Food and Agriculture Organization
of the United Nations

IRAQ

Agriculture And Livelihoods Needs Assessment

In The Newly Liberated Areas Of Kirkuk, Ninewa And Salahadin

FAO Iraq
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List of Acronyms

FAO	Food and Agriculture Organisation of the United Nations
FGD	Focus Group Discussion
Ha	Hectares (I Ha =10 metric donums/ 4 Iraqi donum)
IDP	Internally Displaced Person
IED	Improvised Explosive Device
IQD	Iraqi Dinar
ISIS	Islamic State of Iraq and Syria
KI	Key Informant
KII	Key Informant Interview
KRG	Kurdistan Regional Government
MERI	Middle East Research Institute
MT	Metric Ton
PDS	Public Distribution System
$	US Dollar = IQD 1200
WFP	World Food Programme

Executive Summary

The assessment was carried out in five (sub-) districts in Salahadin governorate three districts in Ninewa; and three in Kirkuk.The overall importance of restoring agricultural activities and livelihoods across these areas is unquestionable – not only for the communities in these regions, but for Iraq as a whole. The invasions of these governorates by ISIS mainly occurred in the period June to August 2014. Some of Salahadin was liberated in April 2015, some parts just recently and some areas are still occupied. In Ninewa, the relevant districts were invaded in August 2014 and some parts liberated in the period June to November 2015. Large areas of Kirkuk were liberated in August 2015.

Crops

Crop production including wheat, barley, maize, fruits and vegetables in the newly liberated areas in Ninewa and Salahadin provided nearly 70% of household income prior to the occupation by ISIS. In Kirkuk which produces oil and is more urbanised, agriculture, forestry and aquaculture was the second-largest employment sector after oil and used to provide jobs for 15% of the total workforce[1]. In addition, these three governorates contributed nearly half of Iraq's national production of cereals and so were major contributors to national food security.

ISIS invaded these governorates just after harvest time in 2014 so farmers immediately lost their harvest and a year's worth of labour and investment. Continued occupation and ongoing violence for several months after disrupted the 2015 cropping cycle as well. The major impact was through massive displacement of the local population, looting and destruction of silos and seed and fertilizer storage facilities as well as the collapse of government support in providing inputs. About 70 to 80% of cultivated area with corn, wheat, and barley was damaged (causing lower yields) or destroyed in areas in Salahadin. In Ninewa on average 32% of acres dedicated to wheat cultivations were badly damaged resulting in a lower yields, and 68% was completely lost. Likewise, 43% of the acres used for barley were damaged while 57% was completely destroyed.

[1] FAO, WFP & Relief International (February, 2015): Rapid Food Security Assessment in Kirkuk Governorate

In all three governorates, much of the existing irrigation is currently in urgent need of repair. Prior to the June 2014 invasion by ISIS, virtually every farmer had access to a constant supply of water through a combination of open-channel, sprinkler and drip irrigation systems. Water pumps, electrical transformers and pivotal sprinklers were damaged or looted.

Crop production is currently severely hindered by reduced access to land due to the presence of Improvised Explosive Devices (IEDs) as well as by the suspension of governmental assistance in terms of seeds, fertilizer and pesticides. Due to a lack of pesticides, pests such as spiders, mould, insects, rodents and weeds have become widespread and hard to control. This has resulted in a decrease in production which is made worse by a lack of machineries. Most of the tools and machineries used by the farmers have either been damaged or looted during the fighting and the higher prices in relation to the pre-crisis situation prevents many farmers from replacing their equipment. Recovery will require removal of IEDs to improve land access combined with provision of fertilizers, seeds and pesticides and access to basic equipment.

Livestock

Across the governorates livestock was another important contributor to household incomes and food security constituting nearly 20% of income in many areas As a result of the crisis livestock related livelihoods and food supply suffered major disruptions. Up to 80% of sheep and goats and up to 50% cows were lost in many areas. Poultry suffered the highest average mortality rates at about 90%. Only 10 to 20% livestock shelters remain intact, Access to medicine, vaccines and other veterinarian services previously available from government are no longer provided. The main products; meat, milk and eggs, average a production loss of 30 to 50%. The main needs reported by farmers required to restore livestock production are adequate shelters, increasing access to medicine and vaccines, and affordable high-quality fodder for their animals. Additionally, farmers currently lack income and cash to buy back animals previously sold under stress.

Fisheries/Aquaculture

In some areas of Salahadin, up to 28% farmers engage in aquaculture and nearly 18% breed fish. In Ninewa fishery activities are slightly less prevalent, and only about 3% of farmers in Kirkuk engage in fisheries. In Salahadin on average 46% of fish ponds were destroyed while in some places almost all boats were destroyed. On average, half of the hatcheries were destroyed, while damage to tools ranged widely from 10 to 100% across districts. Post-crisis production of fish is about 20 to 50% of pre-crisis levels. In Ninewa, Zummar district, pre-crisis production was roughly 10 tons of fish per day. It is estimated that current production fell to a mere 2 tons per day. The FSC assessment suggested daily catch of all three types of fish have roughly decreased by 75%[2] , thus corroborating the empirical finding. Before the crisis, almost all of the fish farmers had access to fish feed and medicine. Yet, due to ensuing insecurity, access to these items has radically decreased to the point where only 10% of farmers reported having access. In the short term, the main needs to recover aquaculture activities in the region are the rehabilitation and repopulation of fish ponds, as well as the replacing of equipment lost in the previous months.

Livelihoods

About 75% of residents work in the agricultural sector either as day labourers or farmers owning or renting an average of 6 acres. Many workers supplement their income from agricultural activities with some sort of other job, often as a civil servant (in customs or police force) or as shopkeepers. Many civil-servants also supplement their public salaries by working as taxi-drivers.

Before the crisis, each farm employed around 14 workers on average [3]. In the current situation however, due to a lack of markets, falling prices and increasing costs, many farmers cannot afford to hire the labourers needed to work the same amount of land previously cultivated. Farmers' income has been reduced by more than 50% since the war against ISIS with poorest among them having to survive on less than $200 per month. Among the most important factors for this downturn is the lack of payment by government to farmers for crops purchased over the last two years.

Food insecurity has become widespread throughout the districts with some estimating the level at over 50%.

[2] Food Security Cluster Assessment. May 2015.

[3] FAO (sept, 2014: p. 19). Rapid Resilience Assessment of Farmers in Northern Iraq.

Many families are trying to cope by engaging in negative coping mechanisms varying from reducing portion sizes, or the number of meals per day to borrowing money from friends and relatives. A few others were more fortunate and had saved some money for expected hard times. The interruption of the federal Public Distribution System (PDS) [4] has been reported as one of the main reasons for decreasing food security. There is an urgent need for cash or income amongst the population of the liberated areas, as well as small grants and loans to support livelihood activities... Importantly, supporting the recovery of the agricultural sector will provide citizens with much-needed job opportunities. For the long term recovery of agricultural livelihoods in these governorates, a comprehensive and structured approach to meet immediate, as well as longer term needs is required.

