



Syria's Food Security: From Self-Sufficiency to Hunger as a Weapon

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Self-sufficiency in food production has been a pillar of the Syrian economy from the days of the agrarian reform launched in 1958 until the neoliberal economic opening of the country in mid-2000s. After Turkey, Syria had the most productive agricultural sector of the Middle East. Agriculture was highly subsidised and counted for almost one-fourth of the gross domestic product (27 per cent of GDP in 2001, 18 per cent of GDP in 2010), employing 17 per cent of the working population (Wind and Dahi 2014; FAO/WFP 2016). Syria became self-sufficient in wheat production in 1991, thanks not only to its state irrigation projects but also to the multiplication of private wells, which were illegal wells, for the most part. In the Jazira, 80 per cent of irrigation depended on underground wells and rivers. The overuse of underground water resources led to a depletion of the water table and the death of historic rivers such as the Balikh, and the Khabour River which dried up in 2001 (Pecad 2008).

Syria was hit by a severe drought in 2006–2010. For the first time in its history, the country had to receive international aid and food supplies for one million farmers, herders, and their families. The drought accentuated the destruction of the agrarian sector, already weakened by the dismantling of the socialist structure. Even before the drought, between 2002

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and 2008, Syria had lost 40 per cent of its agricultural workforce, because of mismanagement of water and land resources (Aita 2010). This was partly due to the implementation of the new agrarian Law 56 of 2004, which allowed landowners to terminate farming contracts. This law was highly contested as it is a highly capitalist, anti-socialist one that favoured landowners and thus constituted an element of agrarian counter-reform.

Since the war in Syria started in 2011, especially after the emergence of the Islamic State in 2013, food and water have become weapons and leverage to political change for the Bashar al-Asad government,¹ the Islamic State, and other armed groups. Access to food has been the main problem faced by the majority of Syrians, both in the state-controlled areas because of inflation and scarcity and within the besieged areas (19 in 2015), where people have been victims of food scarcity and war profiteers. UN Humanitarian food assistance has been mainly conveyed by the government until 2014, while Gulf charities have reached opposition-held areas from Turkey. People under the Islamic State are under awful pressure as wheat is lacking and smugglers cannot enter Raqqa or Deir Ezzor. Starvation has been a new threat in Syria (in Madaya and partially ISIS-controlled Yarmouk).

This chapter succinctly reviews the history of agriculture in Syria from the late 1950s until the present day (end 2016). It is structured in three sections. The first section discusses the government's historical aim of achieving self-sufficiency in food production starting in the late 1950s, showing that agrarian reform was later developed to serve the interests of the middle and large farmers. The second section briefly addresses the agrarian counter-reforms in 2000s and the impact of the drought in late 2000s. The third section presents how food has become a weapon since the war started in 2011. Looking at some of the besieged cities back in 2015 and 2016, it places the emphasis on survival and coping strategies.

THE SOCIALIST OBJECTIVE OF PROMOTING FOOD SELF-SUFFICIENCY

In 1958, during the United Arab Republic, Syria adopted Gamal Abdel Nasser's agrarian reform law, followed by additional legislation in 1963 and 1966. These laws offered the state the opportunity to manage rationally agricultural resources that had previously been plundered by absentee landowners. State farms were created and major irrigation projects implemented in order to attain self-sufficiency. Five-year plans had the

objective to reach self-sufficiency. Food self-sufficiency was an aim for all socialist states in order to counter the West and to build their own legitimacy among former poor peasants and sharecroppers. The successive governments after March 1963 Ba'athist revolution used three interventionist methods to reach this aim: land reclamation (Euphrates Project), seeds improvement (of the Shami variety created by the International Center for Agricultural Research in Dry Areas, ICARDA, established in Aleppo in 1977²), and subsidies to fertilisers and fuel. However, in the context of economic opening which followed in the late 1980s, the concept of self-sufficiency changed in the Eighth Five-Year Plan (1996–2000) to food security, which focused on producing goods of relative advantage and exporting surpluses in order to cover the importation of goods not locally produced (El Hindi 2011: 46).

Self-Sufficiency Through Subsidies (A Costly Policy)

Agriculture was planned throughout Syria's history in order to reach self-sufficiency and boost exportation. Production was highly subsidised. The government subsidised all inputs (seeds, fertilisers, and fuel), was the sole buyer of wheat (except for high-quality wheat that were sold to private mills), and controlled all marketing channels during Syria's development trajectory. The General Establishment for Cereal Processing and Trade (HOBOOB) set the national price for wheat and managed 140 collection centres in the country through the General Company for Silos, Feed Mills and Seed Plants, two-thirds being in the Jazira. The storage capacity for crops was ten million tonnes, enough for two years consumption. It went down to four million tonnes, or ten months' worth of consumption. Two state-run companies were responsible for flour milling and baking: the General Company for Mills (GCM) and the General Company for Baking. In 2011, the government owned 26 mills and contracted 35 private millers (Ahmed 2016).

