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World Food Programme

# SPECIAL REPORT

## FAO/WFP CROP AND FOOD SECURITY ASSESSMENT MISSION TO THE SYRIAN ARAB REPUBLIC

23 July 2015



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## ABBREVIATIONS AND ACRONYMS

<b>AEZ</b>	Agro-Ecological Zone
<b>ASI(S)</b>	Agricultural Stress Index (System)
<b>bbl/d</b>	Barrels per day
<b>CBSP</b>	Central Bureau of Statistics and Planning
<b>CGIAR</b>	Consultative Group for International Agricultural Research
<b>CFSAM</b>	Crop and Food Security Assessment Mission
<b>CPI</b>	Consumer Price Index
<b>cu. m</b>	Cubic metre
<b>d</b>	Day
<b>EIU</b>	Economist Intelligence Unit
<b>ESCWA</b>	Economic and Social Commission for Western Asia
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FAOSTAT</b>	Data programme of FAO Statistics Division
<b>FMD</b>	Foot and mouth disease
<b>GAPAR</b>	General Authority for Palestine Arab Refugees
<b>GDP</b>	Gross Domestic Product
<b>GFD</b>	general food distribution
<b>GOF</b>	General Organization for Feedstuff
<b>GOSM</b>	General Organisation for Seed Multiplication
<b>ha</b>	Hectare
<b>HNO</b>	Humanitarian Needs Overview
<b>HOBOOB</b>	General Establishment for Cereal Trade and Processing
<b>ICRC</b>	International Committee of the Red Cross
<b>IDP</b>	Internally Displaced Person
<b>IFRC</b>	International Federation of Red Cross and Red Crescent Societies
<b>IS</b>	Islamic State
<b>kg</b>	Kilogram
<b>l</b>	Litre
<b>LSD</b>	Lumpy skin disease
<b>MAAR</b>	Ministry of Agriculture and Agrarian Reform
<b>MIT</b>	Ministry of Internal Trade
<b>mm</b>	Millimetre
<b>MoFA</b>	Ministry of Foreign Affairs
<b>MoSA</b>	Ministry of Social Affairs
<b>MWR</b>	Ministry of Water Resources
<b>NDVI</b>	Normalized Difference Vegetation Index
<b>NGO</b>	Non-Government Organization
<b>NPK</b>	Nitrogen, Phosphorus, Potassium
<b>OCHA</b>	Office for the Coordination of Humanitarian Affairs
<b>PPR</b>	Peste des petitis ruminants
<b>rCSI</b>	Reduced Coping Strategy Index
<b>SARC</b>	Syrian Arab Red Crescent
<b>SHARP</b>	Syrian Humanitarian Assistance Response Plan
<b>SRP</b>	Strategic Response Plan
<b>SYP</b>	Syrian Pound
<b>t</b>	Tonne
<b>UN</b>	United Nations
<b>UNDP</b>	UN Development Programme
<b>UNFPA</b>	UN Population Fund
<b>UNHCR</b>	UN High Commissioner for Refugees
<b>UNWRA</b>	UN Agency for Palestinian Refugees
<b>USD</b>	US dollar
<b>WASH</b>	Water, sanitation and hygiene
<b>WFP</b>	World Food Programme

## HIGHLIGHTS

- Although 40 percent lower than the pre-conflict levels, wheat production in 2015, estimated at 2.445 million tonnes, is significantly better than the very poor harvest of 2014 and slightly better than that of 2013. This is mainly due to seasonal rainfall in 2014/15 that was the best in many years in terms of both quantity and distribution and, to some extent, helped mitigate the devastating impact of the conflict on the agricultural sector as a whole.
- There is an estimated shortfall of about 800 000 tonnes in the country's national wheat requirement of 4.854 million tonnes.
- Being predominantly rainfed, barley production, at 968 000 tonnes, was the best since 2006 despite the fact that it came from the smallest area during that period.
- Crop production was adversely affected by all the consequences of the continuing crisis, scarcity and high prices of agricultural inputs and fuel, inputs of unreliable quality, damaged irrigation systems, low levels of mechanization, shortages and high cost of farm labour, and destruction of standing crops.
- The area planted to cereals, and in many cases the area harvested, was limited by insecurity. The estimated harvested wheat area was the smallest since the 1960s.
- There were indications of changing cropping patterns away from wheat and towards cash crops, such as herbs, in response to the small profit margin for wheat production.
- The livestock sector, once important in Syria's domestic economy and in its external trade, has suffered very substantially since 2011 with reductions in terms of herd and flock numbers of 30 percent for cattle and 40 percent for sheep and goats while, poultry, the usual main and most affordable source of protein of animal origin has shrunk by 50 percent.
- Condition of the remaining livestock was relatively good at the time of the mission but is expected to deteriorate with the drying up of pastures starting from the end of June. Access to pasture has been limited by security concerns. Livestock feed was increasingly expensive and scarce, largely as a result of poor rainfall in 2013/14.
- The country's veterinary service is rapidly running out of veterinary vaccines and routine drugs, with the number of unreliable veterinary drugs sold on the open market increasing during the last year.
- The continuing movement of livestock out of the Syrian Arab Republic into neighbouring countries, either with refugees or smuggled out to more lucrative markets, gives rise to increasing concern about the spread of transboundary animal diseases and zoonosis.
- The country's farmers face increasingly serious transport problems with the loss of Government control of arterial highways to opposition groups. This has caused bottlenecks in the movement of produce from production areas to main markets. The high cost of transport and the bottlenecks in the movement of produce have led to increased wastage of fruit and vegetables in production areas.
- Producers, transporters and traders are facing extremely high transaction costs and security risk. As a result, markets have fragmented. The transfers of wheat surpluses from the north east to the food deficit areas of the west have slowed. Unsold wheat stocks are accumulating in the north east, while the west largely relies on imports.
- After being relatively stable in 2014, food prices began increasing sharply in early 2015 as Government subsidies were curtailed and as the currency depreciated. Prices of many critical goods spiralled in the past year, such as bread (+66 percent in private bakeries, +87 percent in public bakeries).
- Overall unemployment stood at 57 percent as of the 4th quarter of 2014, compared to 10 percent in 2011 and up from 49 percent in the first quarter of 2014. Casual labour markets are reeling in conflict affected zones.
- Although the 2015 wheat crop will be better than drought-stricken 2014 harvest, it is not expected to lead to significant improvements in household food security outcomes.
- Overall, households spend 55 percent of their income on food compared to 45-47 percent in 2011 and less previously. People devote more than two thirds of their income to food in Dara'a, Sweida, Aleppo and Hama, where households are prioritizing food purchases over other basic needs.
- A majority of WFP beneficiary households was consuming a 'poor' or 'borderline' diet, with limited consumption of fresh, vitamin-rich foods such as eggs, dairy, fruits, vegetables and pulses. People in the conflict-affected governorates of Deir Ezzor, Hassakeh, Aleppo and Hama have the worse food consumption and coping indicators.
- Large IDP inflows are leading to vulnerabilities in the governorates of Tartous and Latakia.
- UNICEF's SMART survey suggests that three governorates (Hama, Hassakeh, and Deir Ezzor) appear to have GAM rates above 10 percent.
- The 2015 Humanitarian Needs Overview (HNO) assessed that 9.8 million people were food insecure, of which 6.8 million severely. From January to April 2015, more than 0.5 million were newly displaced.

## 1. INTRODUCTION

Following a request to FAO from the Ministry of Agriculture and Agrarian Reform (MAAR), approved by the Ministry of Foreign Affairs (MoFA) on 17 March 2015, a joint FAO/WFP Crop and Food Security Mission (CFSAM) visited the Syrian Arab Republic between 11 and 31 May 2015.

In Damascus, the Mission held meetings with the Ministry of Foreign Affairs (MoFA), The Ministry of Agriculture and Agrarian Reform (MAAR), the Ministry of Water Resources (MWR), the Ministry of Internal Trade (including the General Establishment for Cereal Trade and Processing (HOBBOB), a department within that ministry), the Ministry of the Environment, the Ministry of Economy, the Ministry of Social Affairs, the Commission for Planning and International Cooperation, the General Organization for Seed Multiplication (GOSM), and the Agricultural Cooperative Bank. The Mission also held discussions with the Economic and Social Commission of Western Asia (ESCWA) in Beirut prior to travelling to Damascus.

The Mission spent one week in the field, visiting the Government-held areas in Hassakeh, Tartous and Homs Governorates. In each of these governorates the Mission was provided with information by the Governorate Agriculture Department and other relevant departments concerning current crop and livestock production levels and food-access issues. The Mission visited wholesale and retail agricultural-produce markets, a livestock market and a poultry unit; it also inspected sample cereal fields and greenhouses and interviewed farmers, horticultural producers and livestock owners. IDPs were interviewed to assess their general welfare and discover their coping mechanisms, while recipients of food aid were interviewed to evaluate its effectiveness.

For security reasons the Mission did not visit any opposition-held areas, apart from the area to the west of Qamishli in Hassekeh Governorate. However, during the week that the Mission was in the field, field-monitor teams consisting of both MAAR and national FAO staff gathered information on agricultural and livestock production and access to food in each governorate except Damascus City. The information that they gathered was codified in four separate questionnaires (Agriculture; Food, Livelihoods and Agricultural Needs; Local Food Market Conditions; and Household Food Security); 150 of each questionnaire were completed throughout the country; a total of 245 household questionnaires were collected. In addition, each team submitted a brief summary of the current season's agricultural situation in its allocated governorate. Prior to departure to the field, the field monitors received three days of training in the use of the questionnaires, and on their return to Damascus they discussed their findings with the Mission.

Because of the purposive nature of the sampling, and the relatively small sample size, results from the focus group interviews and household questionnaires cannot be generalized to the community as a whole based on this study alone. Mindful of these inherent limitations, findings from primary data collection are presented in an illustrative way, and are triangulated with data emanating from other information sources to emphasize key factors and trends. The ongoing household food security assessment is expected to offer estimates of the prevalence of food insecurity among the population.

Information regarding agricultural production and food access in opposition-held areas was also gathered from secondary sources in Gaziantep, Turkey and Amman, Jordan.

Other sources of information used by the Mission in its assessment included:

- Vegetation-related satellite imagery (NDVI and ASIS).<sup>1</sup>
- Records and reports from MAAR and the Central Bureau of Statistics.
- Reports published by UN and other agencies over the previous 12 months.

On its return from the field the Mission discussed its impressions with the technical departments of MAAR and, prior to departure from the Syrian Arab Republic, the Mission briefed the Deputy Minister of Agriculture on its findings.

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<sup>1</sup> <http://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=SYR>

## 2. BACKGROUND AND SOCIO-ECONOMIC CONTEXT

### 2.1 General

The Syrian Arab Republic is now in its fifth year of civil crisis, with non-state armed groups in control of approximately half of the country's total land area. Since 2011 there has been a massive and continuing exodus of Syrians, mostly to neighbouring countries, seeking to escape the conflict. By the end of May 2015 UNHCR reported 134 329 Syrian refugees in Egypt, 248 203 in Iraq, 628 160 in Jordan, 1.18 million in Lebanon and 1.76 million in Turkey, bringing the total to almost 4 million. This figure includes only registered refugees; others who left the country and are now living abroad and supporting themselves financially are not included. Deaths as a result of the conflict are estimated by UNFPA at more than 220 000 (about half of them civilians), although the Syrian Arab Republic Observatory for Human Rights reckons that this figure may be much higher. Under normal circumstances, and using the country's pre-crisis population growth rate, Syrian Arab Republic's population by 2015 would have been expected to exceed 23 million; however, with out-migration and conflict-related deaths over the last four years this figure is now thought to be about 18.2 million.

Within the country there has been massive population displacement with people fleeing conflict zones and seeking refuge in more secure areas. UNFPA estimates that the Syrian Arab Republic has 7.6 million IDPs and that 12.2 million people (more than two-thirds of the country's current population, including IDPs) are in need of assistance in terms of either food, shelter or healthcare. (This is discussed in detail in Household Food-Security Situation below.)

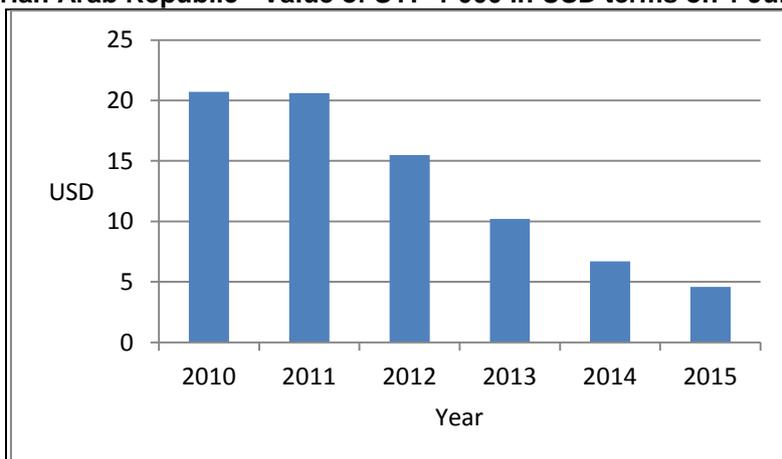
Against such a human backdrop the country's economy has inevitably suffered huge reverses despite the Government's efforts to stimulate economic development in areas under its control. International sanctions imposed on the Syrian Arab Republic have played a very significant part in depressing the Syrian Arab Republic's economy, particularly hindering access to imports of spare parts for refineries, etc. (Economist Intelligence Unit (EIU)).

Immediately prior to the crisis, the Syrian Arab Republic used to produce about 380 000 barrels of crude oil and condensates per day, down from a peak of almost 600 000 barrels per day (bbl/d) in the mid-1990s (US Energy Information Administration), and oil sales generated some 25 percent of the Syrian Arab Republic's total revenue (EIU). Production slumped dramatically in 2011 and by 2013 was down to less than 50 000 bbl/d. Now, even though its two refineries are still operating at more than 50 percent capacity, the country exports no oil apart from some refined fuel smuggled out of IS- and Kurdish-held areas from fields under their control. In January 2015, the Government, partly to combat the re-selling of highly subsidized fuel on the open market and partly to gain extra revenue, increased the price of diesel for transport by more than 50 percent, from SYP 80 to SYP 125 per litre, and the price of diesel for domestic use by 65 percent from SYP 80 to SYP 140 per litre. These were the biggest price hikes for fuel since 2011 and they led inevitably to increased industrial and agricultural production costs.

According to the EIU the only main revenue source to have been sustained since 2011 is the state's income from the country's two mobile-phone companies. The Syrian Arab Republic, therefore, relies heavily on external financial support, largely from Iran and the Russian Federation, as well as food and healthcare aid from UN agencies. The EIU predicts that, despite the conflict, the country's fiscal deficit will narrow over the period 2015-19 and that GDP growth will average 2.2 percent per annum over the same period. Although these predictions are both positive, the country's economy, according to the EIU, will be left, by 2019, more than 30 percent smaller than it was in 2010.

The value of the Syrian Pound (SYP) has fallen steadily since 2011. In 2011 SYP 1 000 would buy USD 20.6. Now it buys (at the official exchange rate) only USD 4.6 as is shown in Figure 1. Unofficially it buys even less.

**Figure 1: Syrian Arab Republic - Value of SYP 1 000 in USD terms on 1 June, 2010-2015**



Source: <http://www.oanda.com/currency/converter/>

Although it is still heavily subsidized, at an estimated annual cost to the Government of USD 900 million (mail online, 2 February 2015), the price of bread rose by 40 percent in January 2015. In addition, the Government increased the flour extraction rate from wheat, thereby increasing the bran content of bread but gaining an extra 10 percent or so in saleable product.

The country's Inflation rate peaked at 120 percent in the third quarter of 2013, in part reflecting a slight and temporary easing of the rate of depreciation of the Syrian Pound. According to Trading Economics<sup>2</sup> quoting the Central Bureau of Statistics and Planning (CBSP), the inflation rate then declined substantially to 13.6 percent by February 2014. Recently, however, it has begun to rise again. The EIU predicts that, with continued localised shortages, the weakening of the Syrian Pound and the monetization of the Government's debts, inflation will remain at about 19 percent over the next few years.

According to Trading Economics, again quoting the CBSP, the Syrian Arab Republic's Consumer Price Index (CPI) rose from 376.5 in July 2013 to 491.6 by the following October. In January 2014 however it fell sharply from 482.5 to 309.7 but it has risen again since then. For the second half of 2015 Trading Economics predicts that a fairly steady level of around 480 will be maintained.

Businesses have recently begun to adjust to the realities of the ongoing crisis. There has been a significant movement of industrialists and merchants to the relatively safe Government-controlled coastal region, including an expanded industrial zone outside Tartous, and exports have begun to increase for the first time since 2011. However, optimism in this regard should be tempered in light of recent territorial gains by IS and other opposition groups.

## 2.2 Agriculture

Prior to the beginning of the current crisis in 2011, agriculture played a very important part in the Syrian Arab Republic's economy, contributing some 18 percent to its GDP, and involving 17 percent of its labour force in production. Some 46 percent of Syrians (10 million, including children and others not actually working in agriculture) were rural dwellers and, of those, about 80 percent were sustained by income from agricultural work.

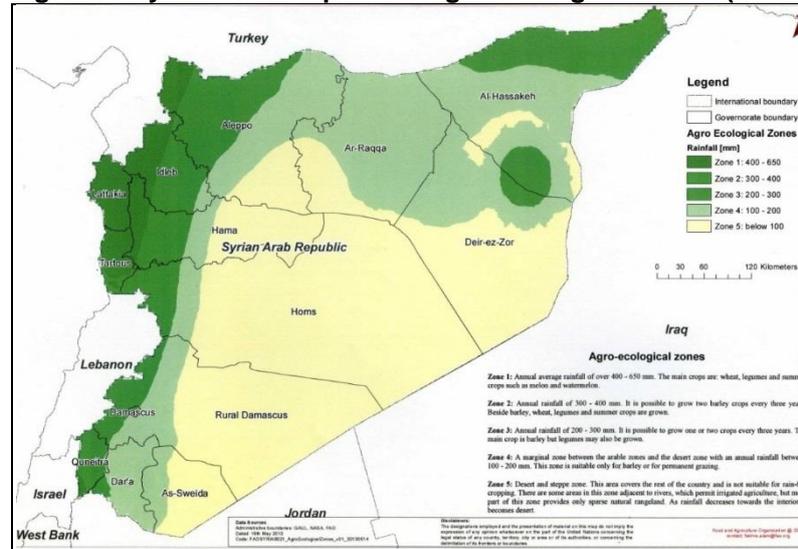
The country is divided into the following five Agro-Ecological Zones (AEZs) based on the level of annual precipitation received, as shown in Figure 2:

- Zone I covers some 2.7 million hectares and has an average annual rainfall of 400-650 mm.
- Zone II covers about 2.5 million hectares and has an average annual rainfall of 300-400 mm.
- Zone III covers about 1.3 million hectares and has an average annual rainfall of approximately 200-300 mm.
- Zone IV is agriculturally marginal, with a total area of around 1.8 million hectares and an average annual rainfall of 100-200 mm.