Recommendations:

1. Restore Crop Production:
   - Provide direct support in the form of seeds, fertilizers, pesticides and enhanced land and machinery access to help restore crop production.
   - Provide temporary irrigation measures such as digging wells.
   - Support measures to restore market access.

2. Restore Livestock production.
   - Provide animals to support restocking, especially sheep and poultry.
   - Provide emergency vetinary services including medicines
   - Direct provision of chicken feed
   - Improve safety and access to pastures

3. Revitalise fish production in Ninewa and Salahadin
   - Rehabilitate fish ponds
   - Direct provision of fish feed and medicines

4. Stabilise Livelihoods (In addition to the above actions which will assist livelihoods)
   - Support cash for work schemes
   - Help rebuild small and micro businesses through grants, affordable loans, market access measures

[4] Every Iraqi, irrespective of income level, is entitled to a monthly food ration for a nominal fee under the PDS

1. Introduction

1.1 Importance of Agriculture in Iraq

Out of a total population of approximately 32 million, about 5 million Iraqis are involved in the agricultural sector and about one third of the population live in rural areas and are dependent on agriculture related activities for their livelihoods.[5] Almost one quarter of the economically active population are thought to be employed in the agricultural sector.[6] Crop production is the major source of income for the majority (75%) of farmers, while the rest depend on livestock or mixed crop and livestock enterprises. Wheat and barley are by far the dominant crops. With an arable area of nearly 8M ha, about 27% of its total area, Iraq has significant agricultural potential for crop and livestock production. However due to various constraints such as moisture deficits and soil salinity only about 3.3M ha are actually cultivated. Crop production is both rain fed and irrigated. To illustrate, based on data available for Ninewa and Salahadin, in 2013-2014, about 200,000 and 56,000 ha respectively of wheat were harvested, producing 215 and 430 thousand MT approximately[7]. Livestock constitutes an integral part of farming systems. Traditionally, farmers keep livestock to enhance farm incomes and satisfy their basic food requirements. Sheep, goats and cattle are the most important livestock, supplying meat, wool, milk and skins.

1.2 Background and Context

The recent crisis in Iraq due in large part to the invasion and occupation by ISIS has led to widespread displacement, economic disruption and threats to agricultural production and food security. According to FAO country briefing there are an estimated 4.4 million people that are currently in need of food security assistance. This group of people includes: IDPs, host communities, returnees and other people who remained in the affected areas during the conflict. In addition, agriculture-based livelihoods face severe constraints across the value chain, from production, post-harvest handling and processing to marketing. Food security conditions are likely to deteriorate with large number of IDPs / returnees putting an additional burden on host communities.

The agriculture sector has suffered major disruption in different governorates of the countries, including those recently liberated. Crop farming and animal husbandry are considered among the main source of income for most the

[5] FAO and Islamic Relief. 2014. Rapid Resilience Assessment of Farmers in Northern Iraq.
[6] Iraq Country Programming Framework (2019-2015) for Agriculture, Food Security and Nutrition, p.11.
[7] Ibid.

households living in the rural areas of the country. The ongoing conflict continues to disrupt cropping cycles, and contribute to shortages of irrigation water, supply of agricultural inputs, food availability, and income generating activities. In addition, the livestock sector has been significantly affected through loss, theft or death of animals and shortages of feed/ fodder. Ninewa governorate has played an historic role as the breadbasket of Iraq. Together with Salahadin governorate it produces over one-third of Iraq's annual wheat and barley. In Kirkuk governorate, one of the major sources of income after oil is agriculture. In addition to fruits and vegetables, winter crops are also cultivated due to its rainy winter. Sheep, goat and poultry rearing are widespread in Kirkuk governorate.

In the context of a rapidly evolving situation, FAO Iraq expressed a strong need to gather in-depth agriculture sector- and related livelihoods information on the impact of the crisis on communities located in some of the newly liberated areas, including their challenges on crop production, livestock rearing, and accessibility to markets and irrigation water. This information was considered crucial to provide timely and targeted assistance to the most vulnerable groups in liberated locations, as well as to appeal for the necessary funds to implement short term humanitarian interventions as well as medium term rehabilitation interventions linking up with the longer-term development projects.

1.3 Objectives of the Assessment

The objectives of the assessment were:

- To obtain a realistic picture of the impact/effects of the crisis on the agriculture sector, including crop production, livestock rearing, fishery/ aquaculture and irrigation.
- To assess the agricultural livelihood status of the affected communities and their degree of vulnerability.
- To identify the different challenges rural communities are facing in the recovery process.
- To identify priorities for recovery needs and corresponding short and medium term interventions for the communities who depend on agriculture for their livelihood.

2. Methodology

2.1 Study Areas

The assessment was conducted in the three governorates of Salahadin, Ninewa and Kirkuk using Focus Group Discussions (FGDs) in selected districts/ sub-districts of each of the governorates, complemented by Key Informant Interviews (KIIs), and direct participant observations. The assessment was carried out in five (sub-)districts in Salahadin governorate: Al Alam, Albo Ajeel, Al Dour, Al Hajjaj (sub-district of Beiji), and Dhulo'eyah (Samarra district); three districts in Ninewa; Zummar, Rabea and Sanoni (sub-district of Sinjar) and three in Kirkuk: Daquq, Dibbis and Yaichi (sub-district of Kirkuk). Prior to the field work, a desk review of the secondary literature was done. The districts/sub-districts were selected on a pragmatic basis depending on which had been occupied by ISIS and were now safe enough and accessible to survey teams.

2.2 Data Collection

The assessment tools included a global checklist of data required for such assessments, a semi structured questionnaire for the FGDs, guidelines for the KIIs, as well as guidelines for farmers' stories (provided by FAO). The FGD semi structured questionnaire was drafted on the basis of some existing relevant examples and the draft finalised through discussions with FAO experts and local researchers. All of the tools were discussed at length with researchers during a training course held in Erbil. The training of researchers was conducted over a three day period and included participation of representatives of organisations who had conducted similar assessments or were knowledgeable about such assessments (day 1), followed by two days of intensive practice in using the survey instruments Data was collected in the field over a one to two-week period. The data submitted was then checked for consistency and validity by comparisons across districts and governorates as well as with secondary literature. Clarifications were sought as necessary with team leaders of the survey teams.

2.3 Challenges and Limitations

The study was designed as a short rapid survey consisting only of the methods outlined and not including a structured statistical household survey. In some areas people were just slowly returning and so some FGDs were smaller than planned. Nevertheless, the combination of survey methods has produced a very useful snapshot of the situation in these governorates.

The need for disaggregation of data by gender and by remainees and returnees was stressed. However, the researches indicated that in some areas in Ninewa they would not be able to organise women's groups. In addition, it was concluded that the vast majority of the population in the districts selected areas had been displaced and were now returning and so it would not be practical to try and separate returnee and remainee FGDs.
The assessment had some limitations especially in terms of data quality. As is reflected in the report, the data for Salahadin was much more complete and of better quality than in the case of Ninewa and Kirkuk, with the latter being least satisfactory. In the analysis data gaps were filled as far as possible with secondary information from the published literature, citing the sources appropriately.

A more detailed assessment including a household survey could be carried out at a later stage when most of the displaced people have returned and are trying to rebuild their lives.