Table 11.1 shows the trend in production and yield of both wheat and barley during pre-conflict Syria. Yields of 2.5 tonnes of wheat per hectare were achieved in 2005 through the use of fertilisers, subsidised by the government. Additionally, a donum of wheat needed 50 kg of fertilisers (El Dahan 2016).³

In 2007, a farmer used to be paid by the government 11,300 Syrian Pound (SP) per tonne of durum wheat (Lançon 2011: 33), which was higher than wheat world prices. This subsidy to wheat accounted for

Table 11.1 Wheat and Barley production, surface and yield (1970–2011)

	1970	1980	1990	2000	2005	2010	2011
Wheat							
Surface thousands ha	1341	1449	1341	1679	1904	1599	1521
Production thousand tonnes	625	2226	2070	3106	4669	3083	3858
Yield in t/ha	0.5	1.5	1.5	1.9	2.5	1.9	2.5
Barley							
Surface thousands ha	1126	1210	2729	1317	1327	1527	1293
Production in thousand tonnes	235	1588	846	212	767	680	667
Yield in t/ha	0.2	1.3	0.3	0.2	0.5	0.4	0.5

Source: CBS 2013, *Agricultural Statistics, Time series 1970, 1980, 1990, 2000–2011*

nearly two per cent of GDP prior to 2011 (Ahmed 2016). As a result, bread was sold at a subsidised low price to the citizens, at 15 SP per bundle of 1.1 kg. In 2007, the government decided to reduce the share of durum wheat flour from 50 per cent to 25 per cent in the subsidised integrated flour for bread making. It had a direct impact on domestic markets. As a consequence durum wheat consumption declined from 120 kg per capita in 2001 to 80 kg in 2007 (Lançon 2011: 26).

Nearly four million tonnes of wheat used to be produced yearly by Syria before the war. A total of 2.5 million were for internal consumption and 1.5 million tonnes were exported. Nearly half of the exportations were directed to northern African country members of the Great Arab Free Trade Agreement (GAFTA) (Algeria and Tunisia, where durum wheat is used for the production of semolina), a third to Italy (for the production of pasta), and the rest to neighbouring countries (Lançon 2011: 22). Other agricultural exports included cotton, sugar (over 150,000 tonnes in 2010), tomatoes (627,000 tonnes), potatoes (100,000 tonnes), fruit, olive oil, livestock, meat, and eggs.

Private Sector Production and Market

The public General Establishment for Fodder distributed minimum fodder rations. The private sector was allowed to trade in fodder both at home and abroad only after 1990 (El Hindi 2011). “The increasing soft wheat and durum production allowed the emergence of a private wheat based industry in Syria. Direct linkages between farmers and private mills are developing but remain marginal” (Lançon 2011: 29).

In 2010, agriculture contributed between 20 and 25 per cent of the country's GDP and was the main source of employment and income for 47 per cent of the population (MAAR 2010). In 2011, over 1.5 million hectares were cultivated with wheat and 1.3 million hectares with barley (Table 11.1). Winter wheat and barley were planted in December and January, for harvest in mid-May.

Syria's Bread Basket: The Jazira Region

Two-thirds of Syria's cereals (or three million tonnes) were produced in the Jazira region before 2011. The Jazira, a former pastoral area for nomadic and semi-nomadic tribes between the Euphrates and the Tigris, became the country's pioneering agricultural front in the 1950s. It is in this region that the great Euphrates and Khabour Project was implemented in the 1970s and where the main national hydrocarbon reserves were exploited after 1985. Before the conflict, the Jazira was a strategic region for Syria as it produced three-quarter of its hydrocarbons. Its population made up 17 per cent of Syria's overall population. However, it was also the region with the highest proportion of poor and the highest illiteracy rate. The Jazira hosted 58 per cent of Syria's poor population in 2004. This figure increased after the 2006 drought: the De Schutter report stated that poverty reached up to 80 per cent in 2010 (UNGA 2011).

