the settlement zone 5 and limited permission provided in settlement zone 4, which is part of the government policy to protect the highly fragile climatic zones; and
- loss or sharp decline of livestock ownership.

Migration of women has been caused by the shortage of labour opportunities and the possibility for them to gain SYP 200 per day, working in vegetable farms at their new destinations.

Some children are taken out of school in April and may return in November/December if the situation improved. In one village, the mission found a school with a capacity of 50 students only seven students were attending irregularly.

Some migrants could not afford to pay the cost of transport of the household to another location for possible job opportunities (which has currently increased from SYP 4 000 to SYP 10 000) and had to borrow. Others were not able to return to their villages because they could not afford these costs. Households headed by the elderly or sick people and those who do not have enabled members to work are left behind with no other means of livelihood.

8. Drinking Water

Drinking water, especially in the Badia region, is either of poor quality or inaccessible because of the distance constraint. The increased cost of transport has added an additional burden on the rural population. The government is arranging for the transfer of free-of-charge water tanks, but these are limited in area coverage and are infrequent. In some areas, for example in Rural Damascus, herders reported that they had to travel 30-40 km to find water for their herds and farther distances to obtain good quality potable water.

9. Health and Education

Data available indicates that there is a marked deterioration in the health conditions of children under five years of age of those who visited health centres in the drought-affected areas and not all children, in three affected governorates of Al-Hasakah, Ar-Raqqah and Deir-Ezzor.

During 2006-2008, diarrhea cases as a result of polluted water increased by 39.2 percent in Al-Hasakah. Acute respiratory infections resulting from dust storms increased by 100 percent in Al-Hasakah, 70.5 percent in Ar-Raqqah and 19 percent in Deir-Ezzor. Malnutrition cases, impacted by the extended poverty and poor food intake, increased by 370 percent in Al-Hasakah, 67 percent in Ar-Raqqah and 229 percent in Deir-Ezzor. Anaemia cases increased by 33.6 percent in Al-Hasakah and 93 percent in Ar-Raqqah and Deir-Ezzor

The mission saw well-built schools in the affected areas with almost one-third or less of student attendance. Most of the villagers pulled out their children either to move to other locations seeking working opportunities or due to their inability to meet education costs (notebooks, transport, clothing and other costs), given their depleted income and livelihood. Some of the better-off households reported that they left their children back home to complete their school year and then join the family in its new location.

10. Government Support

The government provides support in the form of subsidy to agriculture inputs, mostly seeds, and animal feed. It also provides a variety of loans and cash grants. The government has distributed food for a limited period. Animal vaccination and veterinary service are provided for free. Government assistance is seen to allow for the sustainability of the affected community while longer plans are underway.

Every year the government announces its purchase price of major crops (wheat, barley and cotton, etc.) from the farmers, which is based on the estimated cost plus a 25 percent margin for the farmer. This partially offsets the high cost of production. Moreover, for the current cotton planting season, the government is providing fuel support for each 1 000 m² that amounts to SYP 2 500 as well as SYP 800 for fertilizer. The fuel support is limited to Al-Hasakah governorate in consideration of the methods of irrigation used there.

In its efforts to rationalize irrigation water consumption, the government is encouraging farmers to introduce modern irrigation system (sprinklers and drip irrigation) through the provision of partial grants complemented by easy loans.

There are eight types of loans facilitated by different authorities and organizations. Such loans are provided to farmers and herders. To apply for a loan, the applicant is required to submit proper proof of ownership of land and identity as well as an agricultural license document. For

loans for modern irrigation system, applications are required to be sent to the capital city for processing and approval. Therefore, some of the borrowers resort to the private sector for loans despite the high interest rates.

With the recurrent drought and loss of harvest and livestock, public and private loans represent a heavy burden on the rural community. For this reason, the government has recently exempted borrowers from the late payment penalty and interest and have rescheduled the payment of the loan principal over three to seven years. Moreover, the public lending agencies were instructed to approve loan applications regardless of the current level of credit of the borrower.

It should be noted that those benefiting from government support or loans are those who have proper ownership of land and have obtained an agriculture license and are able to meet the requirement of the loans or grants. Although not all farmers are able to do so, the majority still benefits from the support.

11. Coping Mechanisms

The coping mechanisms used by the affected farmers and herders are:

- selling their belongings;
- borrowing;
- reducing their food intake and quality;
- taking their children out of school;
- migration and deserting their villages and land; and
- postponing marriage.

Coping mechanisms and strategies have been exhausted due to the recurrent three-year consecutive droughts. Farmers have lost all or part of their crops and herders lost large numbers of their herds. Loans accumulated to the extent that there is no opportunity to pay them off in the near future nor to apply for more. Large number of male individuals resorted to migrating to the western parts of the country and abroad (Lebanon and Jordan). Furthermore, migration has expanded from being seasonal to a semi-permanent nature, and, in many cases, to include the entire family. Children were withdrawn from schools for migration or because the family is not affording the cost of education. The household consumption of food reached its minimum in terms of the quality and quantity of food intake and meal frequency. Household stocks of food and seeds reached a minimum or have been exhausted. With such lost coping mechanisms, it would be hard for the farmers or herders to meet their needs in the coming season, even in the event of good rainfall, and for several seasons to come.

12. Recommendations

There is a need for an all-sector needs assessment to determine the aspects and extent of needs to be addressed through emergency humanitarian assistance and immediate and longer term/early recovery approaches. Among these interventions are the following:

Immediate response options

These include providing support to sustain the population and returning migrants through social and economic assistance and provision of food assistance, agriculture inputs as well as income-generating activities to allow for migrants to return and resettle:

- provision of high-quality seeds and other inputs to those most affected and those who lost their savings;
- development of sand shelters;
- establishing rural women/community income-generating activities and development;
- introduction of pilot pasture recovery/community based management in the Badia provinces.
- improve the livelihoods of low-income small ruminant herders through sustainable interventions targeted at reducing the herd size while increasing productivity

Policy/longer-term issues

- rescheduling loans;
- health/nutrition assistance policy;
- nutrition surveillance;
- creating work opportunities at the village level;
- review fuel price and other subsidised inputs policy;
- introduction of water harvesting techniques at farm level along with crop diversification;
- introduction of desertification control measures;
- addressing school absenteeism and drop-outs;
- addressing rural women/community development issues;
- reconsidering licensing those unlicensed wells to have users included in the government support scheme;
- review of the government support to wheat and barley production and livestock policy;
- announcing the government's purchase plan and price of major crops as early as possible to avoid traders' exploitation of farmers (as in the case of barley); and
- a progressive reduction of herd size concomitant with minimizing losses due to mortality, in addition to increased productivity and higher annual income for the most vulnerable herders of the Badia steppe.