Photo 1: Male Focus Group conducted by Muslim Aid in Al-Alam district, Salahadin.

Photo 2: Focus Group in Al-Hajjaj district, Salahadin

3. Overview Of Pre-Conflict Agriculture In The Assessed Areas

Key messages

- Agriculture in the three governorates depends on varying degrees of rainfall and irrigation.
- Together Salahadin, Ninewa and Kirkuk produced about half of all cereals (wheat, barley and maize) in Iraq.
- In addition to crops, animal husbandry constituted an important source of income for farmers prior to the outbreak of violence.

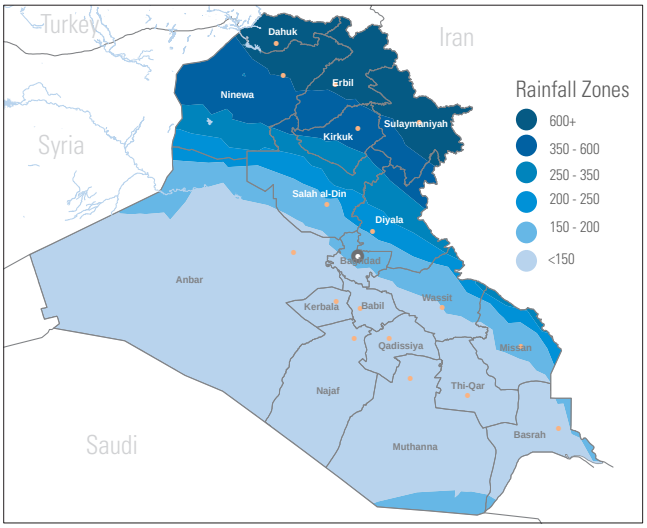
3.1 Agricultural systems

Salahadin governorate is situated in the northern centre of Iraq. Covering 9.407 square miles (24.363 km^2) and with a population of approximately 1.191.403 people, it is one of the most rural governorates of Iraq [8]. Arable land comprises 14.715 km^2, yet only 2.153 km^2 was actively used for cultivation prior to the onset of violence in the summer of 2014 [9].

Salahadin's terrain varies from foothills in the north eastern parts to desert and steppe in the south west. The region is characterised by low levels of precipitation, with most districts receiving an average of 175 – 225mm rainfall annually, while the north-eastern hilly areas get more rain between 250 -350 mm per year [10]. Consequently, agriculture in Salahadin relies heavily on irrigation from the Tigris River. Irrigation is predominantly provided by traditional open-channel systems, but prior to the conflict more advanced systems such as pivotal sprinklers and drip irrigation systems were also present in some locations.

Agricultural activities in Salahadin constitute a mix of cereal cultivation,

Figure 1: precipitation levels Iraq



[8] Source: IOM Salah al Din governorate profile, May 2015. http:// iomiraq.net/reports/salah-al-din-governorate-profile-may2015-

[9] Iraq Ministry of Agriculture: Annual Statistical Data for Agricultural Activities 2014 (Arabic)

[10] Source: FAO

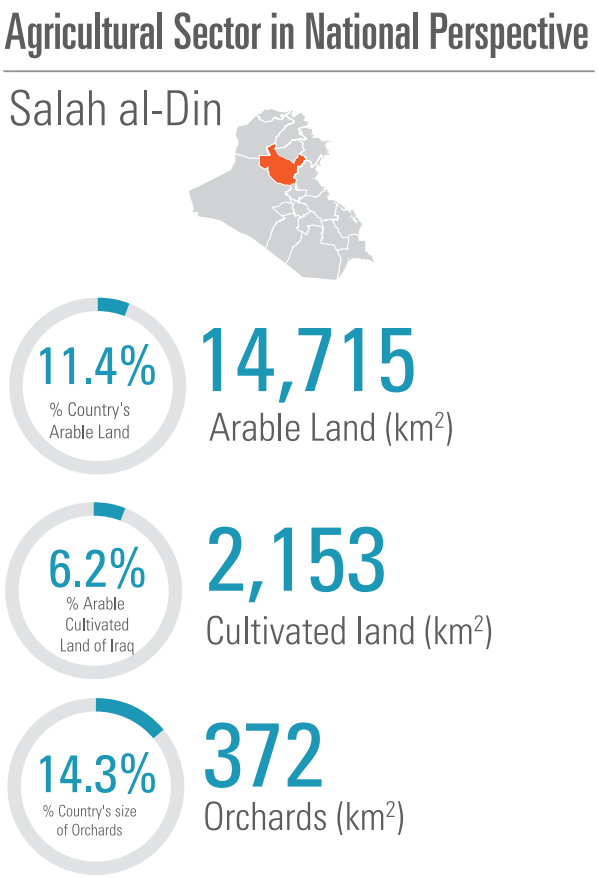
vegetables, fruit, greenhouse production, and animal husbandry as well as some fishing activities. Farmers frequently combine these activities to raise sufficient income. The main crops cultivated in the region are wheat, barley and maize. Although Salahadin is not a very large contributor to barley production at the national level, it does contribute significantly to the total maize (14,89%) and wheat (7, 9%) production in Iraq. Aquaculture is located around the river Tigris (districts Dhulo-eyah, Beiji, and Al-dour) and focuses mostly on catching river fish such as carp, Karl and silver. Important livestock include cattle, sheep, goat, and poultry.

Ninewa Governorate covers an area of approximately 37,323 km^2 (14,410 square miles) divided in 31 districts. Historically, it is regarded as the breadbasket of Iraq. Together with Salah-al-din, it produces over 1/3 of Iraq's annual wheat and barley. Due to conducive levels of precipitation and other favourable weather conditions in these areas, agricultural output is almost exclusively (99%) produced 'organically' on rain-fed lands. Consequently, the majority of residents in Ninewa were farmers.

The area of **Kirkuk governorate** is estimated to be around 9,679 km^2 out of which 28.3% is rural, Kirkuk is relatively urbanised governorate. Around 24% of the rural area is arable and only half of it is cultivated. Rain-fed lands represent 65% of the arable lands while 35% is irrigated. Agricultural lands in Kirkuk governorate are either owned, leased or illegally cultivated (cultivated without lease or ownership in place). Wheat, barley and maize are the main crops grown in Kirkuk governorate. The principal sources of water in Kirkuk are perennial, rivers and surface and ground wells. Rain-fed and irrigation are the methods used for cultivation in Hawija and Dibis while Daquq relies mainly on irrigation.

Figure 2: Ninewa, Kirkuk and Salahadin governorate (f.l.t.r.)