<sup>2</sup> <http://www.tradingeconomics.com/syria/inflation-cpi>

- Zone V is the *Badia* or steppe; it has a total area of approximately 8.3 million hectares and an average annual rainfall of less than 100 mm.

**Figure 2: Syrian Arab Republic - Agro-Ecological Zones (AEZs)**



Source: FAO.

Prior to 2011 approximately 1.5 million hectares of agricultural land were normally irrigated, of which 550 000 ha were accounted for by state-administered irrigation schemes. Permanent crops (olives, fruit trees etc.) accounted for about 5.7 percent of the country's agricultural land.

From the 1960s until the mid-2000s the state also played a part in the production of strategic crops such as wheat, sugar beet, cotton and tobacco, and livestock products, including milk, meat, poultry and eggs, these being produced on a small number of large state-owned and state-run farms. (This production role should not be confused with the state's involvement in the management of irrigation schemes for private producers.) Over the years, however, the state withdrew gradually from its productive role, as is shown in Table 1. The table also suggests that the proportion of state farmland actually cultivated, which was already less than half by 1970, also declined during the 30-year period 1970-2000. By 2004/05, the state had relinquished its management of most of its farms and had allocated parcels of ex-state-farm land to the workers for their use according to a set of social and technical criteria. However, the legal title to the land of the ex-state farms remains with the state.

**Table 1: Syrian Arab Republic - Land under state farms, 1970 and 2000 (ha)**

Year	Total	Cultivated
1970	138 00	64 132
2000	68 146	21 011

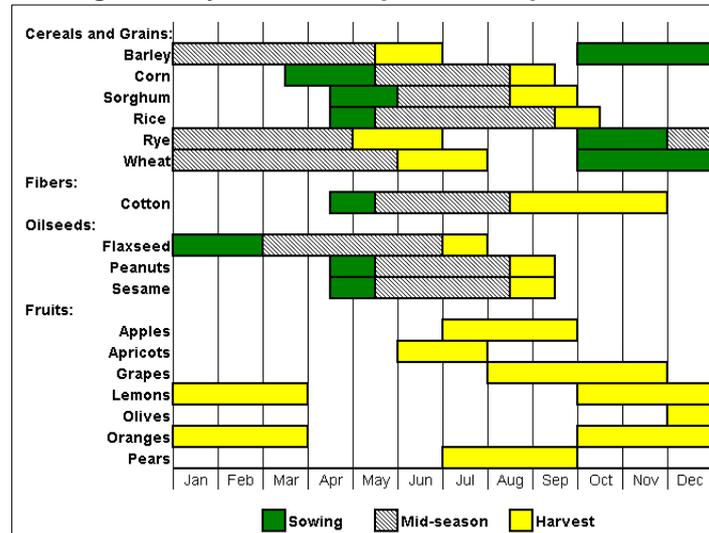
Source: Syrian Agriculture at the Crossroads FAO Agricultural Policy and Economic Development Series No. 8, 2003.

Although agricultural production is now almost totally privately based, carried out mostly by a large number of relatively small farm units, the state continues to play, to the extent possible, a significant role in purchasing crops from producers either for marketing internally or for export abroad. The state has also been the main channel for the distribution of seed and fertilizers and for the provision of veterinary support to the livestock sector.

Prior to 2011, the Syrian Arab Republic was a significant exporter of agricultural produce, including cotton, sugar, tomatoes, potatoes, oranges, apples, olive oil, sheep, cattle, poultry meat and hens' eggs. In 2010, for instance, the Syrian Arab Republic exported 627 000 tonnes of tomatoes, more than 100 000 tonnes of potatoes, and more than 150 000 tonnes of refined sugar. Animal production used to contribute about 35-40 percent to the country's total agricultural production and provide about 20 percent employment in rural areas. Mutton exports alone generated foreign currency estimated at approximately USD 450 million per year, and in 2010 the Syrian Arab Republic exported 871 000 sheep (FAOSTAT). The poultry sector, which employed, directly and indirectly, more than 1 million workers, was also an important foreign-income earner with significant exports of meat, eggs and day-old chicks. In 2010, 76 000 tonnes of hens' eggs were exported (FAOSTAT).

The annual revenue lost as a result of the virtual extinction of agricultural exports due to the current crisis was already estimated by MAAR two years ago at SYP 72 billion (about USD 0.73 billion at the exchange rate prevailing in June 2013), while ESCWA, by the second half of 2014, estimated the loss of capital stock in agriculture at almost SYP 80 billion (about USD 0.5 billion at the exchange rate prevailing in October 2014) (ESCWA, 2014. The Conflict in the Syrian Arab Republic: Implications on the Macro-Economy and MDGs). Figure 3 shows the calendar for the Syrian Arab Republic's main crops.

**Figure 3: Syrian Arab Republic - Crop calendar**



Source: FAO in Emergencies.<sup>3</sup>

Since 2011, rural incomes (and thus private consumption) have suffered from poorer-than-expected harvests resulting from one or more of several adverse conditions including, among others, international trade sanctions, unfavourable rainfall over a number of years, restricted access to productive land because of conflict, high production and transport costs, damage to irrigation systems and farm machinery, restricted movement of goods, poor market conditions and low consumer spending. Despite the fact that rainfall this year was particularly good in terms of both amount and distribution, all the other factors have militated against the production of what should otherwise have been an excellent harvest.

The livestock sector, once very important in the Syrian Arab Republic's domestic economy and in its external trade, has suffered very substantially since 2011 both in terms of herd and flock numbers and in terms of veterinary services and animal health. In turn this has had a very significant impact on rural livelihoods.

### 3. CEREAL PRODUCTION

#### 3.1 Assessment methods

Every year MAAR collects information from its staff in each governorate as to the areas actually planted to each crop, often with FAO assistance. (This is distinct from the planned areas which are also prepared annually by MAAR.) Even in opposition-held governorates MAAR continues to communicate regularly with its staff on the ground. Since the CFSAM is not in a position to estimate very large crop areas itself, and since MAAR area estimates have proven themselves broadly reliable in the past, the Mission accepts these figures subject to discussion. If some figures appear to be over/under-estimates, the CFSAM discusses them with MAAR at either governorate or central level in order to arrive at a credible consensus.

#### 3.2 Area estimates

Under normal pre-crisis conditions it was usual for some of the planted cereal area not to be harvested on account of the yield being too low to justify the expense, perhaps because of pest attack or moisture stress, especially under rainfed conditions. Under the present circumstances of insecurity this proportion has increased. Fields that were secure when they were planted may be abandoned at the time of harvesting because they are no longer secure; standing crops may be burnt as a "scorched earth" strategy or with the objective of removing potential cover for opposing forces. The overall reduction in harvested area is difficult

<sup>3</sup> <http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/176035/>

to quantify but, based on anecdotal evidence, it is the Mission's belief that it may amount to about 8 percent. This figure comprises an assumed 3 percent for normal attrition resulting from natural physical factors, and 5 percent for losses due to human intervention.

Estimates for the area of wheat and barley to be harvested, both irrigated and rainfed, are given below for each governorate in Tables 2 and 5, respectively. For irrigated and rainfed wheat the planted areas were 61 and 75 percent respectively of those planned, giving an overall implementation rate of 68 percent. For irrigated and rainfed barley the planted areas were 66 and 81 percent respectively of those planned (1.79 million ha for wheat and 1.47 million ha for barley), giving an overall implementation rate of 80 percent. It should be noted that the plans are drawn up on the assumption that normal pre-crisis conditions will prevail which are not realistic. The significantly higher rate of implementation of barley compared with that of wheat is indicative of farmers' preference for growing a crop that is less vulnerable to water shortages even though that crop may provide lower returns. As noted above, the Mission estimates that 92 percent of the planted area will be harvested.

### 3.3 Yield estimates

Yield estimates for cereals are initially made by MAAR experts several weeks before harvest. The experts visit a statistically valid sample of fields in each governorate and examine the standing crop, taking into account, *inter alia*, plant density, ear length, number of grains per ear and grain size. When the CFSAM visits shortly before harvest it observes the standing crop and compares its yield estimate with that provided by the MAAR experts. Any discrepancies that may arise are discussed with MAAR, and again a credible consensus is reached. For instance, under the present circumstances of heightened insecurity, the CFSAM may be obliged to visit an area of predominantly low yields; in that case the CFSAM might accept that the average yield for the governorate is boosted by higher yields elsewhere in the governorate. On the other hand, the CFSAM may find the MAAR justification unconvincing on the basis of other indicators such as market prices, in which case it would adjust the yield estimate accordingly in consultation with MAAR.

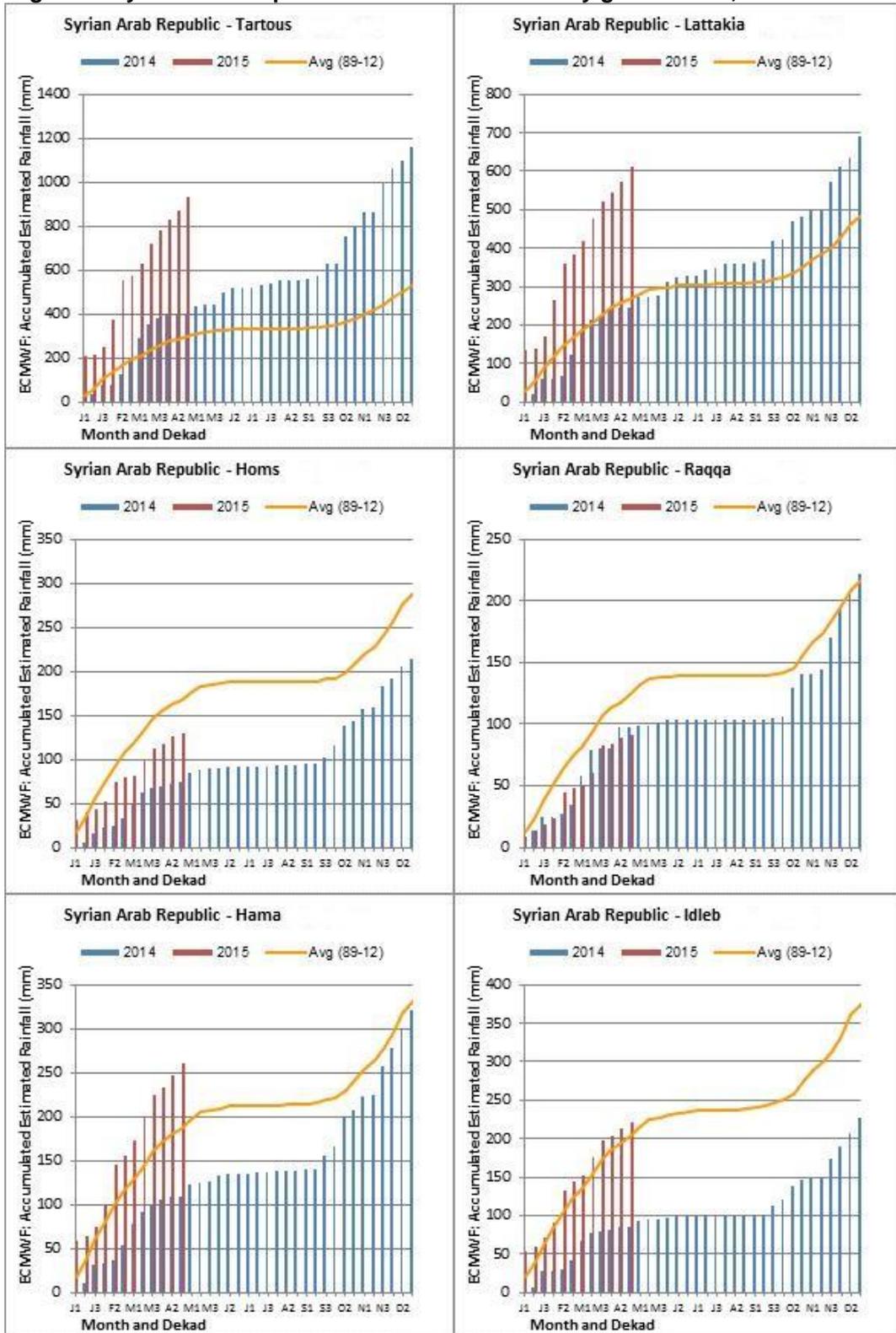
As noted above, the Mission this year had very limited access to cereal fields. It visited the area between Qamishli and Darbasiya in Hassekeh Governorate, the area to the south and southeast of Tartous city towards the Lebanese border, and the area around Ar-Rabwa to the west of Homs city. The Mission was generally satisfied with MAAR's yield estimates in those locations relative to the overall average estimates for the respective governorates, but in some cases considered, on the basis of observation and farmer interviews, that a slight reduction was necessary.

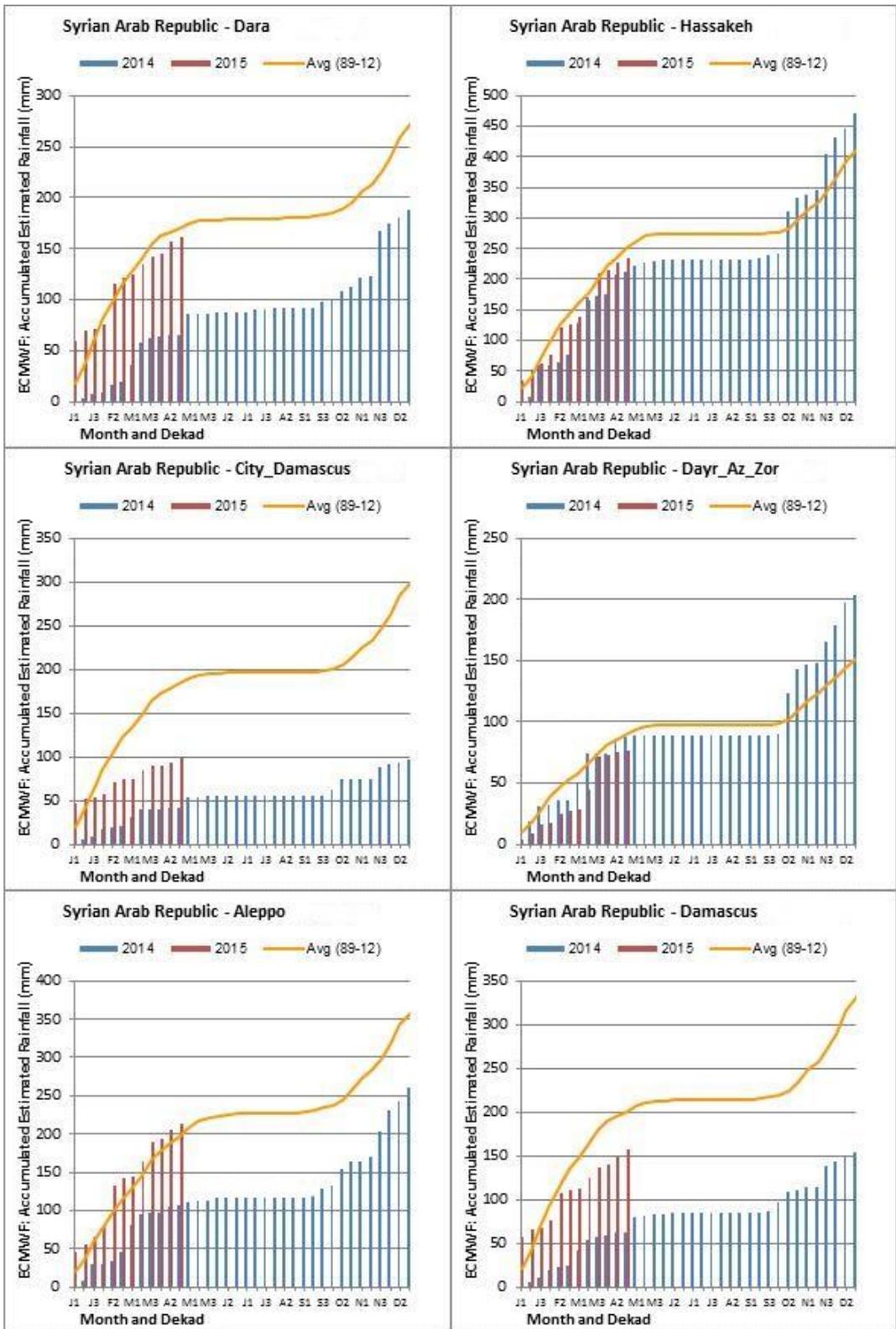
### 3.4 Factors affecting yields

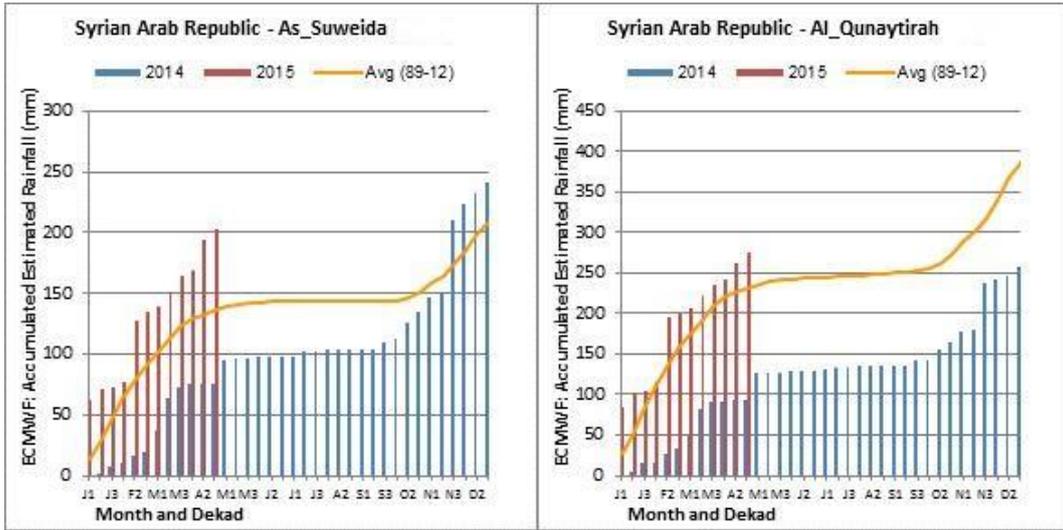
#### 3.4.1 Weather

Rainfall in the 2014/15 cropping season was generally very good over all of the Syrian Arab Republic in terms of both quantity and distribution; it was markedly higher than in 2013/14 in all governorates apart from Raqqa, Hassakeh and Deir Ezzor. Figure 4 shows the cumulative dekadal rainfall by governorate from January 2014 to the end of April 2015, and Figure 5 shows the monthly evolution of the Agricultural Stress Index (ASI) over the whole country from October 2014 to May 2015. As shown in Figure 4, parts of Aleppo and Hassekeh exhibited some stress early in the season but this was mostly eliminated by March. Many parts of the country experienced an unusually sharp frost in January and again in April, which adversely affected some crops, especially vegetables.