This strategic zone was heavily controlled by successive Ba'athist governments that relied on medium-sized landowners from the semi-nomadic tribes of the valleys of the Euphrates, the Balikh, and the Khabour in order to carry out their development objectives (Batatu 1999). The 1958 land reform was only partially implemented in the North-East of Syria. Its limited application in the main zone of Syria's latifundia was due to technical obstacles—the absence of a land register, lack of staff, and the division of land between heirs—as well as political reasons (Petran 1972: 183). After 1963, the Ba'ath regime adopted a pragmatic policy towards the Jazira which consisted of promoting the emergence of a class of middle-sized tribal landowners who were loyal supporters of the party, while allowing the “feudal landowners” to keep the basis of their wealth.⁴ In the middle valley of the Euphrates, large-scale landowners managed to retain up to 55 hectares of the most fertile land, located all along the valley, while leaving the semi-arid plateau lands to be expropriated and distributed.

Water Mismanagement

In the 1950s, Syria had more than eight million hectares of arable land. But because of improper irrigation techniques, huge surfaces have been salinised (in the Jazira). The irrigated area in Syria amounted to 1210 thousand hectares in 2000, which consumed 12 billion cubic metres of water with an average use of 10,000 cubic metres per hectare per year. It increased in 2004 to more than 1430 thousand hectares. Yet the area irrigated by modern techniques (sprinkler and drip) is two per cent of the total irrigated area in 2000 (Khaddam 2011: 63).

Much has been written about the devastating consequences the production of cotton had on the water reserves of the country (Khaddam 2011). The policy of high subsidisation of the cotton production consumed up to one-third of the country's water resources, salinised the soils because of the inefficient drainage system, and used considerable amounts of fertilisers. As mentioned, Syria became self-sufficient in wheat in 1991, thanks not only to its state irrigation projects but also to the multiplication of private wells. The number of private wells was estimated to have increased from around 135,089 in 1999 to over 213,335 in 2007⁵ (NAPC 2010). Eighty per cent of irrigation in the Jazira depends on underground wells and rivers (94 per cent in the Hasakah governorate, 75 per cent in the Deir Ezzor governorate, and 50 per cent in the Raqqa governorate where the Euphrates Project was implemented with all its dams and canals). In 2005, due to groundwater depletion, a new law was issued forbidding new well drilling but it was not enforced. In 2007, Syria consumed 19.2 billion cubic metres of water which was 3.5 billion more than the amount of water replenished naturally, with the difference coming from groundwater and reservoirs, according to the Ministry of Irrigation.

The overuse of underground water resources led to a depletion of the water table and the death of historic rivers such as the Balikh, which dried up in middle of the 1990s, and the Khabour River which dried up in 2001 (Pecad 2008). From 60 cubic metres per second its flow decreased to zero and agriculture was carried on with 6 cubic metres per second of underground water. As a consequence of water table depletion, in 2008, some farmers preferred to rent fully vegetated irrigated wheat fields for the grazing of sheep at the high cost of \$15 per donum, instead of harvesting them (Pecad 2008).

AGRARIAN COUNTER-REFORMS AND THE DROUGHT EFFECTS IN LATE 2000s

Agrarian Relations: Law 56 of 2004

Between 2002 and 2008, Syria lost 40 per cent of its agricultural workforce, which dropped from 1.4 million to 800,000 (Aita 2010). Although workforce statistics had in the past shown wide fluctuations, in this case it appears to have partly been due to mismanagement of water and land resources and partly because of a new agrarian relation law. Promulgated on 29 December 2004, Law 56 allowed landowners to terminate, after three years, all tenancy contracts and replace them with temporary contracts. Applied as of December 2007, this law resulted in the expulsion of hundreds of tenants and workers, especially on the coast in Tartous and Latakia (Sarkis Fernández 2011).

In order to increase investment in the agricultural sector, landowners received the right to terminate tenants' contracts and expel them from the land they had been working on. The aim of the law was to "reach a more efficient agriculture for the wealth of the nation and better economic and social relations (*bi hadaf al istithmar al ardh bi sura saliha li tanmia al tharwa al qawmia wa iqama 'alaqat iqtissadia wa ijtimai'ia 'adila*)" (paragraph 2, Law 56 of 2004). This complex law, containing 167 paragraphs, allowed landowners to terminate any contract, in exchange for meagre compensation, calculated with reference to the number of years tenants had spent working the land. According to paragraph 106, indemnities were calculated between 20 and 40 per cent of the land value (at 2 per cent of land value per years worked). Paragraphs 96 and 163 were contested. Paragraph 96 stipulates that the contract must be on paper and signed by a signature or a fingerprint, while paragraph 163 allows the cancellation of the contract without compensation if it was an oral contract. Most of the work in the greenhouses (where the displaced as the result of the drought coming from the Jazira had sought work) was based on informal oral contracts, *bissa*, which gave workers 20 per cent of the production's sales price (Sarkis Fernández 2011: 155).