Figure 3: Agricultural Sector Salahadin in National Perspective



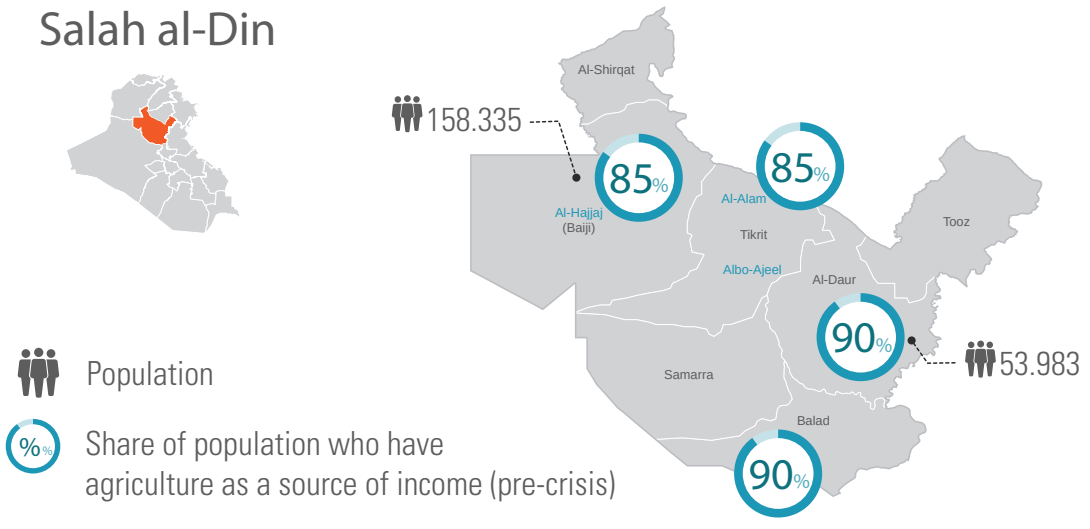
Source: Iraq Ministry of Agriculture - Annual Statistical Data for Agricultural Activities 2014 (Arabic)

3.2 Importance of Agriculture

Salahadin is one of the most rural governorates of Iraq and agriculture constitutes an important source of income for many families (See figure 3) presents the importance of the agricultural sector in Salahadin within the national context.

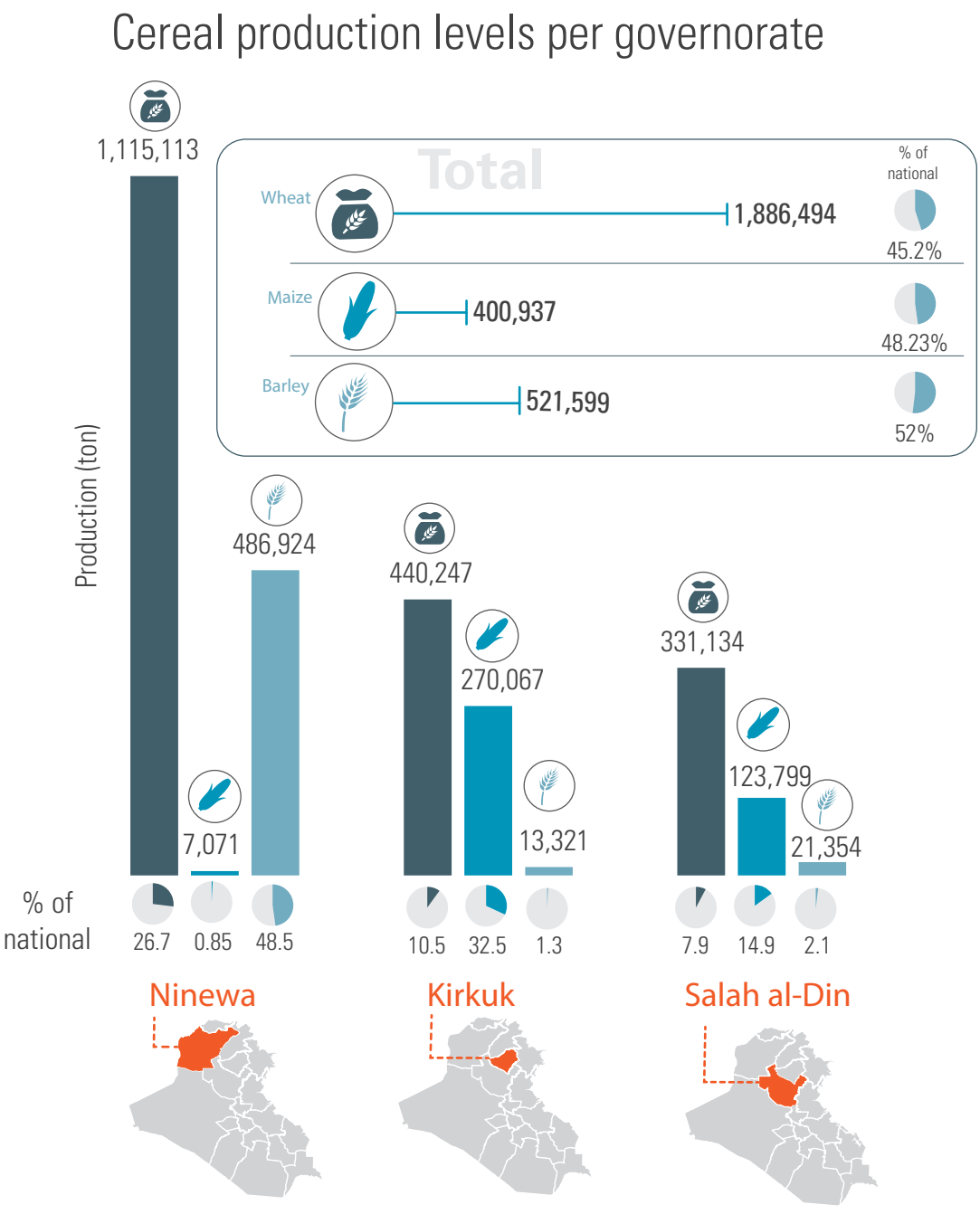
The vast majority of Salahadin's population relies on agriculture as a form of livelihood. As figure 4 shows, this is roughly the same over the five districts covered in this survey.

Figure 4: Percentage of population using agriculture as source of income



Source: WFP VAM (2007)

Figure 5: Cereal production levels per governorate



Source: Iraq Ministry of Agriculture - Annual Statistical Data for Agricultural Activities 2014 (Arabic)

Figure 5 shows the production of the three main crops in the three governorates as well as their proportion to national production levels.

Governorates of Salahadin, Ninewa and Kirkuk produce almost half of the three main crops cultivated in Iraq. Kirkuk and Salahadin together produce about half of all maize in Iraq. Although each governorate has its own focus, it highlights the importance of restoring agricultural activities and livelihoods across these areas. Prior to the advance of ISIS in the region, animal husbandry was an important component of livelihood for farmers in these governorates. Although little reliable data is available on numbers of livestock, the Iraq Ministry of Agriculture presents the following numbers obtained from a 2008 study to illustrate the pre-crisis situation.