**Figure 4: Syrian Arab Republic - Cumulative rainfall by governorate, 2014 and 2015**

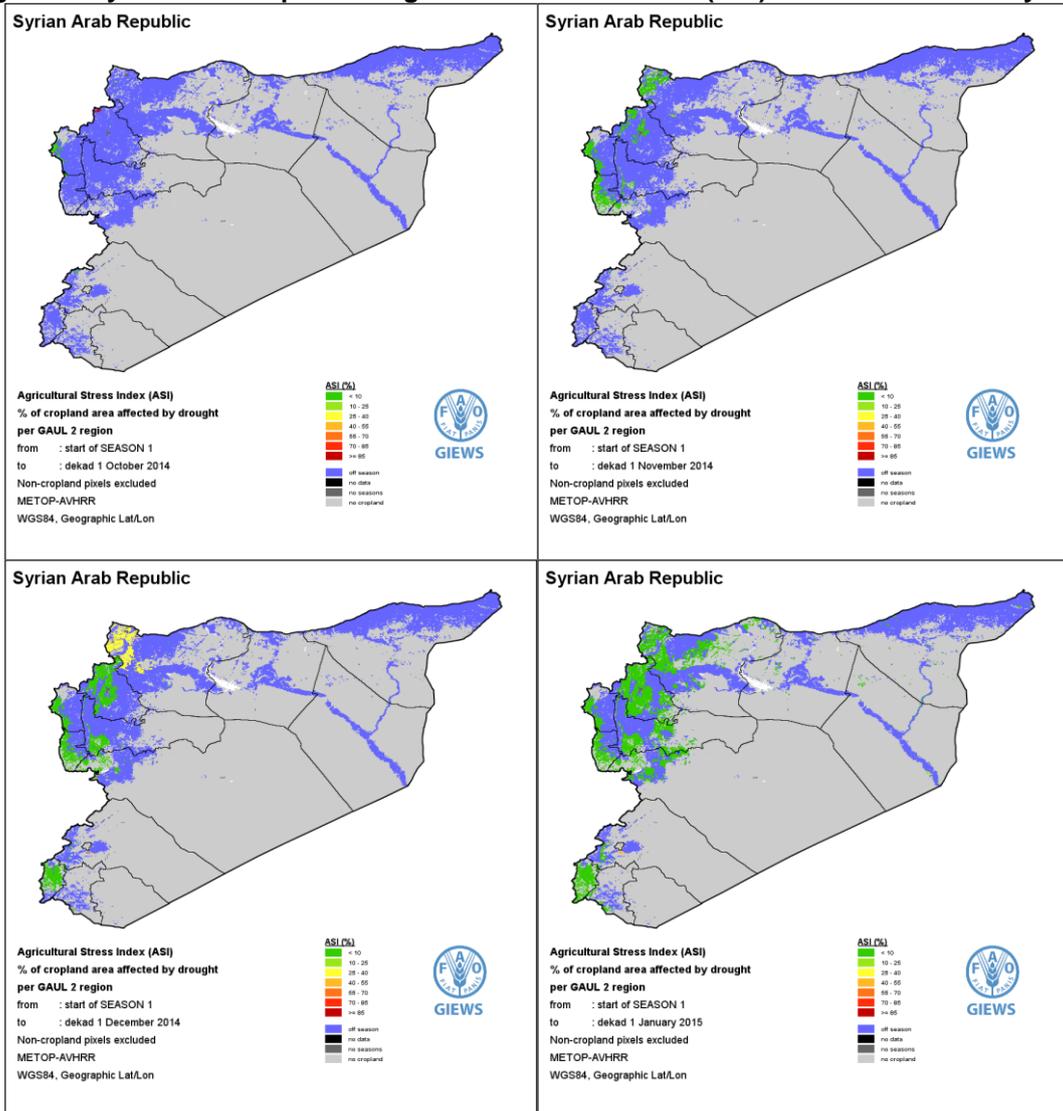


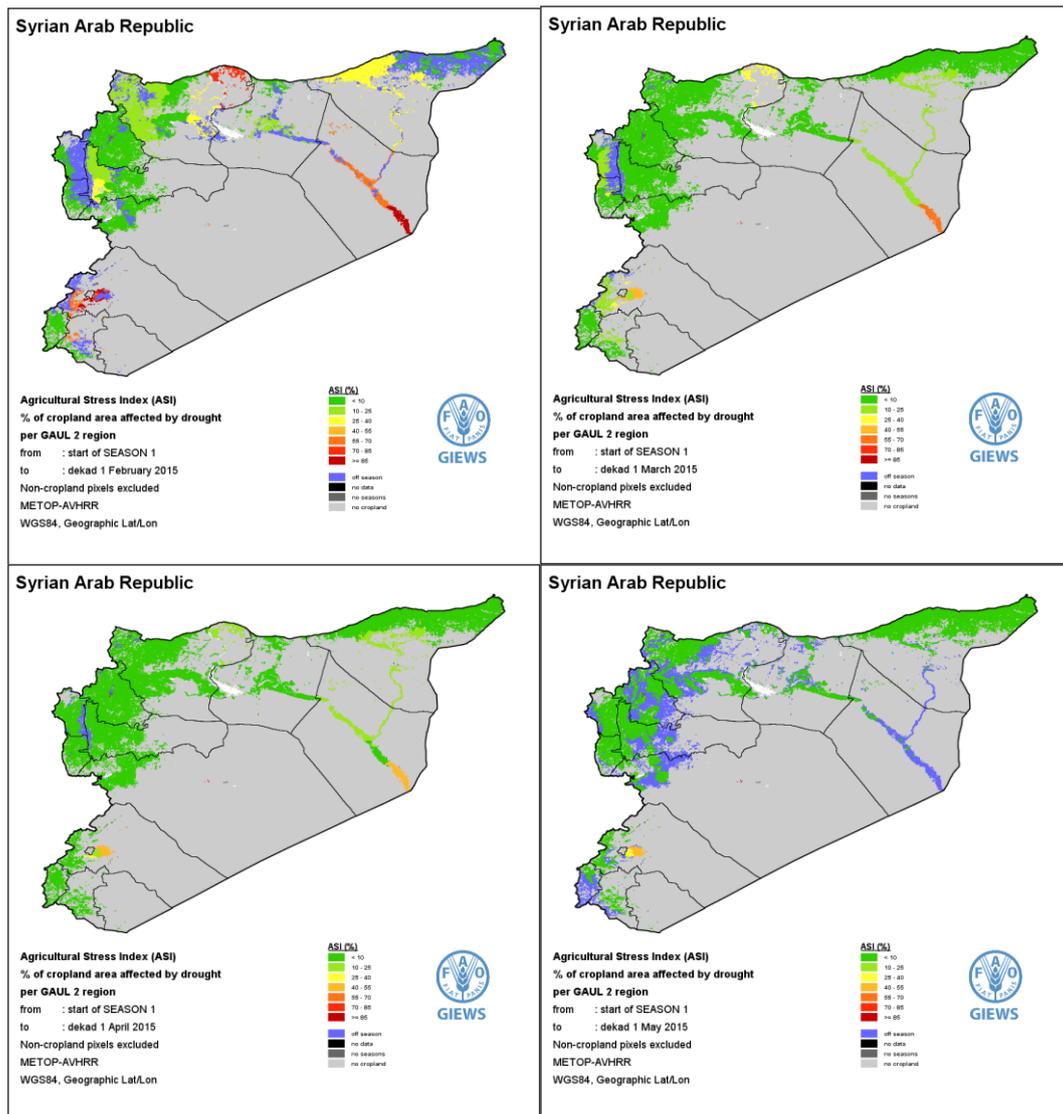




Source: FAO, GIEWS. Earth Observation.

Figure 5: Syrian Arab Republic - Agricultural stress index (ASI) October 2014 to May 2015





Source: FAO, GIEWS. Earth Observation.

### 3.4.2 Irrigation

Since 2011, irrigation canals, pumping stations, small pumps and generators have suffered extensive damage and/or theft. High fuel prices and electricity outages have affected farmers in all areas where irrigation is normally carried out. In addition there have been instances, for example in Idleb and Aleppo, where opposition groups that control a water source have deprived downstream users in the Government-held areas of water. In addition, upstream flows on the Euphrates River that would normally proceed to the Syrian Arab Republic for its use have been increasingly appropriated by Turkey in recent years. As the Euphrates enters the Syrian Arab Republic it should have an average flow of 500 cu. m/sec. By international convention, the Syrian Arab Republic and Iraq are meant to have access to 42 and 58 percent respectively of this flow. Recently, however, Turkey has constructed a very large number of dams for the purpose of irrigation and other uses. This has often reduced the water in the river on the Syrian Arab Republic's side to a mere trickle.

To a certain extent the constraints to irrigation were compensated for by this year's good rainfall. Nevertheless, only 61 percent of the planned irrigated area of wheat was implemented this year. Undoubtedly other factors such as shortages of seed and other inputs, shortages of mechanization, and general insecurity contributed to this reduction, but irrigation constraints also played their part.

According to the MWR, the Syrian Arab Republic requires 17.7 billion cu m of water annually for agricultural, industrial and domestic purposes; 16.2 billion cu m are available, leaving a deficit of 1.5 billion cu. m. However, field irrigation efficiency for wheat is estimated to be between 40 and 70 percent; if the lower end of this range could be raised it would contribute to very significant water saving. MWR is also looking into ways of reusing grey water for irrigation and other uses and has already started work on 97 water-treatment

plants. In 2011 a survey was carried out to ascertain the number of wells in the country; of the 232 000 wells identified, 115 000 had not been permitted by the local authorities. With so many operational well it is not surprising that the salinity of groundwater is increasing in certain parts of the country.

This year MAAR estimates that a total of 1.625 million ha were irrigated. This figure, which includes field and horticultural crops, is higher than the figure for last year. Lower frequencies of irrigation, facilitated by the good rainfall, presumably allowed a larger area to be irrigated with the same or even fewer resources. Irrigated cereal areas this year included 584 750 ha for wheat and 64 188 ha for barley. Technically, farmers are meant to pay for their irrigation water at the rate of USD 12/ha, but few do.

### 3.4.3. Inputs

#### 3.4.3.1 Seed

The General Organization for Seed Multiplication (GOSM) is the Government body responsible for the production and distribution of seed to farmers in the Syrian Arab Republic. Seed of approved crop varieties is produced under contract by selected out-growers. In 2012, GOSM purchased some 280 000 tonnes of wheat seed from out-growers. By 2014 this amount had fallen to 45 000, but GOSM estimates that it will be able to purchase between 70 000 and 75 000 tonnes this year on account of the better harvest. Similarly, the production of barley seed has fallen from its pre-crisis level of 40 000-50 000 tonnes to 15 000 tonnes. GOSM's seed is heavily subsidized. The cost of production of wheat seed is about SYP 80 000/t while seed of hard wheat is sold at SYP 45 000/t and that of soft wheat at SYP 44 000/t.

GOSM's cereal storage capacity has been significantly reduced since 2011 from 300 000 to 150 000 tonnes, and it has lost eight of its 12 seed-processing units; these have either been irreparably damaged, or are still in opposition-held areas, or both. This, along with its inability to provide out-growers with herbicide, has added hugely to the difficulty of producing clean seed. However, to the best of its ability GOSM has continued to distribute seed at subsidized prices not only within Government-held areas but also in opposition-held areas. For the 2014/15 cropping season GOSM distributed 61 522 tonnes of wheat seed (both hard and soft wheat), of which 50 percent went to Hassakeh Governorate.

Since the national wheat and barley seed demands are, under normal circumstances, of the order of 450 000 tonnes and 415 000 tonnes respectively, it follows that only a relatively small proportion of farmers receive cereal seed from GOSM. Most farmers either use seed from their previous harvest or purchase seed from traders; seed purchased in the market can be expensive and is frequently of poor quality.

Based on national research findings, MAAR recommends a seed rate for wheat of between 200 and 250 kg/ha depending on variety and local conditions<sup>4</sup>. However, this seed rate is commonly exceeded with many farmers sowing at a rate of 400 kg/ha. While not approved by MAAR, these rates are regarded by farmers as a means of compensating both for poor quality seed purchased on the open market and for sowing by harrowing rather than by drilling.

For the 2014/15 cereal campaign, FAO distributed 6 000 tonnes of wheat and barley seed to 28 500 families in Raqqa, Aleppo, Hama, Hassakeh, Deir Ezzor and Idlib. This year FAO appealed through the SRP for 20 000 tonnes of certified cereal seed, to enable 100 000 food-insecure families to plant 100 000 hectares in total. At the moment funding has been secured to distribute only 9 000 tonnes of wheat and barley seeds to 44 675 families, which is less than half of the planned needs; this will undermine the food and nutrition security of resource-less farmers who have no access to quality seed.

Depending on available finance (from the Central Bank of Syria) GOSM imports between 6 000 and 15 000 tonnes of seed potato from Europe annually, thus contributing to the national demand of approximately 30 000 tonnes. Future plans include production of seed potato by tissue culture.

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<sup>4</sup> In the national cereal balance sheet prepared for the 2013 CFSAM report, a wheat seed rate of 180 kg/ha was assumed.

#### 3.4.3.2 *Fertilizers*

The fertilizer factory on the outskirts of Homs city (the only operational one in the country) has a capacity of 225 000 tonnes of urea and 150 000 of superphosphate per year, which represents about 40 percent of the country's requirement. (Before the crisis the country used to use about 700 000 tonnes of urea alone.) The factory was also able to produce 100 percent of the country's potassium sulphate requirement. Urea and superphosphate are still being produced but production of potassium sulphate ceased shortly after the beginning of the crisis. For the 2014/15 crop approximately 200 000 tonnes of urea was distributed from the factory. By November 2014 the factory was still holding 76 000 tonnes of urea and 29 000 tonnes of superphosphate.

Official fertilizer prices are set by the Agricultural Cooperative Bank. Officially, urea costs SYP 53 800/tonne, superphosphate SYP 79 600/t and potassium sulphate SYP 85 600/t. Prices on the open market can be much higher, ranging from about SYP 95 000/t to SYP 120 000/t for urea depending on ease and cost of transportation. Prior to the crisis one tonne of NPK cost approximately SYP 16 000.

Granular fertilizer used to be imported from abroad but due to sanctions this has not been possible since 2011. On the other hand, liquid fertilizers, often of suspect quality and not corresponding to their advertised analysis, are available in the market. The shortage of fertilizer has meant that most of what is available is used in situations of high yield expectations such as under irrigation. Application rates are usually low, and many farmers do not use any fertilizer at all, with consequent yield reductions.

#### 3.4.3.3 *Crop protection materials*

Herbicides and pesticides are available in the market. However, many are not approved, some are ineffectual, and a small minority are claimed to be injurious to crops. Government-selected seed out-growers used to be provided with herbicide but this is no longer the case. Presumably because of their relative proximity to Damascus markets a number of farmers in Rural Damascus reported that they used herbicides and/or pesticides.

#### 3.4.4 *Mechanization*

The level of availability of farm machinery appears to have changed only slightly during the last twelve months compared with previous years. However, the very significant constraints of the shortage and high cost of fuel and replacement parts, and the scarcity of qualified maintenance personnel remain. Subsidies have now been removed from fuel. Prior to the crisis, diesel cost SYP 15/litre; now it costs SYP 125/litre, an increase of more than 800 percent, which far outstrips the relative depreciation of the Syrian Pound against the US dollar. Although the price is the same for all users (except bakeries which still receive subsidized diesel), farmers have priority access to fuel. Much of the fuel that is now available on the open market is poorly refined and often contaminated, which can cause damage to machinery. There was also an increased demand for mechanization this year with the better rains; undoubtedly the area under cereals would have been greater had there been greater availability of mechanization and affordable fuel of good quality.

#### 3.4.5 *Labour*

Farm labour wage rates generally vary between SYP 1 000 and SYP 1 500 per day. As might be expected in a situation where the level of security can change rapidly and where there has been a considerable movement of population, the availability and cost of farm labour are volatile. Many insecure areas have been depleted of their potential labour force and those labourers who remain may be unwilling to work in a hazardous situation or may demand a price that the farmer is unwilling to pay. On the other hand a plentiful labour supply does not appear always to guarantee low prices. For instance in Tartous, where the population has doubled in the last four years with the influx of IDPs from insecure areas, it is reported that farm labour is relatively expensive because of the prevalence of better-paid employment opportunities. Other factors also come into play with regard to farm labour. In Hasekeh Governorate, for instance, there used to be a major influx of farm labour for the cotton harvest and this labour force would remain for other farm labouring opportunities. Now, with the collapse of cotton production down to just over 5 000 ha in the governorate, labourers are no longer attracted.

#### 3.4.6 *Pests and diseases*

Few significant cereal pest or disease outbreaks were reported. Most outbreaks of sunn pest (*Eurygaster integriceps*) and wheat rust were satisfactorily controlled with Government assistance, as were some localised rodent problems. Some pest outbreaks, however, such as an infestation of 14 000 ha of wheat by

*Phyllopertha nazarina* in Hassakeh Governorate were only partially controlled because of a shortage of pesticide. Whitefly can be a problem in greenhouse production. Government encourages and assists with biological pest control for fruits and vegetables but pesticides are also used. With the continuing imposition of international trade sanctions and shortages of reliable phytosanitary materials it has become increasingly difficult for the Government to assist farmers in their control of crop pests and diseases, even in areas effectively under its control, and for farmers to purchase those essential products themselves.

#### 3.4.7 Farm access and movement of farmers

Farm access has become increasingly difficult, and often increasingly dangerous, for farmers in many parts of the country. This can result in poor maintenance of a planted crop and sometimes the impossibility of harvesting the crop. The burning of standing crops by militia, either maliciously or to remove potential cover for snipers continues in some areas.

### 3.5 Cereal production in 2015

#### 3.5.1 Yields

Largely because of the good rains this year cereal yields are better than last year. Nevertheless, because of the limited use of fertilizers and other inputs, wheat yields are still a lot lower than what otherwise might have been achieved. Expected yields of wheat and barley are presented below in Tables 2 and 6 for each governorate. The average overall wheat yield from both irrigated and rainfed fields is expected to be 2.2 t/ha, while that of barley is expected to be a relatively high 0.9 t/ha. (This year's barley yields are discussed in more detail below in 3.5.2.2).

#### 3.5.2 Production

##### 3.5.2.1 *Wheat*

Wheat production was better than last year by virtue of this year's good rainfall and in spite of its coming from a smaller area. However, it was still lower than in 2013 when the area was larger and the availability of inputs was not yet as problematic as it has now become. Compared with wheat production over the last ten years, this year's production is only better than that of 2014, 2013 (marginally) and 2008 when the Syrian Arab Republic suffered from exceptionally poor rainfall and, in some areas, drought. Table 2 shows the 2015 wheat production parameters by governorate while Table 3 and Figure 6 show the time series of the Syrian Arab Republic's wheat production over the last 10 years.