Between 2006 and 2010, the total workers employed in the Jazira in agriculture dropped by 20 per cent, from 274,475 to 221,440, whilst in the Hasakah governorate, this drop was 30 per cent (from 110,335 to 77,547) (CBS 2011). These were striking drops as the demographic growth rate was high during that period. Another consequence of Law 56

was the increasing land speculation on agricultural land located at the edges of villages and cities. On the coast, near Banyas, peasants were expelled from the land they had built their houses on, planted trees on, and drilled wells: the land was sold at 20,000 to 30,000 SP per square metre. The fear was that this law would have the same consequences as Law 96 of 1992 in Egypt, which led to the expulsion of elderly and women farmers and accelerated the rural exodus to the cities (Bush 2002).

The ensuing protests were so big, as the communist party's online petitions describe, pushing President Bashar al-Asad to promulgate an amendment to Law 56 in 2006, allowing farmers to give oral proof of their former work, such as neighbours' testimonies. But this did not change the spirit of the law to allow landowners to expel farmers as they wished (Ababsa 2011, 2015).

The Effects of the Drought on Production and Livelihoods (2006–2010)

The years 2007–2009 were terribly dry years in the Middle East. Syria had to receive international aid and food supply for one million peasants living in the North Eastern provinces of Raqqa, Hasakah, and Deir Ezzor (the Jazira), the poorest region in Syria. Raqqa, Deir Ezzor, and Hasakah governorates accounted for 80 per cent of the country's total irrigated wheat acreage, or 680,000 hectares, producing in a good year (such as 2003–2004) roughly 2.7 million tonnes of irrigated wheat and 0.8 million tonnes of rainfed barley⁶ (Pecad 2008). But in 2008 the production fell to 1.3 million tonnes, with no production in the Badia. The country's emergency cereals reserves had been used, but were not sufficient to cope with all the population's needs. According to the FAO Drought Appeal of 2008, up to 75 per cent of the Jazira farmers suffered total crop failure during the 2007–2008 planting season (FAO 2008). Wheat and barley yields dropped by 47 and 67 per cent, respectively, compared to the previous year during the same period. In the non-irrigated areas, production dropped by 82 per cent, and the barley harvest failed entirely.

In the 2008 and 2009 drought crisis, precipitation was reduced to a third of the normal amount. Many herders had to sell their livestock at 60 per cent below cost. As the fodder prices rose in January 2008 by 75 per cent, the flocks were reduced by a 50 per cent increase in animal mortality and a 70 per cent reduction in fertility rates (FAO 2008). Small farmers (less than 10 donums) and herders (less than 50 heads) were already vulnerable as their livelihoods depended on agriculture (Table 11.2).

Table 11.2 The evolution of cereals and legumes production 2004–2008

Cereals	2004	2006	2008
Wheat	4,537,000 t	4,931,500 t	2,139,000 t
Barley	527,200 t	1,202,400 t	261,000 t
Maize	210,200 t	159,000 t	281,300 t
<i>Pulses</i>			
Lentils	125,300 t	180,700 t	34,100 t
Chick peas	45,300 t	51,900 t	27,100 t
Dry broad beans	35,800 t	30,600 t	38,100 t

Source: Agriculture Yearbook 2009, table 14/4, www.cbssyr.org/yearbook/2009/chapter4-EN.htm

Tens of thousands of farmers fled to main cities' suburbs in search for informal jobs. In the Jazira, the source of two-thirds of Syria's cereals and cotton production, the consequences were dramatic. According to a report by the International Institute for Sustainable Development, between 160 and 220 villages were abandoned due to well dryness and harsh wind-blown sand that invaded the houses (Brown and Crawford 2009, DIS 2010). About 300,000 families were driven to Damascus, Aleppo, and other cities (OCHA 2009). The government launched an emergency programme in 2009 to reduce the consequences of the drought, but only a third of the requested \$43 million dollars necessary were donated by the international community. As a consequence, the World Food Programme had to reduce food distribution to 200,000 persons in 2009, compared to 300,000 in 2008 (IRIN 2010).

The drought's consequences were exacerbated by the rise in fodder prices worldwide and by the government's decision to stop subsidising fuel in 2008. In January 2008, bread and fodder prices increased by 75 per cent. Fuel prices rose by 257 per cent (from 7 to 25 SP/litre). This had a strong impact on middle-sized farmers using motor pumps to extract water and run tractors. The situation got even worse for "middle" shepherds who used to drive water tanks to their flocks in order to graze anywhere in the Badia. The government created an Agriculture Support Fund to compensate for this price rise and allowed international agencies to distribute food to the poorest of the victims. Small herders and farmers had no choice but to sell all their meagre material and move to the cities looking for low-paid jobs in the informal sector and in plastic greenhouses in Dara'a region and the coast.