Figure 6: Livestock numbers and proportion of national total

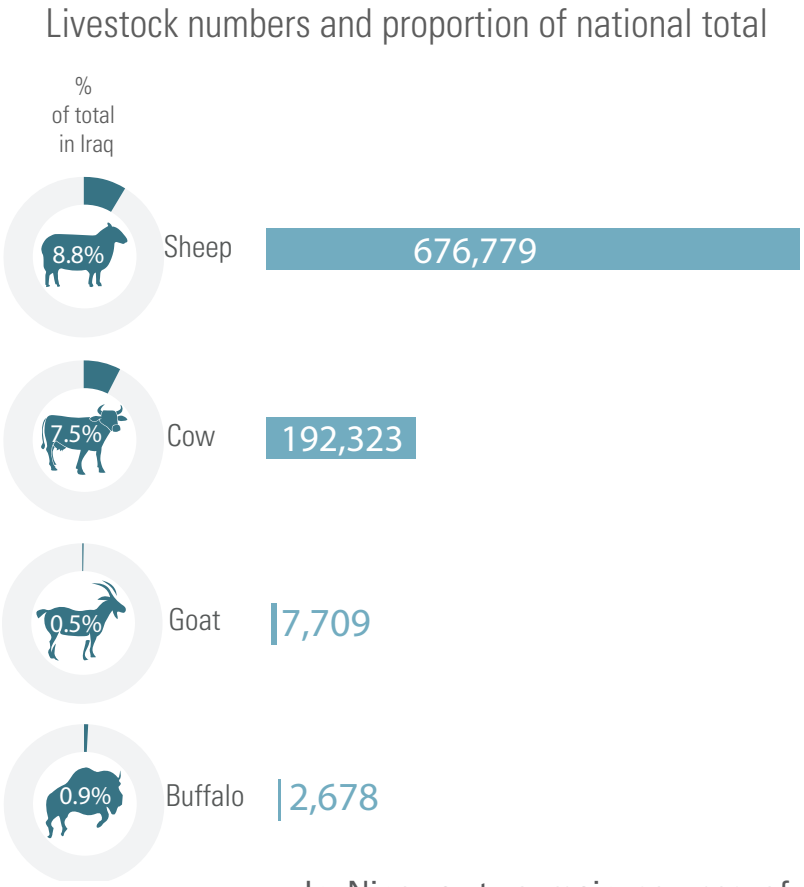
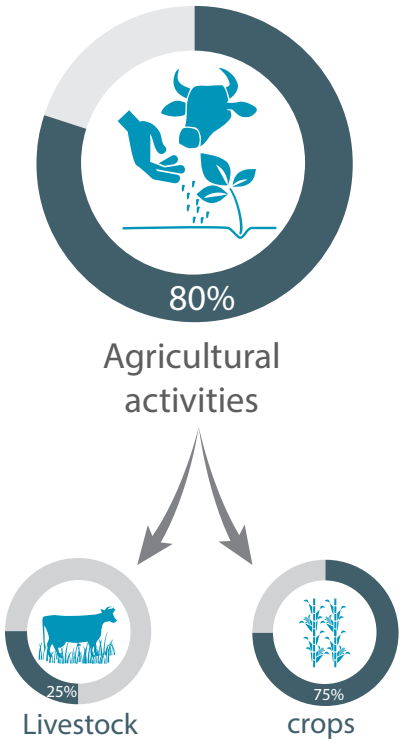


Figure 7: Agriculture for income



In Ninewa, two main sources of income can be observed; crops such as the wheat and barley (winter season), and to a lesser extent fruit and vegetables (during the summer); and animal husbandry. These two activities are frequently combined in one household with crops comprising about 75-80% of agricultural activity and animal husbandry 20-25% [11]. Farmers report that they rely on these activities for over 80% of their income [12].

[11] UNDP, FAO (May, 2015: p. 10). Recovery and Stabilization Needs Assessment for Newly Li berated Areas in Ninewah Governorate – Zummar, Wana, Rabiya, Sinuni.

[12] Danish Refugee Council (2015), Market and Livelihoods Rapid Assessment, Northern Zummar Area.

Figures 7 illustrates the proportion of people who use agriculture as source of income and the configuration of that income in terms of the two major activities; crops and livestock rearing.

In Kirkuk, agriculture, forestry and aquaculture is the second-largest employment sector after oil and used to provide jobs for 15.1% of the total workforce [13]. The percentage of farmers who own agricultural lands is 25% in Hawija and Dibis, 90% in Kirkuk city, 35% in Daquq. Despite its modest size, Kirkuk makes significant contributions to the national production of cereals. Its total arable land is estimated to be approximately 5.128 km^2 (1.27 million acres), 4% of Iraq's total, and nearly half of that surface was cultivated before ISIS attacked in June 2014. Over 1200 farmers were registered at the agricultural office in Kirkuk. In addition to fruits and vegetables, winter crops are also cultivated due to its rainy winter. Sheep and poultry rearing are common in Kirkuk. Data on 2013 from the Ministry of Agriculture in Figure 8 provides the main agricultural producers of the Kirkuk governorate:

Figure 8: Land distribution per crops type and average yields in Kirkuk

Land distribution per crops type and average yields

	Area cultivated (in donums)	Yield (in tons)
Wheat	639,302	440,247
Barley	44,183	13,321
Corn	142,291	270,067
Pomegranate	Not listed	33
Potato	Not listed	39
Onion	Not listed	40
Cucumber	Not listed	38

Source: http://www.zeraa.gov.iq/index.php?name=Pages&op=page&pid=98

[13] FAO, WFP & Relief International (February, 2015): Rapid Food Security Assessment in Kirkuk Governorate

Additionally, there were 4.836 palm trees in Kirkuk yielding 128 tonnes of dates. There were also 189 greenhouses, each one worth on average 3.5 million IQD, according to the Ministry of Agriculture. No data from the Ministry of Agriculture is available on the post-conflict situation in the liberated areas.

Sesame is also widely grown in Kirkuk city while Hawija district cultivates cotton, beans, vegetables and fruits. Barley is largely grown in Kirkuk city and Dibis while wheat is mainly cultivated in Daquq district.

From 2013 to the present day, farmers in Kirkuk have reported a decrease in water supply as well as poor irrigational infrastructure as a major problem in all four districts. This has affected livelihoods by on the one hand decreasing agricultural production, while on the other it has led to a lack of and increased prices for fuel and electricity to power the water pumps. Farmers report production losses of up to 25% in Hawija, Dibis and Kirkuk. In Daquq however, the situation is different with an increase in production of up to 25% due to the completion of new irrigation networks.

Subsidies for inputs such as fertilizers, seeds, training, veterinary services (though at limited degrees in Daquq) and certain agricultural machinery were provided by the government in all of the four districts. Profits from agricultural sales, as well as loans from friends and family members, agricultural and commercial banks and private lenders, are also used to purchase necessary agricultural inputs across the four districts.