**Table 2: Syrian Arab Republic - Wheat production by governorate, 2015**

	Irrigated			Rainfed			Total		
	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t
Rural Damascus	2.4	3.7	9	1.3	1.1	1	3.7	2.8	10
Dara'a	10	4.0	40	44	1.1	48	54	1.6	88
Sweida	0.1	0.8	0.1	27	0.3	8	27	0.3	8
Quneitra	0.1	2.1	0.3	0.3	0.7	0	0.4	1.1	0.5
Homs	11	2.6	29	14	0.9	13	25	1.6	42
Hama	59	3.1	183	9.0	1.9	17	68	2.9	200
Tartous	3.5	2.1	7	6.5	1.3	8	10	1.6	16
Latakia	0		0	2.3	1.0	2	2.3	1.0	2.3
Idleb	32	4.0	130	36	2.3	84	69	3.1	214
Aleppo	99	3.7	367	118	2.0	235	217	2.8	602
Raqqa	110	3.9	431	38	1.6	60	148	3.3	491
Hassakeh	142	2.7	383	268	0.7	188	410	1.4	571
Deir Ezzor	64	3.1	200	0		0	64	3.1	200
<b>Total</b>	<b>533</b>	<b>3.3</b>	<b>1 779</b>	<b>564</b>	<b>1.2</b>	<b>664</b>	<b>1 092</b>	<b>2.2</b>	<b>2 445</b>

Note: Totals computed from unrounded data.

Sources: MAAR and CFSAM.

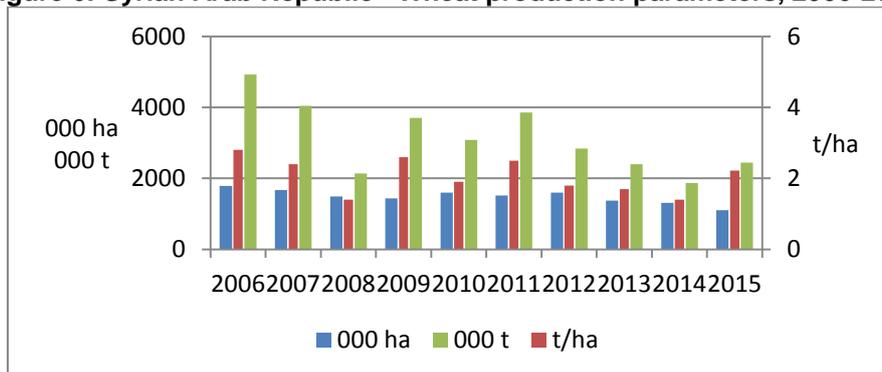
<sup>1/</sup> Area = harvested area.

**Table 3: Syrian Arab Republic - Wheat production parameters (harvested area, yield and production), 2006-2015**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
000 ha	1 787	1 668	1 486	1 437	1 599	1 521	1 601	1 374	1 313	1 092
t/ha	2.8	2.4	1.4	2.6	1.9	2.5	1.8	1.7	1.4	2.2
000 t	4 930	4 041	2 139	3 702	3 083	3 858	2 840	2 400	1 865	2 445

Sources: 2006 - 2011 FAOSTAT; 2012 - 2013 FAO<sup>5</sup>; 2015 MAAR and CFSAM.

**Figure 6: Syrian Arab Republic - Wheat production parameters, 2006-2015**



Sources: 2006 - 2011 FAOSTAT; 2012 - 2013 FAO; 2015 MAAR and CFSAM.

Farmers are often reluctant to deliver their harvested grain to Government collection centres, even when these are easily accessible. With the re-scheduling of loan payments to the Agricultural Credit Bank, farmers

<sup>5</sup> FAO's yield and production estimates for 2012 and 2013 differ from those of MAAR. MAAR's production records for those two years are as follows:

	2012	2013
000 ha	1 601	1 374
t/ha	2.3	2.3
000 t	3 609	3 182

prefer to sell to private traders in order to avoid having to re-pay their previous Government loans which would be automatically deducted from their payment on delivery of their grain.

### 3.5.2.2 Barley

Despite the fact that the area under barley in 2014/15 was one of the lowest in recent years, the season's good rainfall is expected to result in both the highest average yield (0.9 t/ha) and the highest production (968 000 tonnes) since 2006.

Given the currently low availability of agricultural inputs, this year's relatively good barley yields may be unexpected. However, it must be borne in mind that barley, being a predominantly rainfed crop, is, in most areas, not dependent on irrigation (Table 6 below shows that only just over 5 percent of this year's barley was irrigated); most farmers do not rely on a supply of improved seed as they use their own; and barley receives only minimal fertilizer application even when fertilizer is readily available. Barley yields are therefore principally responsive to rainfall, and the rains of 2015 were particularly favourable in terms of both amount and distribution. Table 4 illustrates the very large variation that occurs in barley yield in the Syrian Arab Republic in response to rainfall.

**Table 4 Syrian Arab Republic - Barley yields (t/ha) 1998-2001, in different AEZs, illustrating yield response to rainfall (poor rainfall in 1998, 1999 and 2000; good rainfall in 2001)**

Year	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
1998	2.09	1.05	0.4	0.09	0.3
1999	1.31	0.6	0.12	0.01	0.07
2000	0.71	0.25	0.08	0.02	0
2001	2.59	2.0	1.39	1.0	0.91

Source: World Bank 2013: Economics of Climate Change in the Arab World.

Table 5 shows the 2015 barley production parameters by governorate while Table 6 and Figure 7 show the time series of the Syrian Arab Republic's barley production over the last ten years.

**Table 5: Syrian Arab Republic - Barley production by governorate, 2015**

	Irrigated			Rainfed			Total		
	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t	Area <sup>1/</sup> 000 ha	Yield t/ha	Prod. 000 t
Rural Damascus	1	2.0	1	7	0.8	6	8	0.9	7
Dara'a	0	0.0	0	7	0.6	5	7	0.6	5
Sweida	0	0.0	0	15	0.5	7	15	0.5	7
Quneitra	0	0.0	0	0.2	0.6	0.1	0.2	0.6	0.1
Homs	0.5	1.2	1	31	0.6	19	32	0.6	20
Hama	6	1.5	9	73	0.9	63	78	0.9	71
Tartus	0.05	1.2	0.1	1	0.6	1	1	0.6	1
Latakia	0	0.0	0	0.3	0.6	0.2	0.3	0.6	0.2
Idleb	1	2.0	2	61	1.1	67	62	1.1	69
Aleppo	2	1.7	3	289	1.0	303	291	1.1	306
Raqqa	10	1.5	16	248	0.6	153	259	0.7	169
Hassakeh	21	1.6	34	289	0.9	250	310	0.9	283
Deir Ezzor	18	1.5	28	0	0.0	0	18	1.5	28
<b>Total</b>	<b>59</b>	<b>1.6</b>	<b>93</b>	<b>1 022</b>	<b>0.9</b>	<b>875</b>	<b>1 081</b>	<b>0.9</b>	<b>968</b>

Note: Totals computed from unrounded data.

Sources: MAAR and CFSAM.

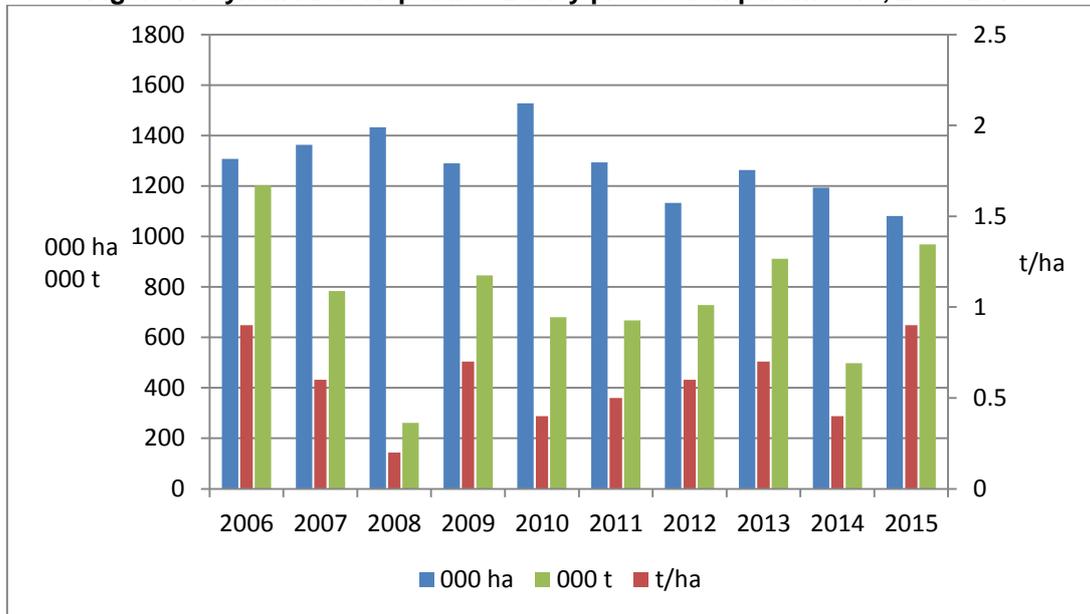
<sup>1/</sup> Area = harvested area.

**Table 6: Syrian Arab Republic - Barley production parameters (harvested area, yield and production), 2006-2015**

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
000 ha	1 307	1 363	1 433	1 290	1 527	1 293	1 133	1 263	1 194	1 081
t/ha	0.9	0.6	0.2	0.7	0.4	0.5	0.6	0.7	0.4	0.9
000 t	1 202	784	261	846	680	667	728	911	498	968

Sources: 2006-2014 FAOSTAT; 2015 MAAR and CFSAM.

**Figure 7: Syrian Arab Republic - Barley production parameters, 2006-2015**



Sources: 2006-2014 FAOSTAT; 2015 MAAR and CFSAM.

Despite the fact that the area under barley has fallen over the last two years, there has been a growing tendency recently for farmers to sow barley on land that would previously have been sown to wheat in order to cut down on the cost of irrigation and other inputs that would be required for a satisfactory wheat crop. This is evident in the relative reductions in area of the two cereals this year compared with 2014. Wheat area fell from 1.313 million hectares to 1.192 million hectares, a fall of 16 percent, whereas barley area fell from 1.194 million hectares to 1.081 million hectares, a fall of only 9 percent.

### 3.5.2.3 Maize

Maize production is less assiduously recorded than that of wheat and barley. Prior to the crisis annual production generally ran at between 150 000 and 200 000 tonnes. The Mission considers that it may now be about 100 000 tonnes. Given the relatively small contribution that it makes to the country's overall cereal production, maize has been omitted from the national cereal balance sheet prepared by the Mission.

### 3.5.3 Changing cropping patterns

There are indications of an emerging trend away from wheat on the part of farmers in Hassakeh Governorate. The cost of production is quoted by farmers as being as high as SYP 55 000 to SYP 58 000/tonne, which compares unfavourably with the SYP 61 000/t offered by the Government. In response, many farmers have partly diversified away from wheat towards high-value herbs. This year it is reported that about 50 000 ha in Hassakeh that would normally be under wheat have been planted to coriander for seed. Farmers are as yet unclear as to how the coriander is to be marketed, but with the small profit margin for wheat they are willing to take a chance that it can be sold profitably. The Government is aware of this possible trend and is considering ways of halting it by increasing the farmer's profit margin; this would probably involve increasing the subsidization of inputs and thereby lowering the cost of production.

## 4. OTHER CROPS

### 4.1 Legumes

The total area under the Syrian Arab Republic's principal legume crops appears to have changed very little since 2010 (Table 7) but yields have fallen.

**Table 7: Syrian Arab Republic - Legume area 2010, 2013 and 2015 (000 ha)**

Legume	2010	2013	2015
Lentils	131	117	98
Chickpeas	68	76	72
Fava beans	17	13	18
Peas	4	3	3
<b>Total</b>	<b>220</b>	<b>209</b>	<b>191</b>

Sources: FAOSTAT for 2010 and 2013; MAAR for 2015.

### 4.2 Potatoes

Most potatoes grown in the Syrian Arab Republic are 'earlies', sown in February and harvested in June. This year 13 662 ha of earlies were planted, representing 67 percent of the planned area. The biggest producer is Aleppo Governorate where more than 4 800 ha were planted. Only a small area (this year 737 ha) of "summer" potatoes (sown in August and harvested in December) is grown, and nearly all of this is in Rural Damascus. The yield of earlies is usually higher than that of summer potatoes. Potato production is now down to about two-thirds of its pre-crisis levels, largely because of reduced area and a reduced supply of seed potato.

Depending on the availability of funds GOSM imports between 6 000 and 15 000 tonnes of certified seed potato each year from Europe.

### 4.3 Vegetables

Commercial vegetable production is especially important in the coastal governorates of Tartous and Latakia where it is mostly conducted in polyethylene tunnels. Tartous alone is estimated to have 126 000 polytunnels, each of 40 m<sup>2</sup>, although 10 000 of these are thought to have been abandoned as a result of rising cost of inputs. MAAR's agricultural directorate in Tartous anticipates that another 4 000 polytunnels will come into production over the next 12 months. Polyethylene granules are imported for the production of polyethylene sheeting which is then used for the construction of polytunnels.

Vegetable crops were adversely affected this year by frost in January and again in April, as well as by the shortage, high cost and frequently poor quality of inputs, with the result that production, especially of tomatoes, is expected to be lower than last year.

### 4.4 Fruit trees

Fruit production has suffered from the felling of trees for firewood in areas where electricity supplies have been reduced or cut off, by shortages and high costs of fertilizers and pesticides, and, in some cases, by the danger of visiting orchards to tend them.

Prior to the crisis, olive production used to employ an estimated 100 000 Syrian families. The Syrian Arab Republic produced close to 1 million tonnes per year, making it the world's fourth largest producer, and in 2010 it produced 200 000 tonnes of olive oil. MAAR now estimates that olive production has fallen to only 400 000 tonnes per year.

Citrus production, on the other hand, appears not to have been significantly affected by the crisis, possibly because most citrus has been produced in secure Government-held areas. Prior to the crisis, the Syrian Arab Republic produced about 1 million tonnes of citrus per year and this level has been maintained within the normally expected range until now. Nevertheless, because of the general shortage and expense of inputs, most farmers face difficulties in accessing fertilizer and controlling pests.

## 4.5 Industrial crops

### 4.5.1 Sugar beet

In 2007 the Syrian Arab Republic produced 1.7 million tonnes of sugar beet. By 2015 this figure has fallen to an expected 29 000 tonnes produced on 860 ha in Al Ghab, Hama Governorate. This represents a mere eight days of work for the only remaining functional sugar beet factory, which has a capacity of 3 600 t/d. Up to the 1980s farmers used to grow sugar beet under a simple contract with the Government. Subsequently production was allocated to MAAR and processing to the Ministry of Industry and farmers were obliged to obtain credit from the Agricultural Cooperative Bank. In recent years, however, the bank has not provided credit, thus making sugar beet production less attractive.

### 4.5.2 Cotton

With shortages of seed, crop-protection materials and credit, and damage to irrigation systems and ginneries, cotton production has fallen significantly since the start of the crisis. Out of a total planned area of almost 125 000 ha of cotton, only just over 43 000 ha were actually cultivated. More than half of this area was planted in Raqqa.

### 4.5.3 Tobacco

Until 2013 the Syrian Arab Republic grew about 11 000 ha of tobacco each year (FAOSTAT). This figure has now dropped to just over 2 750 ha (MAAR), all of which is in Lattakia Governorate.

## 5. POST-HARVEST PROBLEMS

### 5.1 Market access

Transport of farm produce is now very problematic, often leading to bottlenecks and consequent wastage of produce because it cannot be brought to its intended market

In Tartous wholesale market, traders of highly perishable vegetable and fruit products estimate that wastage has doubled because of the expense and difficulty (due to insecurity and several checkpoints along the route which may demand that a truck be un-loaded before proceeding) of getting produce to large markets such as Damascus on time. Until quite recently the cost of transport of fruit and vegetables from Tartous to Hassakeh in a 40-tonne refrigerated lorry was SYP 1 000 000. Now, with increasing insecurity, traders report that the cost may have doubled, making it economically unviable.

### 5.2 Collection points and storage capacity

Prior to the crisis, the Syrian Arab Republic had more than 140 grain-collection centres that would purchase grain from farmers. By the end of 2014 only 31 of these remained under Government control, the others having been either destroyed, damaged or appropriated by opposition forces. According to HOBOOB, the Government had a grain-storage capacity of 7 million tonnes in 2010, but this has now been reduced to between 3 and 3.5 million tonnes.

The number of operational cold stores for the collection of perishable fruits and vegetables available to the Government has been reduced to only 10 percent of its pre-crisis level.

## 6. LIVESTOCK

Prior to 2011, livestock played a very significant role in the Syrian Arab Republic's economy. Livestock production accounted for between 35 and 40 percent of the country's total agricultural production, and occupied about 20 percent of the labour force in rural areas. Mutton exports alone generated approximately USD 450 million as foreign currency per year. The poultry sector, which employed, directly and indirectly, more than 1 million workers was also an important foreign-income earner with significant exports of meat, eggs and day-old chicks. Poultry production was mainly a private-sector activity, with a public-sector share of less than 10 percent. Private cattle ownership was typically less than ten per household in a mixed-farming context, in addition to which there were eleven state dairy farms. This has all changed since 2011.

- Many livestock owners have moved from insecure areas; some have brought their livestock with them, while others have sold off their stock or, in some cases, simply abandoned them.

- Extra pressure has been put on pastures in safe areas to which livestock owners from insecure areas have brought their herds and flocks.
- The cost of livestock feed has escalated.
- There has been increased slaughter of female animals both because of the difficulty and expense of maintaining them and because of the fear of theft.
- A very large number of poultry units have been destroyed or abandoned.
- Veterinary support has been greatly weakened with a reduction of about 50 percent in the coverage of vaccination campaigns and disease prevention programmes compared to the pre-conflict coverage.
- The Government's Shabaa veterinary laboratory near Damascus, which used to produce veterinary vaccines, was damaged and occupied by opposition groups shortly after the start of the crisis. It is no longer operational.
- The international trade sanctions imposed on the Syrian Arab Republic have resulted in further shortages of veterinary drugs and vaccines. They have also opened the door for smuggling these products into the country without any quality control; smuggled materials may be of poor quality or out of date, or they may have deteriorated by not having been properly preserved (i.e., consistent refrigeration/ cold chain).
- The damage to communications systems, transport difficulties and shortages of diagnostic supplies has resulted in a lack of clarity regarding the country's animal disease and zoonoses epidemiology status (i.e., the Syrian Arab Republic had the most advanced foot-and-mouth disease (FMD) control programme in the region until 2011-2012).
- There is now a concern about the possibility of spread of animal diseases and zoonoses to neighbouring countries as a result of the uncontrolled movement of unvaccinated animals across the Syrian Arab Republic's borders. The high impact animal diseases of concern to animal health/production and public health are: brucellosis, sheep and goat pox, rabies, lumpy skin disease (LSD), FMD, peste des petitis ruminants (PPR), Newcastle disease, tuberculosis...).
- Livestock marketing has been hugely disrupted by general insecurity and the high cost of fuel for road transport.
- The once regulated export trade of livestock products is now almost non-existent.
- The country's livestock research centres which used to work on the improvement of local breeds (Awassi sheep, Shami goats and Shami cattle) are no longer operational, including the CGIAR centre near Aleppo.

## 6.1 Numbers

Livestock numbers are difficult to monitor under normal circumstances, but under conditions of crisis such as that affecting the Syrian Arab Republic at present the task becomes even more difficult. To a certain extent an estimate can be made by extrapolation from the number of vaccines administered and routine drugs provided, the volume of trade at livestock markets, abattoir records and anecdotal evidence, but such estimates can only be very approximate. The Syrian Arab Republic used to carry out reliable livestock censuses but no census has been conducted since the start of the crisis in 2011.