Worse than that, vegetable and fruit growers in dry northern Syria used polluted river water to irrigate their crops, which caused outbreaks of food poisoning among consumers. Experts pointed out that the problem stemmed from sewage and chemicals (chromium and lead) that were allowed to reach rivers in rural areas near Aleppo, Latakia, and Raqqa (ENS 2010).

FOOD AS A WEAPON AND HUNGER POLICY IN THE TIME OF WAR (2011–2016)

During the civil war, more than 400,000 Syrians have been killed in fighting and bombing. A total of 4.8 million Syrians have crossed the borders to find refuge in neighbouring countries, and 9.4 million Syrians are in need of food assistance (FAO 2016). The agriculture sector has entered a vicious cycle, with farmers' rural migration to cities, destruction of the irrigation facilities, and increasing food needs. Farmers are lacking seeds and fuel and basic supplies to keep their flocks healthy. Wheat is used as a weapon to win allegiances. Bakeries are targeted. In besieged areas, between 400,000 and 1 million persons are victims of war profiteers. Some managed to organise food production, storage, and equal distribution. Until 2014, the UN Food Assistance was shipped to Latakia and distributed by the Syrian government. On 14 July 2014, the UN Security Council unanimously adopted UNSCR 2165 (UN News Centre 2014), authorising UN cross-border and cross-line delivery of humanitarian aid to conflict-affected populations without the government's approval.

Syria's Agricultural Geography During War

The new geography of Syria at war has also been a geography of food insecurity. The inhabitants of the region held by the government (Damascus, Latakia, Tartous, Sweida, Salamia) where the fighting is less intense have functional markets. Until July 2014 they were receiving most of UN World Food Programme's food assistance, shipped through Latakia. This distribution of food parcels along with the subvention of the bread at low price has attracted civilians from the opposition-held areas, as they were not able to afford the high food prices (Hudson 2014).

While wheat is produced in North and Northeast of Syria, the greatest demand is concentrated in the Western governorates of Damascus, Homs, and Hama. Syria's strategic wheat reserves amounted to 3.5 million

tonnes. The majority of the 140 silos are in the Jazira, under Islamic State control. Only trained government employees have monitored and managed the storage, as it is a delicate task. Currently, only 22 of the 140 storage silos are operating (El Dahan 2016).

The main challenge for ensuring food security during times of war is not only to produce wheat in the context of fertiliser reduction, fuel scarcity, and fighting but also to transport it to markets. The areas under Islamic State's control are suffering greatly, especially Deir Ezzor where the government forces have been under siege for years. Although wheat is produced there, some of it is sold to Iraq and Turkey for double the price (El Dahan 2016).

Idlib, rural Aleppo, and Hasakah are witnessing the interruption of food supply to local markets due to periodic clashes between armed groups (FAO/WFP 2016). The main regions of agricultural production are at war: the Jazira (wheat), the Ghouta, the Al Ghab plain (vegetables), and Idlib (olives, wheat). In the Jazira, the Raqqa governorate is still producing, but under great constraints due to bombing and damaged irrigation infrastructure. North of Hama, fields of standing crops have been burned during fighting, turning a large part of Hama's population into being food insecure (FAO/WFP 2016). Less than half the agricultural land has been harvested in 2014/2015 and 2015/2016 cropping seasons, due to security reasons and lack of fuel and irrigation (FAO/WFP 2016).

The farmland and orchards of the Syrian coast and of Sweida have not been affected and continue to export fruit and vegetables to Iraq, Jordan, and Lebanon. Sweida has become the main agro-industry centre in the south of Syria, since the Jordanian borders closed due to fighting in Dara'a (Carnegie 2015).

Several UN agencies and the Crop and Food Security Assessment Mission (CFSAM) have estimated wheat production, showing better production in 2015, but with a deficit of nearly one million tonnes of wheat. But the major problem is transporting the crop from the Jazira and the North of the country to the consumption basins of Damascus and Aleppo. Roads are dangerous, need toll payments to opposition forces or to the Islamic State, and the transportation costs are therefore very high. Because of the war and the rise of the Islamic State, the major internal trade roads for wheat and barley have been cut between the Jazira and Aleppo (from Hasakah, Deir Ezzor, and Raqqa) and from Deir Ezzor to Damascus through Palmyra from May 2015 until May 2016. The desert road Raqqa-Ressafa-Salamia is also controlled by the Islamic State south of Raqqa.