4. IMPACTS OF THE CRISIS ON CROPS

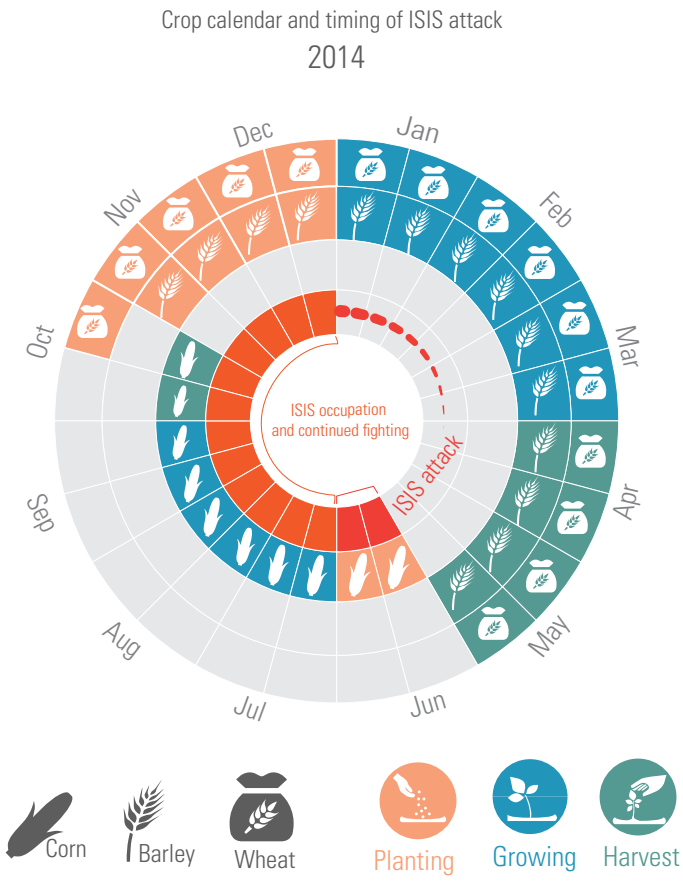
Key messages

- ISIS attacked just after 2014 harvest, so farmers lost their harvest and a year's work.
- The major impact was looting and destruction of silos and seed, fertilizer storage facilities as well as the collapse of government support in providing such inputs.
- Up to 70-80% corn, wheat, and barley was damaged or destroyed in some areas.
- Much of the existing irrigation is currently in urgent need of repair.
- Farming equipment, storage facilities, greenhouses have suffered significant damage.

4.1 Introduction

Crop production is an important source of livelihood for farmers in these governorates. Focus groups reported that between 75 – 90% of people plant crops as a source of income. ISIS' lightning advance in the summer of 2014 came at a particularly crucial time of the agricultural calendar year, as Figure 9 illustrates.

Figure 9: Crop calendar and timing of ISIS attack [14]



ISIS attacked at the moment silos were stocked full with fresh wheat and barley of the latest harvest. Many farmers saw a year's work end up in the hands of ISIS overnight. The occupation and subsequent violence also severely disrupted the sowing and harvesting of the 2014/2015 crops. It is important to note that fighting ensued over 2015 and indeed until the present day, with a relatively fluid frontline shaped by intense fighting in Ninewa, Salahadin and some parts of Kirkuk, and especially around important oil refineries such as in Beiji.

[14] Due to considerations of space, we present only the three main crops. Most of fruit and vegetables are planted in winter (January) or early spring (February, March). Vegetables are harvested before the heat of summer in April and May while fruit is harvested in November.

The most serious effect of the ISIS occupation on the agricultural sector has been the looting and destruction of harvest silos alongside seed- and fertilizer storage facilities as well as the collapse of government support in providing such inputs, as commonly done before the crises. Consequently, farmers are in desperate need of assistance to recover their livelihood.

4.2 Crop losses

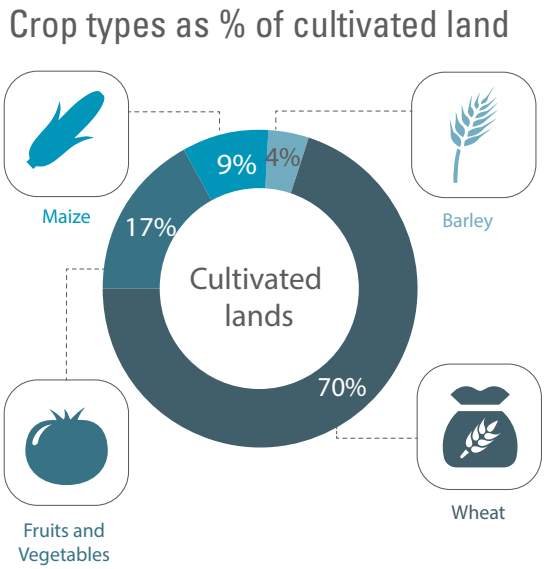
Story of Khairi Mala Hassan, Yazidi Returnee and Farmer in Zummar district, Ninewa.

Khairi, a 40-year old farmer, is one of the Yazidis who has returned to his village Talmous in Zummar. He is experienced in animal breeding and small trade.

Khairi built his house in Talmous in 2005 and he spent a great deal of his savings completing it. Khairi along with his wife and three children enjoyed their rural location and lived a happy safe life before ISIS came.

After ISIS stormed Zummar, Khairi and his family, fled and lived in camps in Kurdistan Region of Iraq. They suffered from the lack of medical facilities and supplies and the deterioration of living conditions and struggled to support the family.
After the liberation of Zummar, Khairi learned in a meeting that many of the homes in their village had been booby-trapped and needed to be cleared carefully. At the same time Khairi received a call from his brother that he had arrived back in the village and he was about to enter their house. Khairi tried to warn his brother not to enter the house but he suddenly heard the sound of an explosion and he lost contact with his brother. In that time Khairi felt panic and confusion.
Moments later Khairi's neighbor called him to inform him that his house had exploded. Khairi realized that his brother had been the victim of that explosion. "I wanted to cry, I wanted to scream but my eyes were empty," said Khairi.
Now Khairi hopes to rebuild his life not only because of his family, but also to support his dead brother's family and help them to build their life again. They will never forget that day but life should go on.

Figure 10: Crop types as % of cultivated land



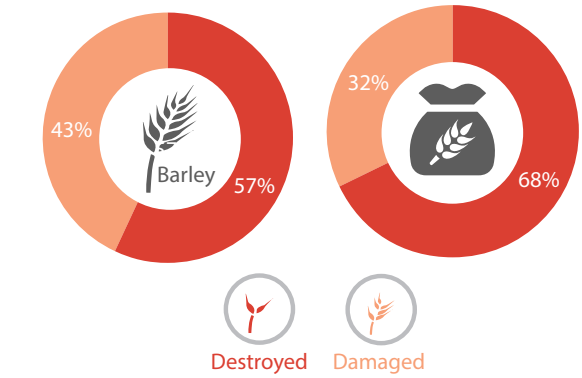
Source: Iraq Ministry of Agriculture Annual Statstical Data (2014)

Continued violence over an 18-month period has severely affected agricultural cycles and standing crops. Based on data for Salahadin, figure 10 illustrates that the overwhelming majority of cultivated land was dedicated to the production of cereals, wheat in particular.

Although wheat production has taken a severe hit in all areas, the loss in production of maize in Salahadin is even more important at a national level as it previously contributed almost 15% to Iraq's total maize production.

The main reasons for loss of crops and reduced yields across the governorates are a lack of affordable fertilizers and quality seeds, damage to irrigation, suspension of government subsidised purchases and inputs, and lack of labour as many young men have joined the fight against ISIS (particularly since April 2015). Additionally, transport of goods and people is difficult due to the security situation in large parts of Salahadin, Kirkuk and Ninewa. Finally, farmers aiming to recover their production levels are hampered by reduced access to land due to the danger of IEDs in many newly liberated areas, as the tragic personal account of Khaila Mala Hassan demonstrated."