### 6.1.1 Sheep and goats

The Syrian Arab Republic used to be a very significant exporter of sheep (especially of the Awassi breed) to Saudi Arabia and the Gulf countries. Sheep numbers peaked in 2007 at 22.9 million but had dropped back to levels of around 18 million by 2011, the year of the last livestock census. Since then, numbers are thought to have declined by a further 40 percent to 10.8 million. The country's goat population is much smaller than that of sheep. From about 2.3 million in 2011, with a reduction of about 40 percent, the number of goats is reckoned to have fallen to less than 1.4 million.

### 6.1.2 Cattle

The Syrian Arab Republic's cattle population has always been relatively small at around one million under normal circumstance. Since 2011, when cattle numbers were estimated at some 1.1 million, the country has seen a decline of 30 percent to about 778 000.

### 6.1.3 Poultry

Of all livestock, poultry has suffered the greatest reduction in numbers since 2011 with the destruction or abandonment of a great many poultry units which is particularly worrying in view of the role of poultry as a main source of protein of animal origin. Reports indicate that Dara'a and Aleppo Governorates suffered

substantially in this regard with the loss of 90 percent of their units. At an estimated 13.1 million, the Syrian Arab Republic's poultry numbers are now at 50 percent of their 2011 level of 26.2 million.

#### 6.1.4 Other livestock species

It is assumed that the numbers of other, less important livestock species, such as buffaloes and camels, have suffered similar reductions during the present crisis.

### 6.2 Animal nutrition

Most livestock feed in the Syrian Arab Republic comes from natural pastures and rangelands, cultivated green and conserved fodder, crop residues and by-products of the agro-processing industry. Barley is the main feed grown for livestock, but in years of poor rainfall, other crops, which are not economical to harvest for grain, contribute significantly as a source of fodder for ruminants. The principal agricultural stubbles are those of wheat, barley and cotton. Under normal circumstances when cotton is more extensively cultivated, cotton seed-cake provides the main source of supplementary protein to grazing animals. Wheat bran and straw are the most important crop by-products for feed production.

Thanks to this year's favourable rainfall, pasture has been good throughout the country, but insecurity has made many pastures inaccessible. This has led to undue pressure on available pasture in secure areas which can, in turn, lead to pasture deterioration. In Tartous, for instance, the livestock population is reported to have doubled in the last four years as a result of livestock owners moving there from insecure areas.

Feed ingredients (barley, maize, soya, wheat, etc.) are expensive and often scarce. Farmers report that the cost of feed represents the most limiting constraint to livestock production. For instance, the average prices of barley and wheat bran, the principal livestock concentrates, rose from SYP 52/kg and SYP 37/kg in 2014 to SYP 65 /kg and SYP 61/kg in 2015, respectively.

At the time of the Mission, livestock condition is good, but this may change when pastures dry up towards the end of June. The increased cost of feed is expected to have a negative impact on livestock health, especially during the fodder-deficit period of December-February.

### 6.3 Animal health

Livestock health is threatened by a greatly weakened veterinary service, shortages of vaccines and reliable drugs, and questionable refrigeration to maintain cold chains for the safe transport of veterinary vaccines. The veterinary vaccine production department in Shabaa near Damascus has been damaged and is under the control of opposition armed groups. Nevertheless, despite the crisis, the Government has been able to implement the vaccination programmes using existing vaccine stocks that are now almost exhausted. The 26 million free vaccines were administered by the Government over the last 12 months. Vaccines for FMD, brucellosis and pasteurellosis must all be imported.

There are growing concerns about diseases and the health of livestock in the coming years as vaccines are no longer produced and existing stocks are running out. While FAO has provided veterinary drugs for 4 million head of livestock, and is planning to double this quantity with the provision of an additional 4 million doses of treatment against ectoparasites, the country would require much more assistance as the current situation has potentially very serious implications, especially in view of the substantial cross-border selling of livestock and the risk thereof of carrying diseases into neighbouring countries.

Despite the prevailing situation, there have been no official reports of significant diseases outbreaks, although some reports of local outbreaks have been reported (e.g., LSD in Lattakia, Deir ez-Zor and Sweida, and of FMD and pasteurellosis in Ar-Raqqa. In addition, cases of mastitis and brucellosis in cattle as well as internal and external parasites have been reported in several governorates. Enterotoxaemia of sheep, caused by *Clostridium perfringens* and triggered by a change in diet, is frequently reported from various parts of the country. Regarding the poultry sector, the Mission visited one farm in Tartous where chronic respiratory disease due to mycoplasma was rampant.

Against this, there are reports from various sources indicating several outbreaks of FMD, LSD, tuberculosis and PPR in neighbouring countries that are suspected of having been spread from the Syrian Arab Republic. While this is possible, considering the reports of large numbers of unvaccinated sheep crossing the border out of Hassakeh Governorate, where the vaccination coverage is estimated at between 30 and 40 percent, into Turkey and Iraq, it is also possible that the situation has been exaggerated by the media. In addition,

veterinary services in many of the Syrian Arab Republic's neighbouring countries are weak and are not capable of managing efficiently the threat of emerging transboundary animal diseases at their borders. In any case, it should be noted that, being in the same epidemiological unit and considering the frequent movements of animals between countries (due to cross-border family links), even under normal circumstances, the risk of diseases spreading across the region is high. This risk is, of course, heightened when a country's vaccination capability has been seriously eroded, as is the case in the Syrian Arab Republic. FAO is to launch a new project funded under OCHA to target 4 million head of livestock against ectoparasites in the south of the country.

## 7. LOCAL FOOD MARKET CONDITIONS

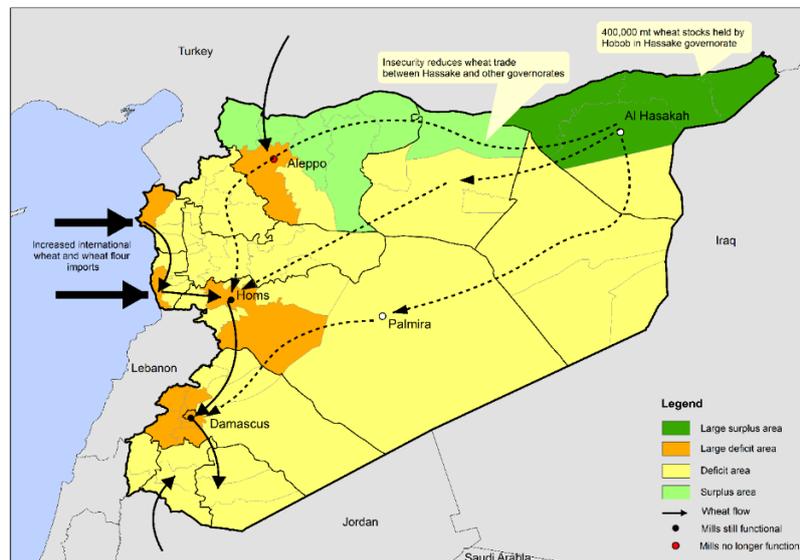
### 7.1 Wheat market

The conflict has led to the destruction of vital storage and milling infrastructure. There are considerable security risks and elevated transaction costs for traders and transporters. Consequently, the wheat market has become highly fragmented: the transfer of wheat between surplus-producing areas to wheat-deficit zones has slowed, causing critical trade distortions.

The breadbasket of the Syrian Arab Republic extends along the north and northeast, with Hassakeh governorate alone accounting for one-third of aggregate wheat production. This breadbasket is distant from the western governorates of the country, where final demand for wheat is concentrated. Milling capacity which used to be around 3.8 million tonnes per year before the crisis is now about 2.8 million tonnes/year. The mills currently working are mostly located in the large cities of Damascus and Homs after the damage to mills in Aleppo.

As shown on the map below (Figure 8), the domestic wheat trade flows remain disrupted by insecurity and the increased cost of road transportation, leading to reduced internal wheat flows. Due to this reduction in trade, some 400 000 tonnes of wheat had accumulated in government silos in Hassakeh governorate at the time of the assessment. The fall of Palmyra in May 2015 has even further affected the internal routes used to transfer wheat from the east to Damascus.

**Figure 8: Syrian Arab Republic - Domestic wheat flows, 2015**



Source: WFP.

Due to exorbitant internal transactions costs, millers in Damascus presently have no economic incentive to source wheat from Hassakeh Governorate. Indeed, a private trader would pay some USD 300 to bring a tonne of soft Black Sea wheat to Damascus, while it costs an estimated USD 360 to transfer a tonne of wheat from Hassakeh to Damascus. Most of the differential lies in very high internal transactions costs, which currently amount to some USD 150 per tonne, including high transportation costs, and a 25 percent "tax" levied by armed groups controlling the road (Table 8). The Government is covering the high transfer cost for some quantities of wheat.

**Table 8: Syrian Arab Republic - Cost of transporting a tonne of wheat to Damascus from the Black Sea or Hassakeh Governorate (May 2015)**

CONTIITEM (USD/t)	Black Sea-Beirut-Damascus	Hassakeh-Damascus
Commodity Cost	217	210
Quality Control	3	None
See Freight and Port Charges	45	None
Import Duty (5 percent)	13	None
Armed Group "Tax" (25 percent)	None	52
Land Transport	20	96
<b>TOTAL</b>	<b>~300</b>	<b>~360</b>

Source: WFP, exchange rate USD 1 = SYP 290.

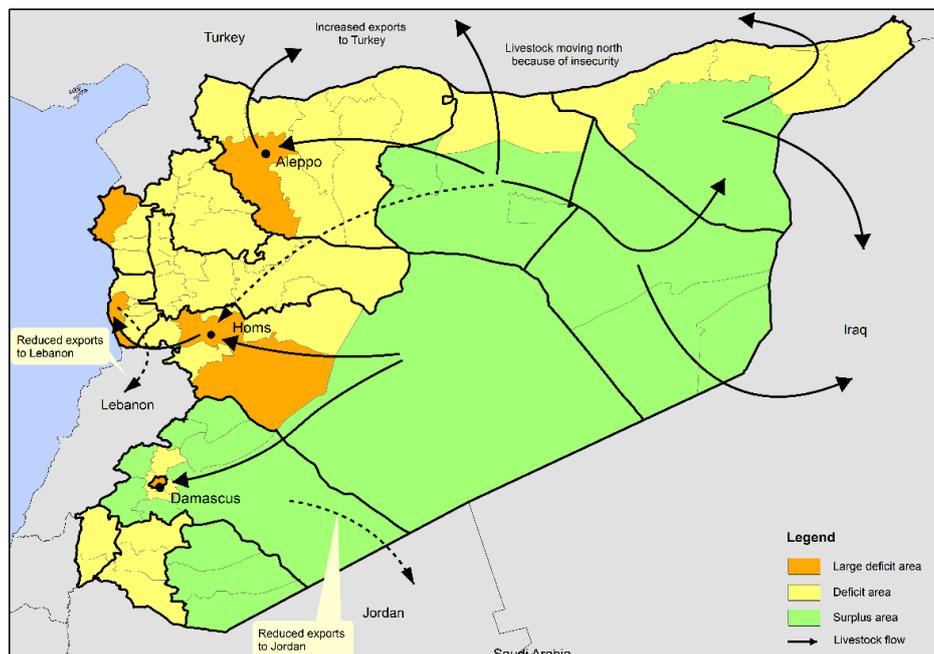
Under present conditions, importing wheat from overseas is the most competitive option for Syrian traders. While the 2015 crop was better than the previous year, imports will likely continue to cover needs in the urban areas of the west of the country. Since the start of the crisis, the Syrian Arab Republic has increasingly relied on international imports to cover domestic needs of 4.5 million tonnes. Imports may be estimated at 1.5 million tonnes in 2014, a drought year that compounded the deficit. Some 250 000 tonnes of wheat flour was imported from Iran in 2014/15, indicating that imports are compensating for reduced wheat processing capacity. The Government is expected to have the capacity to continue importing wheat in 2015/16, thanks to bilateral trade agreements with Iran. The central bank also prioritizes foreign exchange reserves for the import essential goods, including wheat.

Considering that wheat prices in Turkey are above the Syrian Arab Republic Government's price of SYP 61/kg, and the high transaction costs of marketing wheat on the domestic target, economic incentives for exporting wheat exist. In northern areas, the opposition has announced it would purchase wheat at SYP 62/kg or USD 220 per tonne, a level similar to world prices and the Government floor price. This underscores the strategic value of wheat for armed groups.

## 7.2 Livestock market

As shown in Figure 9, in 2015, livestock are found further north than usual, because of insecurity in the "badia", the rangelands that cover most of Deir Ezzor, Raqqa, southern Hassakeh, eastern Homs and Rural Damascus governorates. The livestock market has shifted in response to insecurity and risk and changing access to export markets. Since the closure of the border point between Jordan and the Syrian Arab Republic, exports have slowed on that corridor. Exports to Lebanon are below those of last year, owing to insecurity. Meanwhile, an increase in unregulated livestock exports to Turkey and to northern Iraq is noted. The very high cost of transportation continues to limit east-to-west livestock transportation; as a result, a glut of livestock is reported in rural areas of Deir Ezzor Governorate.

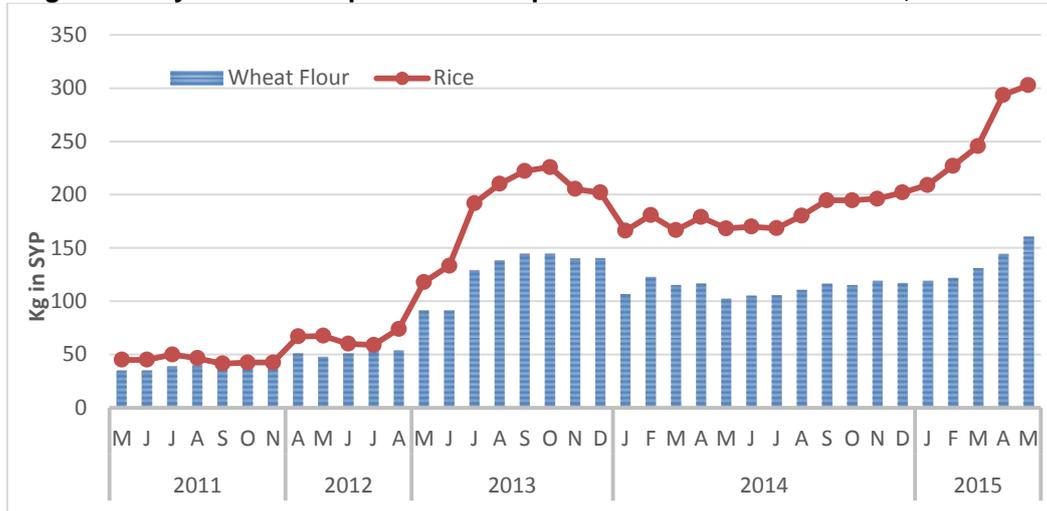
**Figure 9: Syrian Arab Republic - Domestic livestock flows, 2015**



### 7.3 Food prices

WFP monitoring has shown that wheat and rice prices have increased substantially since the start of the conflict in 2011. The retail price of wheat flour has spiked from 50 to over SYP 150/kg, while rice has surged by a factor of 6 since 2011. After a relative period of stability in 2014, price increases resumed in 2015, as food subsidies were curtailed. The highest price levels on record for these commodities were observed in May 2015, attesting to a worrying surge in the price of staple foods.

**Figure 10: Syrian Arab Republic - Retail prices of wheat flour and rice, 2011-2015**



Source: WFP.

WFP price data (Table 9) may be used to estimate year-on-year food price changes for specific items, comparing March 2014 and 2015. While the prices of some commodities, such as wheat flour (+14 percent) or vegetable oil (+14 percent), have remained fairly stable, those of other goods, such as bread, have spiralled (+66 percent in private bakeries, +87 percent in public bakeries). Higher prices for diesel fuel (+108 percent) and butane gas (+61 percent) point to sharply higher energy costs for households and businesses, including farmers, transporters, mills and bakeries.

**Table 9: Syrian Arab Republic - Commodity prices, 2014-2015**

Commodity	2014	2015	Change
Wheat Flour (kg)	112	125	12%
Rice (kg)	167	221	32%
Bread Public (1.5 kg)	21	39	87%
Bread Shops (1.5 kg)	46	76	66%
Lentils (kg)	181	265	47%
Sugar (kg)	113	157	39%
Tea (kg)	1,138	1,480	30%
Oil (L)	275	313	14%
Diesel (L)	86	179	108%
Butane Cylinder (25 kg)	1,624	2,619	61%

Source: WFP.

In order to assess the cost of purchasing a group of essential commodities in different locations, we calculate the cost of a standard basket of dry goods providing 1 930 kcal a day for a family of five during a month. This basket includes 37 kg of bread, 19 kg rice, 19 kg lentils, 5 kg of sugar, and 7 kg of vegetable oil. We calculate its cost for 32 markets for which data was available in March 2015.

Over the past year, food prices seem to have risen the most in places exposed to active conflict (Table 10). Indeed, prices tripled in besieged Deir Ezzor city, while also spiking in Hama (+88 percent) and Homs (+71 percent). People living in areas of the Syrian Arab Republic not directly affected by the crisis have also faced large price increases, including Sweida (+96 percent), Tartous (+55 percent) and Lattakia (45 percent); disrupted supply lines and a large number of incoming IDPs may have led to price hikes in these areas. By

contrast, the price of the food basket receded in Rural Damascus and remained stable in Damascus over the past year.

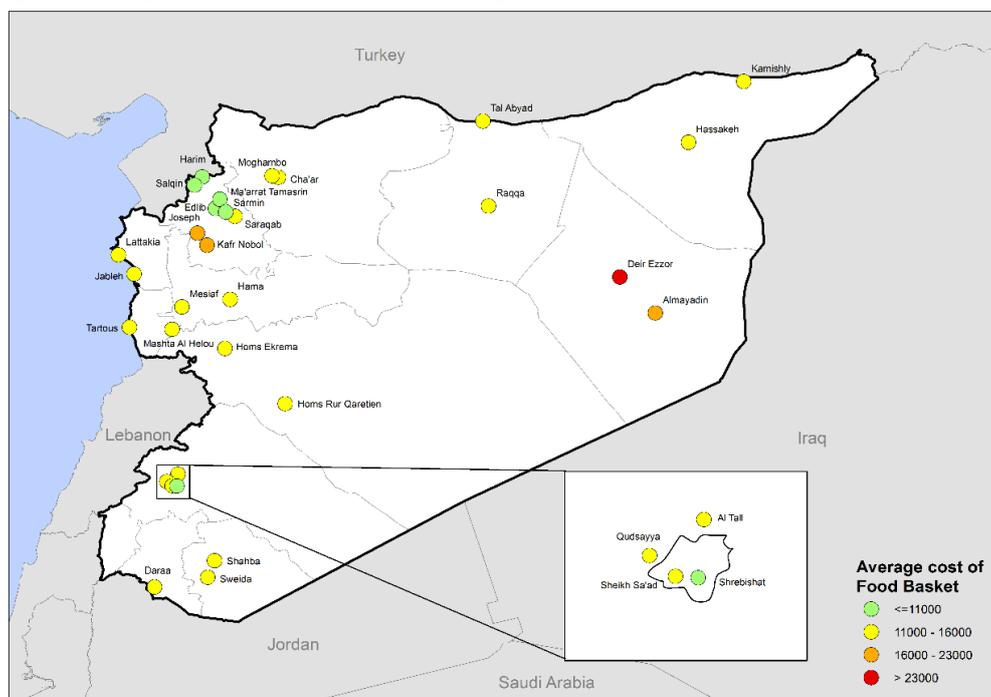
**Table 10: Syrian Arab Republic - Price of a standard basket of dry goods (SYP)**

Governorate	Share of 2011 population	Mar-14	Mar-15	Change
Aleppo	23%	9,103	12,431	37%
R Damascus	13%	18,095	14,705	-19%
Homs	9%	8,048	13,773	71%
Damascus	8%	11,455	12,318	8%
Idleb	7%	7,549	10,014	33%
Hassakeh	7%	9,154	14,890	63%
Dair Ezzor	6%	9,223	30,560	231%
Hama	6%	7,438	13,968	88%
Dera'a	5%	9,538	12,912	35%
Lattikia	5%	9,228	13,358	45%
Raqqa	4%	10,055	12,476	24%
Tartous	4%	9,104	14,141	55%
Sweida	1%	6,770	13,295	96%

Source: WFP data.