The storage of crops also needs competence that neither the Islamic State nor the jihadist rebels possess. The producers have stockpiled wheat, because farmers were not able to transport it. This is a major threat to food sufficiency as they take the risk of losing the reserves to fungus or fighting.

In 2015, the Syrian government managed to buy only 450,000 tonnes of wheat, less than half the requested quantity needed to provide enough bread to government-held areas (El Dahan 2016). But it has tried to convince the farmers to sell to HOBBOB at \$200 per tonne instead of \$130 and promised to pay the crop within 24 hours to attract sellers (Hamlo 2015). This is due to the fact that farmers have transportation problem and are threatened by armed groups who want to stop them handing over to the authorities. Therefore some farmers prefer to sell for higher prices abroad or to brokers. For instance, in March 2015, IS allowed 185 trucks loaded with wheat from Qamishli to cross to government- controlled area (Hamlo 2015).

Additionally, the Islamic State has a problem in managing properly its silos. Therefore it allows engineers to go to Syrian government areas for training. In the words of Adam Vinaman Yao, the deputy representative of the FAO in Damascus: “often, when armed groups were able to keep control of wheat-related infrastructure, they would cut a deal with the regime: Workers could pass from one side to another to keep the production chain going”. Agricultural experts in Islamic State-held Raqqa, for example, are allowed to come to Damascus for government training. “The militias are always interested to keep the expert because they know that the expert will take care of the system and keep it running” (Ciezdalo 2015).

New market roads have opened to Turkey for cotton, wheat, and olive oil, from rebel-held areas. As a consequence, Syrians must purchase olive oil on higher prices. Also, the private Syrian merchants import wheat from the Black Sea at \$300 per tonne, which is cheaper than bringing wheat from Hasakah to Damascus (\$310 in 2016) (FAO/WFP 2016). The very high internal transaction costs is due to a 25 per cent “tax” levied by armed groups controlling the roads.

Food insecurity concerns almost the third of the Syrian population. People are taking debts to buy food, as food prices are rising (FAO/WFP 2016). Inflation is rocketing, making food necessities such as wheat flour and rice very expensive and a key reason for food insecurity (FAO/WFP 2016).

The share of household expenditure on food has increased tremendously since the beginning of the crisis, at the expense of meeting other

critical needs (FAO/WFP 2016). Families were found to be spending more than half of their incomes on food, and in some places such as Sweida, Aleppo, and Hama, this proportion is higher and has jumped to almost 80 per cent in Dara'a, one of the areas which witnessed some of the most intense fighting.

A majority of people were found to have a “poor” or “borderline” diet, based of bread, oil, sugar, and wild vegetables. Dietary diversity is somewhat better in the North-Western governorates of Idlib, Tartous, and Latakia, where households have some access to high-quality and vitamin-rich proteins and vegetables. People in the conflict-affected governorates of Deir Ezzor, Hasakah, Aleppo, and Hama have the worse food consumption indicators.

Additionally, social capital plays a major role. Families borrow from relatives and friends, a lucky few have family abroad. Few borrow from the banks. Nearly one in every three households is indebted. The purchase of food is the main reason for that debt.

Syria Agricultural Production Under War

In the context of war, Syrian farmers are trying their best to cultivate their land, using rudimentary technics. Some refugees are coming back from Turkey to sow their land in January for the winter crops, hoping to be able to harvest in May and June. But they face major difficulties to harvest in areas under control of the Islamic State. Some farmers displaced from Homs and Damascus went to farm villages in the fertile southern Hauran (villages of Tafas and Yadouda), whose inhabitants have fled to Zaatari camp in Jordan (Carnegie 2015).

Crops have been burned by the belligerents north of Homs and Hama. Besieged Syrians manage to cultivate as much as they can, taking risks to go to their fields or developing cultures within courtyards in cities and villages. Water is a major issue. New cisterns have been created, and when fuel is available, wells are being drilled and pumped.

According to the Syrian Ministry of Agriculture and Agrarian Reform, some 1.03 million hectares of wheat were planted between December 2015 and January 2016 (of which 430,000 were irrigated and 600,000 were rainfed), while 1.13 million hectares were planted with barley (of which 95 per cent were rainfed) (FAO/WFP 2016). But the productivity has been reduced due to the lack of fertilisers and of good seeds. The seeds produced in Syria are progressively losing their resistance to insects and

Table 11.3 Syria wheat, barley, and maize production (2010–2014)

	<i>Average 2010–2014 (thousand tonnes)</i>	<i>2014</i>	<i>2015 estimate</i>	<i>Change 2014/2015 (%)</i>
Wheat	2809	1865	2445	31
Barley	747	594	968	63
Maize	129	156	133	–15
Others	8	8	8	0
Total	3693	2623	3554	35

Source: FAO, GIEWS 2015 Country Cereal Balance Sheets

diseases (FAO/WFP 2016). Plus the usual rotation between cereals and pulse or legumes is neglected, and soil is at risk of losing its nutrients.