Figure 11: Average proportion of damaged and destroyed crop in Ninewa



In Ninewa, it is estimated that on average 32% of acres dedicated to wheat cultivations are badly damaged, while 68% is destroyed [15] to the extent that no production is possible. Likewise 43% of the barley crop was damaged while 57% was destroyed. Figure 11 shows the impact of IS attacks on wheat and barley in Ninewa.

[15] Damaged is used to indicate reduced yield potential while destoyed implies complete destruction

Figure 12: Standing Crop Losses (Salahadin)

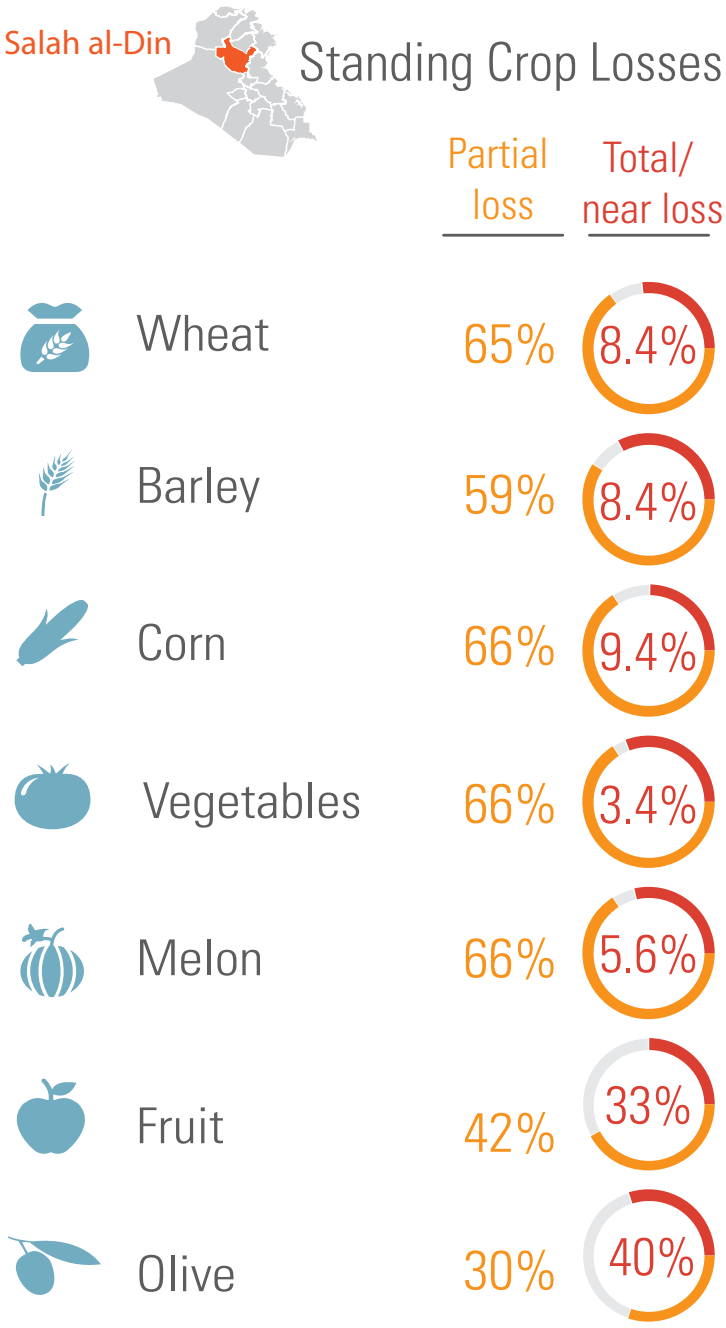
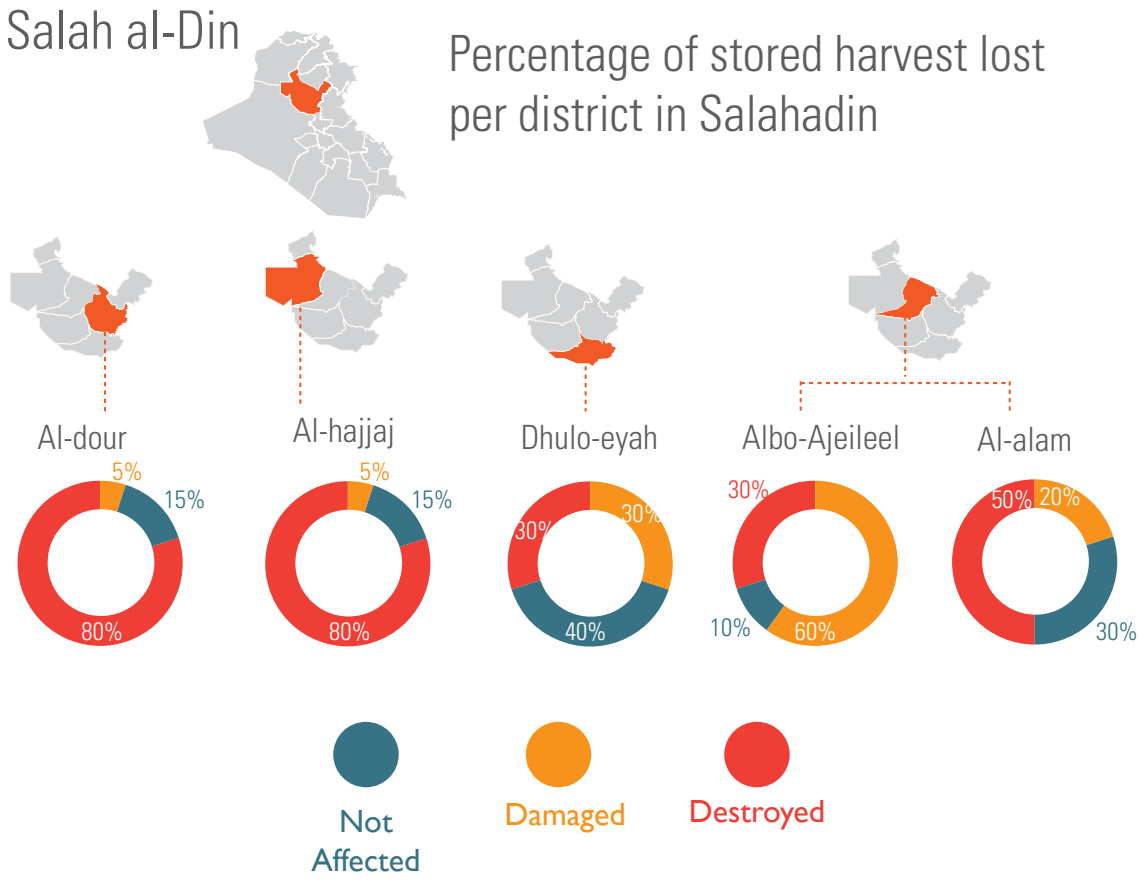


Photo 3: Orchards have been particularly impacted, with 75% damaged or destroyed

It is important to note that not all districts and sub-districts in Salahadin have been impacted equally hard. Wheat, barley and corn production was most affected in Al-Alam, Dhulo-Eyah and Albo-Ajeel (70 - 80% damaged, 5 – 10% destroyed), but less so in Al-Hajjaj and Al-Dour (40 – 55%).