As of March 2015, food price levels were heterogenous, as shown in Figure 11. A standard basket of dry goods was most affordable in Damascus (Shreibishat), where it costs less than SYP 11 000. Relatively low food basket prices also prevailed in northern Idleb Governorate (Idleb, Salqin, Harim, Ma'arat Tamasarin, Sarmin), probably thanks to trade with neighbouring Turkey. By contrast, extremely high food basket prices were observed in besieged Deir Ezzor (over SYP 23 000) and Almayadin (Deir Ezzor), where a food basket cost twice as much as in central Damascus. A food basket stood at more than SYP 16 000 in western parts of Idleb that were conflict-affected.

**Figure 11: Syrian Arab Republic - Average cost of food basket, March 2015 (SYP)**



Source: WFP, REACH data.

## 7.4 Market response capacity

The fragmentation of markets described for the wheat market has undermined the market's capacity to meet people's needs. The markets of Deir Ezzor, Hama, Sweida and Hassakeh stand out as having the lowest ratings from the key informants interviewed for this study. Shortages of pulses, fruits, vegetables and meat are reported in these locations. In other markets, while higher transaction costs have led to price increases, food commodity availability reportedly remains satisfactory. Table 11 shows the top constraints to market functionality reported from different governorates.

According to key informant interviews, high transportations costs and pervasive insecurity are the primary constraints to market functionality. High prices and weak purchasing power have dampened consumer demand and turnover. A more granular analysis of market functionality is required, as local conditions vary widely.

**Table 11: Syrian Arab Republic - Top constraints to market functionality**

Governorate	First constraint	Second constraint	Third constraint
Quneitra	High transport costs and insecurity	High prices	Low purchasing power
Aleppo	High transport costs and insecurity		
Raqqa	Rising prices	High transport costs and risks	Lower consumption
Deir Ezzor	Weak purchasing power	Insecurity	
Damascus countryside	Weak purchasing power	High prices	
Dara'a	High transport costs and insecurity	Insecurity	Security conditions
Hama	High transport costs and insecurity	Weak purchasing power	Rising prices
Hassakeh	Rising prices	Weak purchasing power	Instability of the exchange rate
Homs	High transport costs and insecurity		
Idleb	Lack of storage capacity	High transport costs and risks	Instability of the exchange rate
Lattakia	High transport costs and insecurity		
Sweida	High transport costs and insecurity	Closing share crossing	
Tartous	Rising prices	Weak purchasing power	Lower consumption

Source: CFSAM key informants.

## 8. CEREAL SUPPLY/DEMAND SITUATION

### 8.1 Population

According to the World Bank<sup>6</sup>, the Syrian Arab Republic had a population of 21.5 million in 2010, one year prior to the start of the present crisis. UNHCR now estimates<sup>7</sup> that the number of registered refugees from the Syria Arab Republic is close to four million with a continuing exodus, while UNFPA reckons that 220 000 lives have been lost as a direct result of conflict. With such losses and volatility it is difficult to estimate the remaining national population. In June 2014, the CIA's World Factbook<sup>8</sup> put it at 17.95 million, which included some 440 000 Palestinian refugees, and that figure has not since been revised by the Factbook. However, the latest figure proposed by ESCWA is 18.2 million. In the absence of any more substantiated estimate, and on the assumption that births within the country will for the time being be balanced by deaths and departures, this figure has been used for the food balance sheet in this report.

<sup>6</sup> <http://data.worldbank.org/indicator/SP.POP.TOTL/countries/SY?display=graph>

<sup>7</sup> <http://www.unhcr.org/53ff76c99.html>

<sup>8</sup> <https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html>

## 8.2 Stocks

Prior to 2011, the Syrian Arab Republic maintained a strategic stock of about three million tonnes of wheat, but inevitably the present crisis has rendered this impossible. Following the poor cereal harvest of 2014, the Government pledged itself to import at least one million tonnes of wheat in order to ensure adequate supplies within the country until mid-2015. Now, with what promises to be a good harvest, albeit greatly compromised by the many problems associated with security, national reserves may be less precarious, at least for the next few months. Nevertheless it is difficult to quantify the amount of wheat currently remaining in stock, given the strategically sensitive nature of such information. In February 2015, Reuters quoted the Minister for Internal Trade and Consumer Protection as expressing the hope that, with a good harvest, imports would not be required this year. Nevertheless, a month later and this time quoting HOBBOB, Reuters reported that the Government was seeking to import 150 000 tonnes of wheat in a tender that would close in April. Shipping industry sources report that individual shipments of wheat are now substantially smaller than in recent years. Maximum cargo sizes landed at Tartous and Lattakia are now of the order of 15 000 to 20 000 tonnes, compared with 60 000 tonnes when conditions were more stable.

## 8.3 National cereal balance sheet

The national cereal balance sheet for the Syrian Arab Republic in 2014/15 is presented in Table 12. The following assumptions have been made:

- By the middle of the 2015/16 marketing year (31 December 2015), the human population of the Syrian Arab Republic will be 18.2 million (see above).
- Cereal production in 2014/15 production comprises 2.826 million tonnes of wheat, 968 000 tonnes of barley and approximately 100 000 tonnes of maize.
- Opening stocks of wheat at the beginning of July 2015 amounted to 500 000 tonnes.
- The closing stock of wheat by 30 June 2016 will be approximately 1 million tonnes.
- Opening stocks of barley held either privately or by Government are zero.
- Per caput wheat consumption will be 170 kg/annum. (A reduction of 15 kg/caput /annum from the previously assumed 185 kg/caput /annum has been used to reflect the generally reported reduction in daily household consumption).
- A sheep/goat population of 12.2 million, and a cattle population of 778 000.
- An average feed requirement of 0.25 kg of barley grain/sheep per day as part of a ration of 1 kg/animal per day of total feed, including bran, browse and crop residues. This represents a minimum physiological maintenance requirement for sheep.
- An average feed requirement of 3.5 kg of barley grain/bovine per day.
- The cereal area for 2015/16 will be similar to that of 2014/15.
- Seed rates of 220 kg/ha for wheat, 170 kg/ha for barley, and 15 kg/ha for maize.
- Harvest and storage losses of 15 percent of production for wheat, barley and maize.
- The Government will import 600 000 tonnes of wheat.
- Commercial companies will import 200 000 tonnes of wheat.
- For 2015/16, some 310 000 tonnes of wheat products will be received as in-kind food assistance, including 200 000 tonnes by WFP and 110 000 tonnes by other organizations.

**Table 12: Syrian Arab Republic - National cereal balance sheet, 2015**

	<b>Wheat</b>	<b>Barley</b>
<b>Total Availability</b>	<b>2 945</b>	<b>968</b>
Production	2 445	968
Opening stock	500	0
<b>Total Utilization</b>	<b>4 854</b>	<b>2 502</b>
Food use	3 094	-
Feed use	0	2 107
Seed	393	250
Losses, field and post-harvest	367	145
Closing stock	1 000	0
<b>Import Requirement</b>	<b>1 909</b>	<b>1 534</b>
Anticipated Government imports	600	-
Anticipated commercial imports	200	-
Food aid	310	-
Uncovered shortfall	799	1 534

It is expected that about 200 000 tonnes of rice will be imported, which includes 83 000 tonnes in the form of aid through WFP, and that about 100 000 tonnes of maize will be produced.

## 9. HOUSEHOLD FOOD SECURITY SITUATION

### 9.1 Current food assistance

In 2015, the food cluster plans to provide food or cash transfers to some 7 million people, while a further 2.5 million will receive agriculture assistance. Some 2 million people will receive both food and agriculture assistance in 2015. The overall financial requirement is USD 1.2 billion for 2015. In addition to the cluster's actions, the Red Cross and Red Crescent Movement plan to provide food assistance to a further 1.2 million vulnerable Syrians. Targeted groups include IDPs, Palestinian refugees and host communities; the unemployed and urban poor; casual labourers; and, small-scale farmers and herders. Activities include the distribution of food rations, cash transfers and assistance to bakeries on the one hand, and activities to promote livelihoods on the other.

### 9.2 Recent changes in household food security situation

#### 9.2.1 Livelihoods under stress

Although the 2015 wheat crop will be better than the drought-affected 2014 harvest, it is not expected to lead to significant improvements in household food security outcomes, because of the cumulative effects of years of conflict on the economy, livelihoods and households' capacities to cope. From January to April 2015 some 546,000 people were newly displaced, mainly in Idlib and Dara'a governorates, as a consequence of active conflict<sup>9</sup>. According to UNDP<sup>10</sup>, nearly 3 million jobs were lost between 2011 and 2014. Unemployment stood at 57 percent as of the fourth quarter of 2014, compared to 10 percent in 2011 and up from 49 percent in the first quarter of 2014, underscoring the severe impact of the conflict on people's ability to earn an income. Meanwhile, spiralling prices, and very limited income earning opportunities continue to constrain the food security of many households. UNDP (2015) estimates that four out of five Syrians now live below the poverty line, while nearly two-thirds live in extreme poverty and are unable to cover basic needs, including food.

The four main wealth categories that households belong to, and the income sources these groups rely on, were identified by key informants. The most vulnerable or "poor" households rely on food assistance, and supplement those resources with extremely precarious income sources. "Borderline" households primarily earn income from casual labour. Households in the "medium" category tend to rely on government salaries or pensions. The wealthiest category owns businesses.

The poorest households rely on unskilled and extremely precarious work for which they compete with new IDPs, such as (illegal) street peddling and scavenging. Assistance remains a critical resource for these households, who live on as little as SYP 5 000/month. Many beneficiary households are receiving lower amounts of assistance in 2015, frequently once every other month. Poor, labour-constrained households continue to face low income-earning prospects.

Opportunities for casual labour -- the top income source for "borderline" households, are currently very limited. The war has effectively crippled labour markets by undermining overall economic activity, but also by hampering the mobility of workers and restricting the seasonal migration of unskilled workers. Key informants report that because of the lack of employment opportunities, young able-bodied men are drawn to work in the security and military sectors. WFP wage data shows that even in places that have been relatively spared by the conflict, such as Tartous and Latakia, newly arrived IDPs and returnees have saturated the labour market and driven down wages.

Households in the "medium" category are typically government workers. In order to compensate for the higher cost of living, the Government provided a SYP 4 000 increase to all civil servants' salaries, an adjustment that helped better-off households cope with food subsidy cuts in January. Before the increase,

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<sup>9</sup>OCHA: Displacement in 2015. Accessed at:

[http://reliefweb.int/sites/reliefweb.int/files/resources/24\\_may\\_2015\\_displacement\\_in\\_2015\\_final.pdf](http://reliefweb.int/sites/reliefweb.int/files/resources/24_may_2015_displacement_in_2015_final.pdf)

<sup>10</sup> UN (2014) Syria: Alienation and Violence. Accessed at:

[http://www.unrwa.org/sites/default/files/alienation\\_and\\_violence\\_impact\\_of\\_the\\_syria\\_crisis\\_in\\_2014\\_eng.pdf](http://www.unrwa.org/sites/default/files/alienation_and_violence_impact_of_the_syria_crisis_in_2014_eng.pdf)

the average civil servant's salary stood at SYP 25 000/month. The public sector employs roughly 1 million people.

### 9.2.2 Household purchasing power

Many households perceive that their purchasing power is eroding as sharp food price increases outpace incomes. With the exception of Rural Damascus, where food prices have moderated compared to 2014, CFSAM respondents claim that their expenditure on food has doubled in the past year. Survey respondents reported that their non-food expenditure has increased by 60-90 percent in the past year. In general, higher costs for rent and utilities are placing additional pressure on limited household budgets.

As food prices increase, respondents devote less of their budget to non-food items. Overall, households spend 55 percent of their income on food. However, households in Dara'a, Sweida, Aleppo and Hama, spend at least two-thirds suggesting that households in those governorates are prioritizing food over other basic needs.

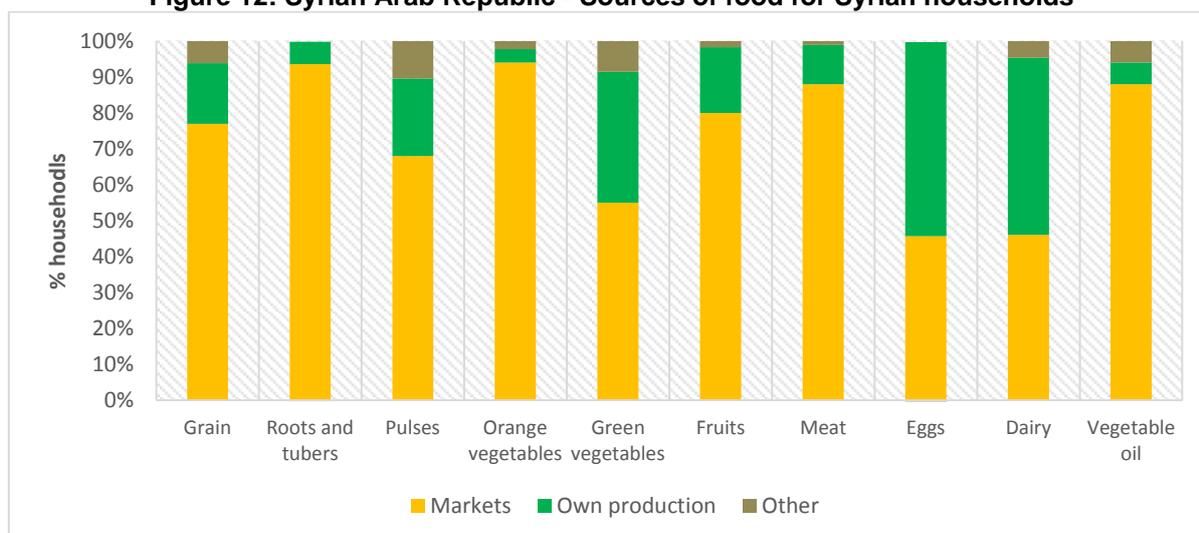
Terms of trade analysis points to substantial variation in household purchasing power. As of March 2015, casual labourers' terms of trade were most favourable in the governorates of Raqqa, Damascus, Rural Damascus, and Aleppo where the price of a standard monthly food basket was equivalent to 8-12 days' wages, thanks to comparatively low food prices. Food access conditions are much more difficult in Deir Ezzor, Dara'a, Tartous, and Lattakia, where 25-33 days of labour are needed to purchase the same food basket. Conflict explains low purchasing power in the two former governorates, while saturated labour markets are the driver in the latter two. Sheep to food terms of trade are low in Sweida and Hassakeh, both livestock-producing areas where prices may be low on account of marketing difficulties.

### 9.2.3 Market purchases and diet

Syrians overwhelmingly rely on markets as their primary food source, which means that most people have been directly exposed to much higher prices for the food since the beginning of 2015. Primary data (Figure 12) suggests that although some farming households are now able to rely more on own production thanks to a better harvest, the general extent of market dependency has not changed compared to a year ago. Cereals, tubers, vegetable oil, pulses fruit and meat are purchased on the market for at least two out of three households, suggesting that own food production is a limited food source at the household level for most staples, even among the farming communities covered by the CFSAM survey. Own production, however, constitutes the main source of eggs, dairy and green vegetables for half of the households.

Households must generally pay cash for the food they buy; deferred payment is only mentioned in Deir Ezzor and Hama, both highly insecure governorates where traders may choose to extend loans in order to avoid the risks associated with holding inventory.

**Figure 12: Syrian Arab Republic - Sources of food for Syrian households**



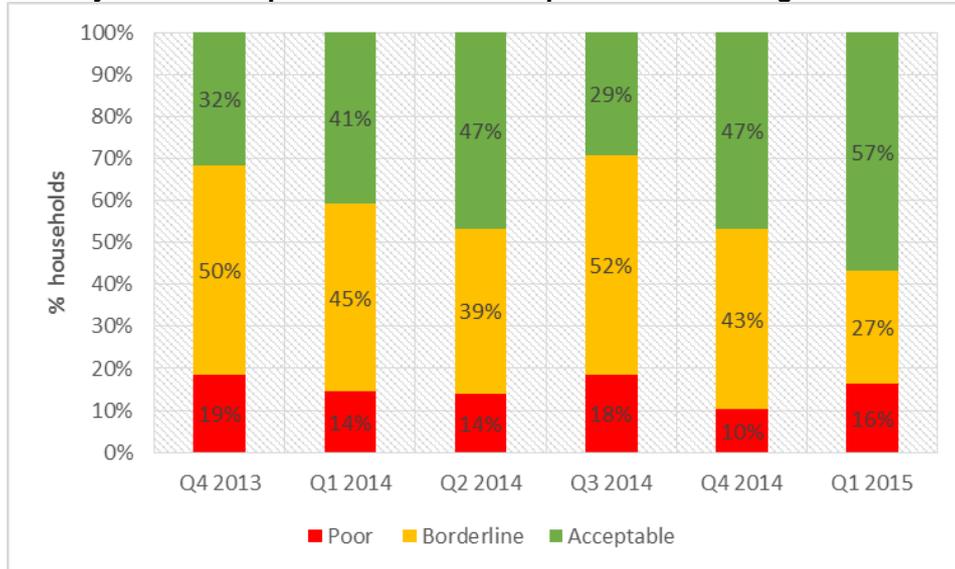
Source: CFSAM.

Food consumption and coping indicators are used as proxies for household food security status. We use quarterly data from WFP monitoring and evaluation to capture trends in these indicators for 2013 to 2015.

We also analyse primary data from the May 2015 CFSAM. A limitation of the CFSAM survey was its small sample size. For that reason, findings from primary data are not generalized to the entire country.

WFP monitoring data suggests that throughout 2014 most beneficiary households were consuming a ‘poor’ or “borderline” diet (Figure 13), which corroborates the notion that the difficult food access conditions have translated to reduced food consumption at the household level. In terms of food consumption, poor households continue to rely essentially on a diet of bread, cereals, pulses, vegetable oil and sugar; these items are provided through humanitarian food parcels.