Table 11.3 presents wheat, barley, and maize production during war years. By 2015, farmers were able to cope with the crisis and managed to increase total production by 35 per cent, as compared to 2014 (Table 11.3).

The area of land sown with wheat and barley during the 2015–2016 season stood at 2.16 million hectares, down from 2.38 million hectares the previous season and 3.125 million in 2010 (El Dahan 2016). As the prices of seeds, fertilisers, and fuel have hiked, farmers are forced to return to more traditional form of agriculture, with reduction of yield. The only solution for medium and large farmers is to drill new wells to irrigate new land, further using the aquifers. Farmers in rebel-held areas managed to harvest land in the Badia, drilling wells and pumping the underground water aquifers, despite a policy to forbid drilling, especially East of Salamia.

The chaos has led to the depletion of Syria's livestock. Some animals were smuggled to Iraq, Jordan, and Turkey, without proper vaccinations (which created a sanitary threat in these countries). From 15 million sheep and 2 million goats pre-war, only 60 per cent are left. The poultry sector, which was mainly private sector investment with significant exports of meat and eggs, has lost almost 70 per cent of its production according to Abdul Salam Ali, deputy minister of economy and foreign trade (Carnegie 2015).

Most preoccupying, the irrigation infrastructures built over the past 40 years have been damaged or stolen (motor pumps) and the fields in Hauran and the Jazira need to be decontaminated from landmines.

Hunger as a Weapon of War

During war, nothing escapes destruction. Farms, mills, and bakeries have been targets for the fighting subjugating powers, causing human hardships and misery. This started in August 2012, when aerial attacks hit 18 bakeries in Aleppo, the centre of opposition resistance then. “When the Free Syrian Army began to thrive in the regions of Idlib, Homs and Deir Ezzor, bakery bombings quickly followed. In the fall of 2014, the regime shifted its attention to the successful bread-making operation of the Islamic State, or Da’ish, bombing one outlet in the city of al-Raqqa” (Eng and Martinez 2016).

Additionally, the Aleppo wheat mills have been bombed, leaving functioning mills only in Damascus and Homs. The milling capacity therefore fell from 3.8 million tonnes before 2011 to around 2.8 million in 2015 (Carnegie 2015). In July 2016, Deir Ezzor inhabitants in the area controlled by the government were in major distress as only one single bakery was producing bread at a very high price (400 SP per kilo). The white flour was sold at 800 SP and a kilo of firewood was SP 250 (Mourad 2016). Running tap water is cut due to lack of power, so the inhabitants are drinking polluted water from a branch of the Euphrates (not from the river directly) or from salted wells, causing abdominal pains and diarrhoea. Water is sold at SP 1200 per barrel. In May 2016, in the area north of Latakia held by the rebels, only one bakery was functioning, and the price of a kilo of bread doubled from SP 100 to 200 (Ibrahim 2016). In August 2015, the kilo of bread was sold under 100 SP in the government-controlled areas (SP 60 in Damascus, SP 75 in Latakia), but was double in Raqqa controlled by the Islamic State (SP 200) and reached SP 800 in the Ghouta where fighting was high, to a maximum of 3500 in besieged Deir Ezzor (Table 11.4).

All warring parties are using food as a political tool to convince the population to stay loyal. The government is paying public sector salaries in areas no longer under its control, even in Dara’a and Raqqa. Subsidising of bread is not only the modus operandi of the socialist self-sufficiency ideology. It has been used during war as a political tool to win allegiance from the rebel-controlled areas where fighters have difficulties to distribute bread as bakeries are systematically bombed. While the price of kilogram of bread used to be SP 15 before the war, it increased to SP 35 in 2015 and is now ranging between SP 60 and 80. The Islamic State also uses the tool of bread to gain a foothold in towns and villages previously

Table 11.4 Bread prices by province in August 2015

<i>City</i>	<i>Price (kg of bread) in Syrian Pounds</i>
Deir Ezzor	3500
Ghouta	800
Dara'a	200
Raqqa	200
Aleppo	175
Homs	150
Suwayda	100
Hasakah	100
Tartous	75
Latakia	75
Damascus	60
Idlib	50

Source: <http://syriadirect.org/news/syria-bread-prices-by-province/>

held by other rebel groups (Eng and Martinez 2015). It is trying to reach its own self-sufficiency and is buying wheat at higher prices than the government.