**Figure 13: Syrian Arab Republic - Food consumption status among WFP beneficiaries**

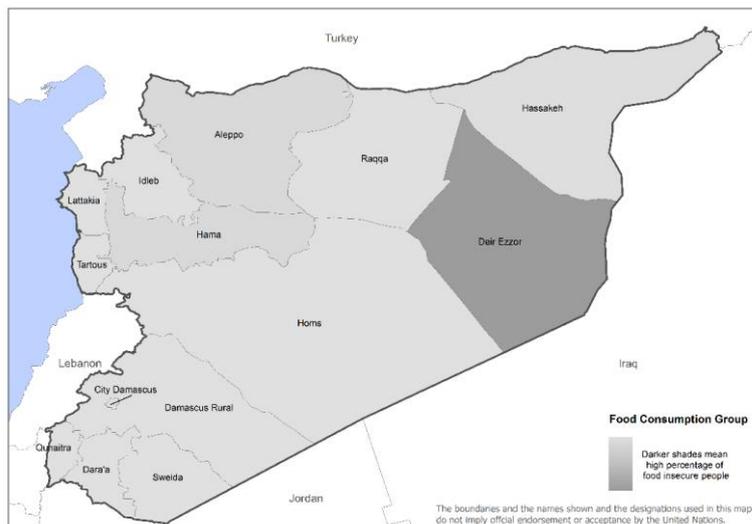


Source: WFP.

Although food consumption indicators seem to have improved in the first quarter of 2015 (16 percent “poor” and 27 percent “borderline”) compared to the same period in 2014 (14 percent “poor” and 45 percent “borderline”), they reflect continuing and substantial food insecurity for beneficiaries of food assistance. As these statistics cover beneficiary households, it is likely that the food consumption of ‘poor’ households without access to assistance is worse.

The primary data collected during the CFSAM (n=250) suggests that the governorates of Deir Ezzor, Aleppo, Hama and Hassakeh seem to be the most affected by food insecurity at the time of the survey in May 2015 (Figure 14). These all happen to be conflict-affected governorates where insecurity and livelihood change constitute large barriers to food access. WFP monitoring also identifies Aleppo as a highly food insecure governorate, which confirms that food consumption in that governorate is precarious.

**Figure 14: Syrian Arab Republic - Household food consumption groups, May 2015**



Source: CFSAM.

By and large, the households interviewed in May 2015 all consume cereals, vegetable oil and sugar at least three times a week (Table 13). However, very few households consume green vegetables, orange vegetables, fruits, meat, fish and liver.

**Table 13: Syrian Arab Republic - Food groups consumed, by governorate (% households consuming at least 3 times a week)**

Governorate	Cereals	Oil and sugar	Dairy	Eggs	Fruit, meat, fish and liver
Quinaitra, Raqqa, Hassakeh, Sweida	Dark	Dark	Dark	Light	Lightest
Rural Damascus, Dara'a, Tartous	Dark	Dark	Light	Light	Lightest
Deir Ezzor	Dark	Dark	Lightest	Lightest	Lightest
Aleppo, Hama, Homs, Idleb	Dark	Dark	Light	Light	Lightest
Lattakia	Dark	Dark	Dark	Dark	Lightest

Source: CFSAM data.

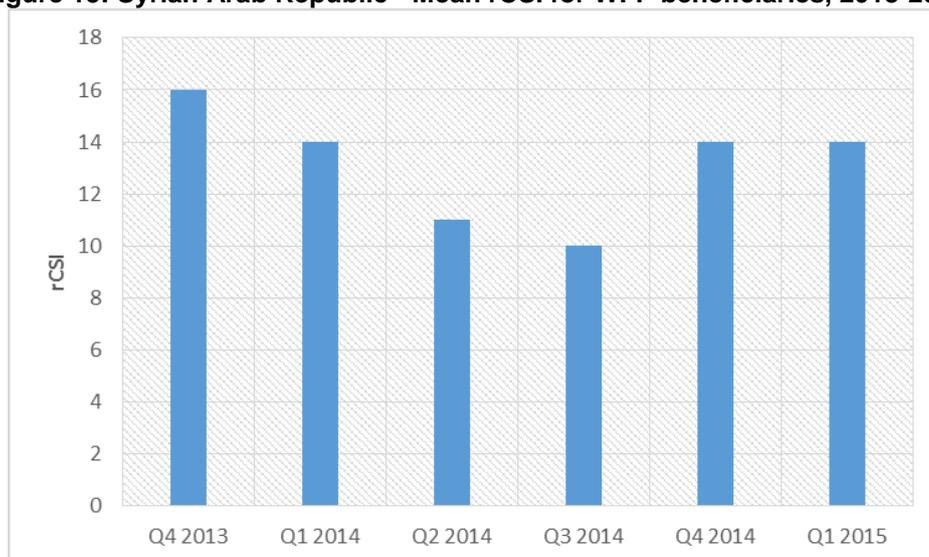
Table 13 offers an illustration of the dietary diversity of CFSAM respondents, who live in rural farming communities. Darker shades indicate where a commodity is consumed every day, while lighter shades mean that the item is rarely consumed. The lightest shade shows foods that are not eaten at all. Primary data suggests that while most Syrian households have access to bread, oil and sugar on a daily basis, the consumption of high quality foods such as fresh fruit, meat, fish and liver is rare. Dietary diversity is especially problematic in besieged Deir Ezzor, where many households report hardly any consumption of dairy or eggs.<sup>11</sup> Dietary diversity is also poor in Aleppo, Hama, Homs and Idleb, where many households eat dairy and eggs on a very limited basis. The data indicate that dietary diversity is better in the north-western governorate of Lattakia, where interviewed households there seem to have some access to high quality and vitamin rich proteins and vegetables.

### 9.3 Food access constraints and household coping strategies

#### 9.3.1 Negative coping

The reduced Coping Strategies Index (rCSI) measures the frequency and severity of the behaviour households engage in when faced with food shortages. A higher score indicates that households are resorting to more frequent or severe negative coping strategies (Figure 15). Figure 15 below shows trends for beneficiaries of food assistance, and not the general population. Because households may temporarily resort to negative coping while maintaining an acceptable level of food consumption, the indicator may not necessarily synchronously correlate with food consumption.

**Figure 15: Syrian Arab Republic - Mean rCSI for WFP beneficiaries, 2013-2015**



Source: WFP.

<sup>11</sup> The scope of primary data collection was limited because of insecurity, and findings may not reflect the general situation in the governorate.

According to monitoring data from WFP, the rCSI among beneficiaries has hovered between 10 and 16 between late 2013 and early 2015. The more favourable rCSI levels were observed in the second and third quarter, a trend that seems to be associated with an improvement in the spring/summer months. The data suggests that Syrian households continue to resort to negative coping mechanisms to meet their food needs; a pattern also apparent from the food consumption data.

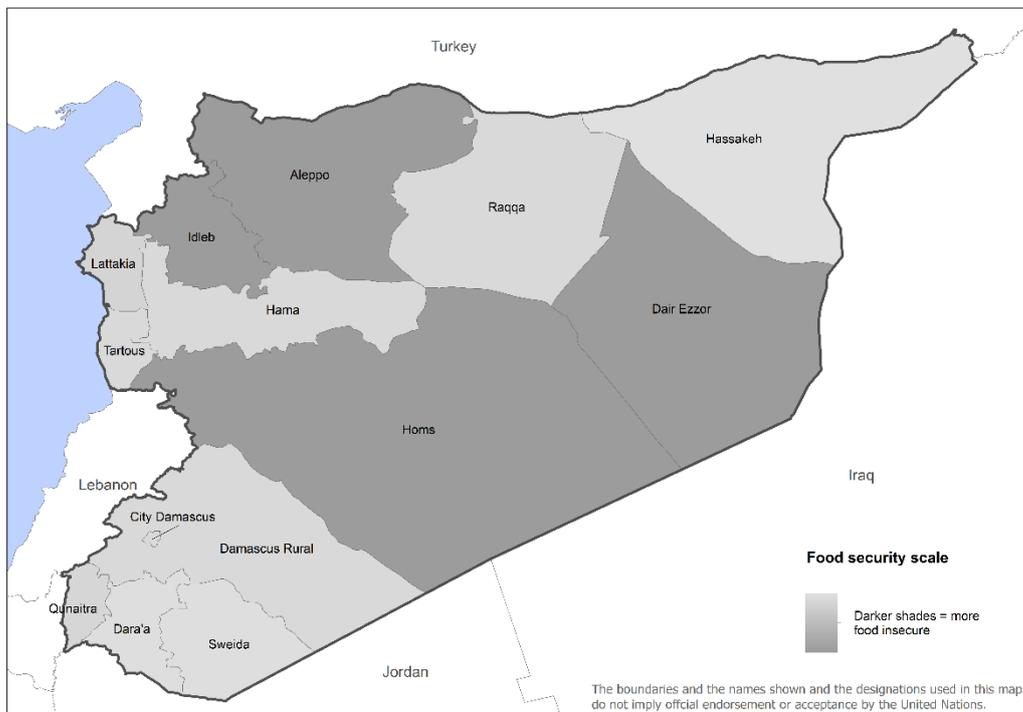
As of the first quarter of 2015, the most commonly applied strategies include relying on less preferred foods (84 percent of households, headed by either men or women). More than half of households limit portion sizes (57 percent for households headed by women, 54 percent for households headed by men), reduce the number of meals eaten in a day (58 percent for households headed by women, 54 percent for households headed by men) or borrow food from relatives (58 percent for households headed by women, 46 percent for households headed by men).

Many households also engage in livelihood-based coping strategies, including reduction in non-food expenditure which was applied by 57 percent of households. Sale of assets was reported by 21 percent of households led by men and 18 percent of households led by women. Some 16 percent of households spent their savings on food. One out of five households led by men had at least one member migrate, while one out of ten households led by women reported that strategy.

During this timeframe, a degradation is noted in Lattakia and Tartous, lending credence to the notion that food access conditions are deteriorating there due to large IDP inflows. Households in Damascus relied more frequently than others to coping strategies throughout the timeframe. As of May 2015, the highest median rCSI is observed in the governorates of Hassakeh, Hama, Tartous and Sweida.

The following map offers an illustrative summary overview of the food consumption and coping indicators. Governorates that combine a high prevalence of households with "poor" and "borderline" food consumption and that also engage in negative coping are shaded in the darkest colour. This map does not reflect the estimated prevalence of food insecurity with any precision.

**Figure 16: Syrian Arab Republic - Food security scale**



- **Hassakeh and Deir Ezzor:** new displacement is increasing humanitarian assistance needs. Conflict has severed supply lines with the rest of the country, leading to high food prices and shortages, with the exception of the areas along the border with Turkey. The food situation in besieged Deir Ezzor is acute. Meanwhile, GAM rates stand above 10 percent.
- **Aleppo, Idleb, Homs and Hama:** Conflict is causing continued displacement and has largely disrupted local labour markets. Although food prices in areas close to the Turkish border are comparatively low, they are higher in conflict zones. Markets in Hama are reportedly affected by

shortages for fresh food. Households are using coping strategies and are consuming a low-quality diet, with little dairy, eggs, fruits, vegetables or meat.

- **Quneitra** and **Dara'a**: new displacement continues. The closure of the border with Jordan and the disruption of routes with Damascus are putting pressure on local food prices.
- **Rural Damascus** and **Damascus**: While food prices have moderated compared to last year, many households continue using coping strategies.
- **Tartous** and **Lattakia**: large and continuing IDP inflows have depressed the labour market, causing livelihood stress for poor households, regardless of their displacement status.
- **Sweida**: prices have sharply increased in the past year, and shortages of fresh foods are reported. Terms of trade are low for casual labourers and herders. Households are engaging in more coping strategies as they adjust.

### 9.3.2 Food utilization

The nutrition situation in pre-crisis Syrian Arab Republic (from 2009) was poor with an estimated Global Acute Malnutrition (GAM) prevalence of 9.3 percent, a Severe Acute Malnutrition (SAM) prevalence of 2.3 percent, and a stunting prevalence of 23 percent, indicating a poor public health situation<sup>12</sup>. Micronutrient, vitamin A and iodine deficiencies were also recorded in the Syrian Arab Republic<sup>13</sup>.

Limited data is available to reflect the current situation in the Syrian Arab Republic. In partnership with the Ministry of Health (MoH) and UNICEF, a Rapid Nutrition Assessments (RNA) on IDP populations living in shelters in 13 governorates in the Syrian Arab Republic (except Raqqa) has conducted between March and July 2014. The result showed a Global Acute Malnutrition (GAM) rate of 7.2 percent, and a Severe Acute Malnutrition (SAM) rate of 2.3 percent, indicating a poor public health situation<sup>14</sup>. Three governorates (Hama, Hassakeh, and Deir Ezzor) appear to have GAM above 10 percent, whereas the other seven governorates (except Dara'a, As-Sweida and Lattakia) have GAM rates between 5 and 9 percent.

Challenges to food utilization include shortages of cooking gas, more limited availability of vegetables, dairy, eggs because of lack of electricity and refrigeration, reduced access to health services and a degradation of access to water. The loss of milling and baking capacity means that more households consume home-baked bread.

### 9.4 Estimate of assistance requirements

The Humanitarian Needs Overview (HNO) assessed that 9.8 million people were food insecure, of which 6.8 million were severely food-insecure. On the basis of the CFSAM exercise, the mission assesses that these estimates reflect the current high extent of food insecurity that prevails in the Syrian Arab Republic. Under current scenarios, WFP plans to assist some 4.25-4.5 million people with food assistance through 2015-2016. The 2015 HNO is being updated and will reflect an updated picture of food assistance needs for the food sector as a whole.

As of May 2015, PICC and WFP were implementing a comprehensive food security assessment for the Syrian Arab Republic based on food consumption and household coping indicators.

## 10. RECOMMENDATIONS

- Support cereal production by provision of agricultural inputs.
- Accept diversification by wheat farmers and assist with marketing non-wheat produce, but, at the same time, subsidize inputs for wheat production.
- Encourage and support the establishment of village-based private seed production and distribution centres.
- Emergency rehabilitation of damaged irrigation infrastructure.
- Establish small centres for milk collection and processing for local markets including prevention of diseases transmitted by raw milk to protect public health.
- Train livestock holders in home processing of milk for cheese, yoghurt and other dairy products in selected areas.

<sup>12</sup> Syrian Family Health Survey (2009).

<sup>13</sup> Syria nutrition sector strategy; MoH Surveillance data 2011;

[http://whqlibdoc.who.int/publications/2008/9789241596657\\_eng.pdf](http://whqlibdoc.who.int/publications/2008/9789241596657_eng.pdf); Syrian nutrition sector strategy (MOH, 1998).

- Increase support for backyard vegetable and poultry production through distribution of improved seed and chicks.
- Provide livestock vaccines and regular drugs.
- Where markets allow, expand the WFP voucher transfer program in order to support purchasing power of the most vulnerable while supporting local food markets. A dedicated market assessment would identify such locations; close monitoring of market functionality would be required considering the fluid state of prices and supply.
- Review needs on the basis of the in-depth food security analysis exercise in order to refine the estimates of food insecure populations on the basis of household's dietary diversity and coping strategies. The exercise would also allow continued improvement of targeting of assistance.
- Provide support to public or private milling and bakeries in conflict affected areas, for instance by providing fuel, yeast or subsidies.
- Prioritize food assistance for the besieged and conflict affected areas of Syria. Priority groups include IDPs, and poor households affected by the war's indirect consequences.
- Food security monitoring system should be set up in order to produce regular updates on food security in the country, with reference to agriculture, food prices and household outcome indicators.

## INDIVIDUAL GOVERNORATE REPORTS ON THE AGRICULTURAL SITUATION IN 2015

The following notes are based on information provided by MAAR enumerator teams who visited the governorates.

### Aleppo Governorate

The rains arrived on time and were well distributed. Total amounts were estimated to exceed the average by between 30 and 80 percent. With the good rains, and because of the high cost of fuel, farmers cut back on their irrigation with some irrigating their wheat only once or twice in May. Irrigation was also compromised by the fact that opposition groups cut off the water supply to much of the Government-controlled area, which constitutes about 30 percent of the whole of the governorate. Farmers in opposition-controlled areas however did have access to irrigation water.

Cereals were planted on time. The proportion of land under barley increased at the expense of land under wheat because barley, which requires less water and therefore less pumping of irrigation water, is cheaper to produce. The relative coverage of the main field crops was 30 percent wheat, 40 percent barley, 10 percent potatoes and vegetables. Other minor crops covered the remaining 20 percent. The area under cotton and maize was greatly reduced compared with pre-crisis years, and no sugar beet was grown.

Seed was scarce. Cereal producers either purchased their seed from the market or used retained seed from last year's harvest. Because of the shortage of seed, wheat producers reduced their seed rate from 400 kg/ha to 200 kg/ha. (400 kg/ha is an unusually high seed rate for wheat; the reduction to 200 kg/ha brings the seed rate down to a more usual level).

Fertilizer use was greatly reduced in response to scarcity and prohibitively high market prices. On the other hand it was reported that a majority of wheat producers used plant protection against yellow rust on their crop; however, sunn pest (*Eurygaster integriceps*, 'sona') was present on much of the crop and was not controlled. Crop protection was not used for barley. Weed control in crops was exacerbated by the favourable rains.

Mechanized farm operations were hampered by high fuel prices, poor maintenance of machinery, and, because of insecurity, difficulty in moving from place to place. Nevertheless, labour was available at a moderate cost.

The following cereal yields are expected:

Irrigated wheat	3.7 t/ha
Rainfed wheat	2.0 t/ha
Irrigated barley	2 t/ha
Rainfed barley	1 t/ha

Large numbers of olive and pistachio trees have been cut down for firewood because of the shortage of electricity and the high price of diesel.

Livestock numbers continue to fall. Cattle numbers are estimated to be down by 50-70 percent, sheep and goats by 40 to 50 percent, and commercial poultry by 90 percent; backyard poultry is thought to be down by 50 percent. Despite the fact that most livestock owners do not receive free veterinary services, there have been no significant outbreaks of animal disease, but the systems that used to be in place in surveillance, sampling and testing have collapsed (veterinary services and regulatory inspection), so reporting is also not likely. Feed is available at high prices and pastures are good, though often inaccessible because of insecurity.

### Hama Governorate (including Al Ghab)

Rainfall amounts and distribution were better than last year. However, the governorate's irrigation systems suffered from further damage to structures and theft of irrigation pumps.

Cultivation was hampered by access problems due either to insecurity or high transport costs. Ninety percent of cereal farmers were reported to have received seed from the Government, but individual allocations were insufficient. Fertilizers were used extensively but at low application rates. The availability of operational farm

machinery was down by about ten percent on last year, largely as a result of the shortage of spare parts, and the availability of irrigation pumps fell by approximately 25 percent. The cost of farm labour increased, prompting growers to reduce their cultivation of labour-intensive crops. Sixty percent of farmers used pesticides or fungicides at low rates, which were often of dubious origin. Rodents were a problem in some areas.