Food Production in Besieged Areas and Coping Mechanisms

The UN estimated that in 2016, some 590,000 people lived in Syria's several besieged areas, without access to essential supplies (FAO/WFP 2016). In the besieged areas of Homs, residents have turned to make-shift survival strategies to circumvent the blockade (Al Jablawi 2016). Some citizens have managed courageously to break the blockade by producing food in the remaining rural areas or even within courtyards inside towns and villages. Not only is the food production remarkable, but even more, its distribution is done equally among the besieged population, under civilian control. This creates hope in the social resilience for the future.

In the government-controlled areas of Northern Homs, civilians have managed to produce and store wheat since Autumn 2015. The major local initiative is named "Our Bread from Our Land" project (*Khobzna min ardna*) and is supervised by Homs local council with the support of Syrian NGOs. This programme started in September 2015 at the initiative of the Homs Governorate Local Council with the support of the State of Qatar, through the Assistance Coordination Unit (ACU) (ACU 2015). It is a

way to resist the blockade by the Syrian government imposed on the armed groups and which barred aid convoys from entering the area. Nearly 50 farmers sold 110 tonnes of wheat. The local council sold the bread at a lower price than the government. According to media activists, the price of a bag of bread decreased by 50 per cent. The local council gave loans to the farmers in exchange for pledges that they will not sell their yield outside the blockaded area (Al Jablawi 2016). Later in July 2016, the head of Homs local council reported to the journalists of *AllSyria* that he was facing major difficulties, as charity donations were not sufficient to continue to purchase anymore bread from Homs countryside.⁷ The farmers preferred to store their own production, taking the risk of losing it.

The city of Darayya in the Western Damascus countryside was under siege for four years, between December 2012 and August 2016. Most of the 250,000 inhabitants left. The 10,000 left inside suffered awfully. The inhabitants cultivated every single piece of the remaining land, to grow wheat and vegetables (chards and spinach). The inhabitants also shared their food, and the local council oversaw the distribution of aid that reached the city (Al Jablawi 2016). The opposition forces managed to dig tunnels to convey food and medicine, as the al-Asad government seized the arable land in Eastern Ghouta. The population relied on charity and money transfers from displaced persons to their families via intermediaries. Residents managed to use organic waste to produce methane gas, to power generators. They installed wind turbines to charge energy storing batteries (Al Jablawi 2016).

CONCLUSION

Since the Syrian war started in 2011, especially after the emergence of the Islamic State in 2013, food and water became weapons and leverage to political change for the government, the local councils, and the Islamic State. The government is trying to maintain control over the wheat chain of production, as two-thirds of the wheat is produced in the Jazira and half is stored in the Raqqa governorate. In the meantime, the Islamic State is trying to reach its own food self-sufficiency. But in the context of high inflation, farmers prefer to sell their production illegally to Iraq and Turkey for double the price. The private sector manages to import wheat from the Black Sea countries at a cheaper price than from the Jazira due to a 25 per cent tax levied by the armed groups.

Food became the main preoccupation of a population subjected to inflation and scarcity. Gulf charities are distributing food from Turkey to the opposition-held areas. In besieged areas, the population is particularly suffering to feed itself as most are victims of war profiteers who take profit on the black market. Some manage to produce wheat (in the Ghouta). Paradoxically, in the areas under the Islamic State, especially in Deir Ezzor, the absence of black market is even worse for the population.

NOTES

1. Bashar al-Asad became president of the Syrian Arab Republic in June 2000, after the death of his father, Hafez, who ruled from 1970 up until 2000.
2. ICARDA is a global research-for-development organization established with Rockefeller foundation support.
3. In Syria, farmers have used the unit donum for centuries. It corresponds to 0.1 hectares.
4. In this regard, an amendment to the land reform law was enforced in 1966 in order to protect recently irrigated lands from expropriation. This amendment was inspired by Ba'athist militants from Deir Ezzor, who were small and middle-sized landowners, anxious to oppose the cities' middle classes (Petran 1972: 183). Their aim was to control a region which was 92 per cent rural and whose 96 per cent of its inhabitants were illiterate and to create favourable conditions for the implementation of the great Euphrates and Khabour Project, by keeping a solid middle class.
5. In 2001, the cost of a 270-metre depth well was €16,000 in the Raqqa governorate, an investment that only tribe sheikhs and big landowner could afford.
6. A total of 1.7 million hectares of wheat are cultivated every year, of which 45 per cent is irrigated, mainly in the Jazira (Pecad 2008).
7. <http://all4syria.info/Archive/331598>

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