Irrigated and rainfed wheat are expected to return yields of 3.1 and 1.9 t/ha respectively, while irrigated and rainfed barley yields are expected to be 1.5 and 0.9 t/ha.

Numbers of livestock in the governorate increased as a result of an inward movement of rural populations from insecure areas. Livestock condition is generally good but the marketing of milk is problematic. Some 15 percent of the governorate's poultry units are still operational.

### **Hassakeh Governorate**

Hassakeh is Syria's main wheat-producing governorate accounting for up to 50 percent of national production. Rainfall this year was good in all districts. Amounts were close to the long-term average in the cereal areas and slightly above average in the *Badia*; distribution was excellent. There was little change since last year in the governorate's irrigation capacity which had already been greatly reduced since the beginning of the crisis. Planting was timely, with 20 percent planting in October, 60 percent in November and 20 percent in December.

Because of the perceived inadequate returns to wheat production caused by high production costs (up to SYP 55 000 or more per tonne) and a relatively low guaranteed selling price (SYP 61 000/t) many growers put a portion of their land under alternative crops, the most prevalent of which was coriander. Although this is the first year for most growers, and although marketing outlets are still unclear, some 50 000 ha were sown to coriander, indicating that this may become an increasing trend if the profitability of wheat production is not increased, either by lower input costs or a higher selling price. Only 43 percent of the planned wheat area was planted to wheat. Because of its lower production costs, barley was also sown on some of the land that would otherwise have been sown to wheat.

About 50 percent of farmers received certified seed from either the Government or FAO which provided mostly Sham 7 and Douma 1 wheat, as well as barley seed. Other farmers purchased seed at the market or used their own harvested from last year's crop. Out of a wheat seed requirement of 165 000 tonnes the Government was able to provide only 30 000 tonnes. Rainfed wheat was sown at a rate of about 200 kg/ha while irrigated wheat was sown at rates of between 300 and 400 kg/ha. These high seed rates were used to compensate for possibly poor germination in market-purchased or self-produced seed and to compensate for reduced germination resulting from harrowing in the seed rather than drilling it.

Only about 15 percent of farmers used any fertilizer, and much of this was liquid of unreliable analysis from unknown sources.

Farm mechanization is greatly reduced since 2011 but has not shown significant further reductions during the last 12 months. On the other hand, the cost of farm labour has increased by about 25 percent. The scarcity of farm labour has been exacerbated by the fact that cotton, the harvest of which used to attract labour into the governorate, has not been grown in Hassakeh for some years.

MAAR's Department of Plant Protection was able to provide only limited cover to cereals in Hassakeh. Some 14 000 ha of wheat were attacked by *Phyllopertha nazarina*. 1 600 of these were controlled by farmers using expensive market pesticides; other farmers ploughed their crop back in and planted an alternative crop, while some areas were saved by frost which killed the pest. Overall, however, there were substantial losses and yield reductions. Sunn pest (*Eurygaster spp*) affected 5 000 ha of wheat while a further 11 000 ha were affected by the corn ground beetle (*Zabrus tenebroides*); neither of these pests was controlled. Small areas of wheat were affected by yellow rust and root rot.

Yield expectations for irrigated and rainfed wheat are 2.7 and 0.7 t/ha respectively while those for irrigated and rainfed barley are 1.6 and 0.9 t/ha. However, it was estimated that, because of insecurity, up to 10 percent of farmers may not be able to harvest their crop.

The livestock population is thought to have fallen by 20 percent since last year as a result of smuggling out of the governorate to Turkey and Iraq where prices are higher than in Syria. Many of the smuggled sheep are unvaccinated and therefore pose a health threat to the neighbouring countries' flocks. The Kurdish-controlled section of the border with Turkey is quite well sealed but elsewhere the border is relatively porous. Animal

health in general is currently good (veterinary vaccines, albeit in quantities that could satisfy only 30-40 percent of the governorate's requirements, were brought in by air). Nevertheless, cases of FMD were reported in both cattle and sheep; other diseases reported include sheep and goat pox, enterotoxaemia, pasteurilla, brucellosis and anthrax.

Pasture in the *Badia* pasture is currently very good, but there is a shortage of feed. GOF reports a shortage of wheat bran.

### **Homs Governorate**

Rainfall was better than last year in amount and distribution. Irrigation was compromised by the fact that some of the supply dams were in insecure areas and some canals had been damaged during conflict. Despite the favourable rains, wheat and barley were sown late because of a general scarcity of seed at planting time; GOSM did provide some seed but the amounts were insufficient.

Fertilizers were available but at high prices. Most farmers in secure areas applied fertilizers to their wheat crop but at a greatly reduced rate (10 percent of the normal application rate) because of the high cost. Likewise, the use of crop protection materials was low because of their high prices; on the other hand, there were no reports of significant instances of crop pests or diseases.

Mechanized farm operations were compromised by the high cost of fuel and a shortage of spare parts.

Fruit trees were damaged by frost in January and received another setback in the spring with unseasonably cold weather.

Cereal production this year is expected to be better than last, with the following yields anticipated:

Irrigated wheat	2.6 t/ha
Rainfed wheat	0.9 t/ha
Irrigated barley	1.2 t/ha
Rainfed barley	0.6 t/ha

There was a significant movement of livestock herds from insecure both inside and outside Homs Governorate to secure areas, which put extra pressure on pastures and feed. Only 20 - 30 percent of pre-crisis poultry units are still functioning.

### **Deir Ezzor Governorate**

Rainfall this year was very good and well above the long-term average, allowing a reduction in the frequency of irrigation and hence a reduction in pumping costs. Irrigation was adversely affected by the high price of fuel and spare parts and by damage to main and secondary canals.

Under normal circumstances, the crops grown in Deir Ezzor include wheat, barley, maize, cotton and vegetables. This year the cereals were sown on time; the relative area under barley increased at the expense of wheat because of its greater tolerance of dry conditions. Nevertheless the total cropped area was severely limited by insecurity.

Seed was in relatively short supply. Farmers increased their seed rates in order to compensate for poor germination rates in seed purchased from the market. Certified wheat seed distributed by GOSM included the varieties Sham 6, Sham 7 and Bohooth. Highly priced fertilizer of unknown provenance and often of unreliable analysis was available in the market. Limited amounts of pesticide were available but no significant crop diseases or pests were reported. Weeds however were often plentiful. The cost of tillage and other agricultural operations increased in response to high prices for fuel and spare parts. Farm labour was available because of the limited number of alternative job opportunities; it was, however, expensive because of insecurity considerations.

The average yield of irrigated wheat this year is expected to be 3.1 t/ha, and of irrigated barley 1.5 t/ha.

Livestock numbers have fallen over the last 12 months in areas affected by military conflict, but livestock condition is reported to be good. The quality of veterinary support is unreliable; vaccinations are administered and artificial insemination carried out but often without qualified supervision. Pasture condition is very good this year, and feed is available but at a high price.

## **Sweida Governorate**

Rainfall this year was good in all agro-ecological (AEZs) of Sweida Governorate. There is only a very small area of irrigated land in Sweida. The main crops are rainfed wheat and barley, lentils, apples, grapes and olives.

Cereal planting was on time. The barley area increased slightly at the expense of wheat. The Government distributed seed of Sham 3 and Sham 5 to about 70 percent of wheat growers. About 30 percent of wheat growers either bought their seed at the market or used their own seed from last year's harvest. Both wheat and barley were sown at lower-than-usual seed rates. Very little fertilizer was used. Lentils occupied about 30 000 ha.

Mechanized farm operations were hampered by the high cost of fuel. It cost between SYP 15 000 and SYP 20 000 to cultivate one hectare. Farm labour was available but at a high price of between SYP 1 500 and SYP 2 200/day.

Sunn pest (*Eurygaster* sp) on wheat was controlled by the Government, and American bollworm was controlled by farmers. Pests of fruit trees were controlled at the growers' expense.

Both wheat and barley suffered set-backs from frost in January and April.

Average wheat yields are expected to be low at about 300 kg/ha, and barley yields 500 kg/ha. Average lentil yields are expected to be about 300 kg/ha.

Security within most of Sweida Governorate is said to be good but surrounding areas are insecure.

Livestock numbers have fallen since last year and the condition of animals is poor. Veterinary services and vaccinations are available only in secure areas. Many pastures are inaccessible because of insecurity.

## **Lattakia Governorate**

This year's rainfall in Lattakia was above average and well distributed.

From an economic perspective, the governorate's main agricultural activity is greenhouse production with drip irrigation; there are approximately 12 000 greenhouses (plastic tunnels of 400 square metres each) in the governorate mainly producing tomatoes and cucumbers. However, in terms of area, fruit trees (mainly olives and citrus) are most important covering about 75 percent of the governorate's agricultural area. The principal field crops include wheat, barley, lentils, garlic, peas and chickpeas. No change has been observed in the governorate's established cropping pattern in recent years.

NPK fertilizer and pesticides are available in the market but at high prices. Much emphasis is placed on the biological control of pests in the greenhouses, especially whitefly. Farm machinery is available although there have been instances of theft; with high diesel prices, agricultural operations are expensive. Farm labour is scarce, partly because more attractive and better-paid jobs can be found in the civil service sector. A farm labourer gets paid SYP 1 000 to SYP 1 500.

Peacock spot (*Spilocaea oleaginea*) was reported on olives. Crops received a setback in January and again in February when they were hit by frost. Strong winds also damaged trees.

Average yields of wheat and barley are expected to be 1.0 and 0.6 t/ha respectively. All cereals are rainfed. Lentils are expected to yield just under 1 t/ha.

The condition of livestock, which is relatively unimportant in Lattakia, is good. Veterinary support is available but the supply of animal feed is limited.

## **Quneitra Governorate**

Rainfall this year was above the long-term average of 748 mm/yr, but irrigation was seriously hampered by the high price of fuel.

Crops include wheat, barley, broad beans, lentils, chickpeas and vegetables. Planting of cereals was on time but the area was smaller than last year due to the difficulty of obtaining seed and fertilizer. Some farmers used seed from their harvest last year while others purchased it in the market. Seed rates for wheat and

barley were general around 300 kg/ha in order to compensate for poor germination. The main wheat varieties grown were Sham 3, Sham 5 and Hourani, while most of the barley was Arabic White. Only organic fertilizers were used, and pesticide use was limited by high prices. Likewise, farm operations using machinery were expensive, reflecting the high price of fuel compared with last year. Farm labour was available but at a cost that reflected the general increase in costs.

Sunn pest (*Eurygaster sp*) and wheat rust were not a problem for cereals this year. Olive trees were adversely affected by a January snow storm and again in April by unseasonal frost.

The average yield expectation for irrigated wheat is 2.1 t/ha, and for rainfed wheat 0.6 t/ha. Barley (all rainfed) is expected to yield, on average, 1 t/ha. Insecurity, which has already prevented many farmers from inspecting their crop, may prevent some from harvesting.

Livestock is generally in good condition and veterinary support is effective; all vaccinations were completed on time. GOSM provided livestock feed but amounts were inadequate; prices for feed in the market were high. Pasture is better than last year but insecurity has rendered many areas inaccessible. Most poultry units in the governorate have ceased to function because of insecurity.

### **Tartous Governorate**

Rainfall was good and above average.

In 2014 there was a reduction in apple production in favour of olive in the highland areas, and a reduction in olive production in the lowlands in favour of irrigated field crops, because of the diseases that the olive trees are suffering from, (Peacock eye, and Alamaaomh).

Areas of main crops:

The wheat cultivated area for 2015 reached 10 894 ha, barley 569 ha, winter crops 1 801 ha, potato 2 235 ha, olive 75 535 ha, citrus 9 299 ha, the total of invested greenhouses 124 396.

Inputs:

Seed: local wheat 220 kg/ha, improved wheat (durum wheat and soft wheat, Sham 10, Duma 1, and four local varieties) 250 kg/ha.

Fertilizers (N, P and K) have not been available in sufficient quantities in recent years.

Availability and cost of mechanization:

The cost of one hectare SYP 50 000 to SYP 60 000, preparing the land (deep tillage, surface tillage, planning, softening), the estimated cost of harvesting one hectare of wheat by mechanic harvester is SYP 25 000 to SYP 30 000.

Casual farm labour costs SYP 1 500/day, while greenhouse technicians are paid SYP 2 500/day, and the transportation SYP 3 000/t/15 km.

Olive trees are suffering from peacock spot (*Spilocaea oleaginea*), and olive tuberculosis (*Pseudomonas syringae*).

Apple: Apple scab.

Citrus: Fruit fly - Citrus bug.

Crops: Vole - Herb Flower Nile.

Protected planting: spiders and fruit worms.

Yield expectations:

- Irrigated wheat and barley: 2.1 and 1.2 t/ha. Rainfed wheat and barley: 1.3 and 0.6 t/ha.
- Production of wheat for 2014, 17000 tonnes, potato 56 000 tonnes, olive 39 000 tonnes, citrus 230 000 tonnes, apple 21 000 tonnes, strawberry 11 000 tonnes, tobacco 5 000 tonnes.
- The estimated production of wheat for this year 19 000 tonnes.

Livestock:

- Numbers: cows 35 283, sheep 87 474, goats 1 581 (540 of it Shami, and 13 041 Jabali i.e. mountain).
- Number of chicken farms: 1 832, and the number of broilers 16 900 000.
- Number of bee hives: 43 186.
- All the livestock and bee breeder are suffering from the breeding high prices.

- Feed: the feed are imported and its prices are very high because of the traders monopolism, the prices of poultry feed, SYP 130 000/t, the cows feed SYP 47 000/t.
- Pasture condition: good due the good rainfall of this year.

### **Rural Damascus Governorate**

Rainfall, which started in November and continued till April, was above average, better than last year, and well distributed. There were several days of frost in January and again in April. There was less irrigation this year, mainly because of the shortages and high price of fuel for pumping; this was partly compensated, however, by good rainfall. The irrigated area was estimated to be about 14 percent less than last year.

About 30 percent of cereal farmers received their seed from the Government; 40 percent purchased their seed from the market, and the remainder either received seed distributed by FAO or used seed retained from their previous harvest. The main wheat variety grown was Sham 3 while barley seed was local. FAO also distributed vegetable seed. The price of imported tomato seed was reported to be very high. Fertilizer was not readily available and its cost was high. However, many farmers were reported to have used herbicides and pesticides. Farm labour was available but it was more expensive than last year.

Field access was difficult in several areas because of both insecurity and the shortage and high price of fuel with the result that some land remained uncultivated. Some sabotage and theft of machinery was reported.

No significant crop pests or diseases were reported, but vegetables and fruit trees were adversely affected by frost in January and again in April.

At 3.7 t/ha and 2.0 t/ha, the average yields of irrigated wheat and barley were better this year than last. Rainfed wheat and rainfed barley are expected to yield 1.1 and 0.8 t/ha.

Cattle, sheep and goat numbers are reckoned to be down on last year, with many owners selling off their stock because of the high price of feed. On the other hand, the number of poultry units has increased by about 50 percent from last year. In addition to seed distributions, FAO provided several households with laying hens. Livestock condition is good, with no significant health issues, and veterinary support is effective. The pasture this year is good but frequently inaccessible.

### **Idleb Governorate**

Rainfall amounts this year were double those of last year, and distribution was good. Irrigation was reduced to its lowest on record in recent years, mainly because of high fuel and other costs.

Farm input costs were as follows:

<b>Item</b>	<b>SYP</b>
Wheat seed, 50 kg	2 500
Barley seed, 50 kg	1 500
Urea, 50 kg	4 750 - 5 000
Farm labour per day	1 000
Ploughing by tractor, per dunum	800
Diesel, 1 litre	180 – 200
Petrol, 1 litre	375
Livestock feed, 50 kg	3 500 - 4 000

No crop diseases or pests were reported.

Irrigated wheat is expected to yield an average of 4.0 t/ha, and rainfed wheat 2.3 t/ha. Average yields of irrigated and rainfed barley are expected to be 2.0 and 1.1 t/ha respectively.

Livestock production was adversely affected by high feed prices, limited access to pasture and low vaccination rates.

### **Raqqa Governorate**

Rainfall was above average and well distributed. Irrigation was greatly reduced for various reasons; the high cost of pumping from Assad Lake, the Euphrates River and deep wells; the malfunctioning and high running

costs of generators; high fuel and electricity costs; conflict-related damage to irrigation pumps; and intentional cutting-off of electricity supplies by anti-Government groups. It was estimated that only about 30 percent of wells were used during the season.

Cereals were sown on time but in some areas insecurity prevented sowing. Many growers shifted from wheat to barley because of its cheaper production requirements. Cotton, however, was planted late because of unusually cold weather at planting time; the area under cotton fell this year (now 21 700 ha, down 40 percent on its pre-crisis levels) but its production is expected to be higher than last year. A recent development is the planting of cumin, 3 500 ha of which were grown this year. Other major crops in the governorate included maize and vegetables. Sugar beet used to be produced in Raqqa but there has been no production since 2013.

Seed was available but at a high price, uncertified, and of unreliable quality. Consequently wheat producers reduced their seed rate from 400 kg/ha to 200 kg/ha. (400 kg/ha is an unusually high seed rate for wheat; the reduction to 200 kg/ha brings the seed rate down to a more usual level.) The governorate received some wheat seed from FAO but, because of the security situation it did not receive any seed from the Governorate. Fertilizers were available in the market but at very high prices, prompting an estimated 60 percent of farmers to apply seed at three-quarters of the recommended rate. Plant protection materials likewise were very expensive and often of poor quality. Labour was in short supply as a result of population displacement.

On the wheat crop some limited outbreaks of sunn bug and rust were reported. Hailstorms in April affected the barley and vegetable crops.

A good average yield of 3.9 t/ha is expected for irrigated wheat, while rainfed wheat is expected to yield 1.6 t/ha. Irrigated and rainfed barley yields are expected to be 1.5 and 0.6 t/ha, respectively.

### **Dara'a Governorate**

Rainfall this year was timely, above average in amount, and well distributed.

Winter crops include wheat, barley and broad beans. Tomatoes, potatoes, vegetables and lentils are grown in the summer. The area under wheat, barley and lentils increased this year compared with last year.

Wheat seed was mostly obtained either from GOSM or from farmers' harvest of last year. Wheat varieties included Sham 3 and Sham 5, while Furat 2 and Arabic White were the main barley varieties. Liquid fertilizers were available in the market and were used only on irrigated fields. Urea was not available. The availability of mechanization for farm operations was slightly reduced this year as a result of theft of machinery. Farm labour was available at a cost of SYP 200/hour. With regard to security, the governorate centre and Ezra'a and Al Sanamien areas are safe but the other villages are not.

Small outbreaks of sunn pest (*Eurygaster sp*) were controlled by the Government. Wheat rust was observed but its presence was very limited. Two days of frost in April had an adverse effect on cereal production.

Average yield expectations for irrigated wheat are 4.0 t/ha and for rainfed wheat 1.1 t/ha. Rainfed barley is expected to yield 0.6 t/ha.

Numbers of cattle, sheep and goats in Dara'a have fallen in the last 12 months as owners have been selling off their stock to avoid theft and mortality; the Government provided livestock vaccinations but most veterinary drugs had to be obtained from the market. Pasture is good but much is inaccessible. Some animal feed was provided by the Government; the price of feed in the market was high.