Crops stored in houses and silos have been equally affected by the conflict. The main reasons reported for loss of stored harvest is looting, destruction of property and the spread of pests and mould. In Salahadin, a number of local insects have been causing damage to both standing and stored crops as farmers' access to pesticides have decreased in the last months. In Ninewa farmers have been forced to store crops on open fields or other inadequate facilities, resulting in the loss of produce through mould and decay.

Figure 13: Percentage of stored harvest lost per district in Salahadin



STORY OF MOHAMMED HRIS, FARMER FROM RABEA, NINEWA.

Mohamed Hris is a 50 years-old farmer from the village of Tal Asmir, where he lives with six other members of his family. He has experience in animal breeding and farming.

Before ISIS attacked, Mohamed had a store of potatoes that was about 1200 tons. These were stored in 4 large warehouses, each one contained 3 AC (5 tons), and the cost of this storage system was 500 million IQD.

When ISIS attacked Rabia, Mohamed and his family left the area and also their stored potatoes, agriculture machines and all their properties.

When the region was liberated, Mohammed returned to find that everything had disappeared. The warehouses are now empty, and all the equipment has been stolen including 12 pieces with cables at a cost of $40,000 and two generators (250 kv).

Moreover, Mohamed had water pumps and milking machines which belonged to another project for breeding Dutch cows (Holstein). Upon his return Mohamed did not find any of the cows, only some bones. They had died because of the lack of water and fodder and because no one was caring for them.

Mohamed hopes that one day he will reestablish his farm again and continue to breed animals and refill his warehouses with potatoes. Mohamed and his family are continuing their life by supporting each other. They will do their best to accomplish their dream.

4.3 Irrigation

Crop production in Salahadin and most parts of Kirkuk is heavily dependent on the functioning of irrigation systems. Prior to the crisis, virtually every farmer in Salahadin had crucial access to a constant supply of water through a combination of open-channel, sprinkler and drip irrigation works.

Much of the existing irrigation is currently in urgent need of repair as a direct result of the conflict. Indeed, in every district, farmers attending the focus groups as well as key informants consulted declared the restoration of irrigation as a primary and immediate need for the recovery of agriculture in Salahadin. All districts reported damage caused by military operations, as well as a large number of pumps and generators looted or stolen by ISIS. In Albo-Ajeel, a sub-district of Tikrit for example, five engines, water pumps, electric distribution transformers as well as the main generator were stolen by ISIS as they retreated from the area. In Dhulo-eyah, the limited advanced irrigation systems available to farmers such as pivotal sprinklers, fixed sprinklers and drip irrigation was heavily damaged so that only about 40% of sprinklers is currently in use and merely 20% of drip irrigation can be used.

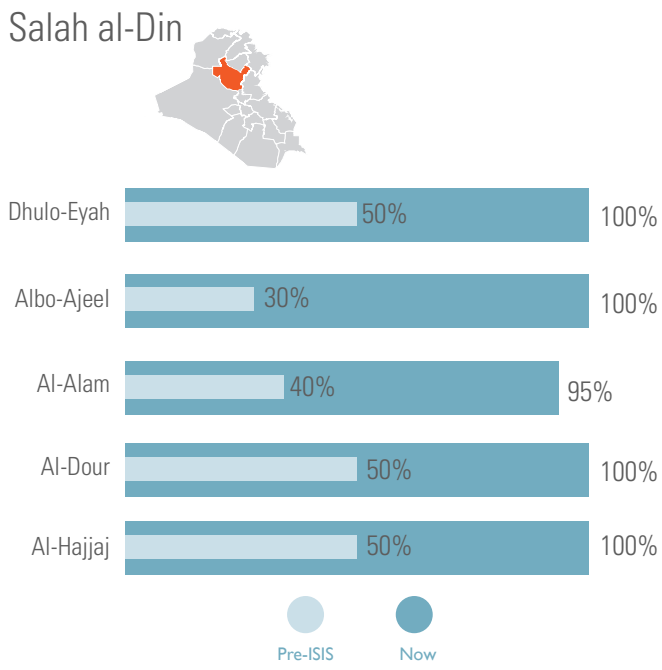
Photo 5: Example of open-channel irrigation works in Kirkuk

Photo 4: Villagers in Kirkuk gathered damaged irrigation pipes to show extent of damage done

Consequently, farmers' costs for irrigation have increased by 50% from 100.000 Iraqi Dinar (IQD) per hectare per season to 150.000 IQD – a price many farmers cannot currently afford, despite the importance and lack of alternatives available. Community-leaders suggest more wells should be dug as a temporary coping measure if irrigation cannot be repaired quickly. Figure 9 depicts the decrease in access to irrigation for farmers in Salahadin.

In Ninewa, the restoration and repair of the Al-Jazeera irrigation project is critical. In contrast to Zummar, farmers in Rabiya and Sanoni cannot rely solely on rain and are heavily dependent on irrigation to water their lands. The Al-Jazeera project supported some 1.700 farming households and offered the communities in Rabiya and Sanoni over 5.000 jobs. It provided over 85% of the population access to irrigation and was the absolute cornerstone of agricultural activity in Rabiya. However, rebuilding it requires significant investment, with an estimated cost of 2.500.000 IQD/ per acre.

Figure 14: Access to irrigation per district in Salahadin



In Kirkuk, crop production depends on a combination of rain-fed and irrigation lands. Irrigation is more common in the south, where precipitation levels are lower than in the north. Agriculture in the Kirkuk governorate uses a wide range of irrigation methods. The most common are traditional methods such as wells, open-air channels, and reservoirs created by small-scale earth dams. Additionally, more advanced irrigation systems such as sprinklers and drip-irrigation works are used for agricultural production.

Irrigation in Kirkuk has been seriously impacted by the crisis. Across all four districts, farmers report a reduction in access to water. Both farmers and key informants reported that ISIS has looted water pumps, generators and other vital parts of the irrigation networks. Channels and dams have also been damaged as a result of military operations and are in urgent need of maintenance and reparations. The costs of a single water pump in Kirkuk is reported to be around $ 7.500, - or 9.000.000 IQD.

Photo 6: Damaged irrigation system in Salahadin

4.4 Equipment and Inputs

Theft, looting and destruction of agricultural tools and equipment have been significant across all three governorates throughout the conflict. In Salahadin, key informants' report large numbers of agricultural trucks have been taken by ISIS. In line with these statements, FGDs with farmers revealed that making tools and equipment available to the farmers is an urgent short-term need to restore crop production.

Among the equipment used by farmers in the region are mainly tractors, harvesters and ploughs. When ISIS came, many farmers became displaced as they were forced to flee their homes and villages leaving all of their equipment behind. In the absence of the farmers, their homes were destroyed and much of their equipment stolen or destroyed.

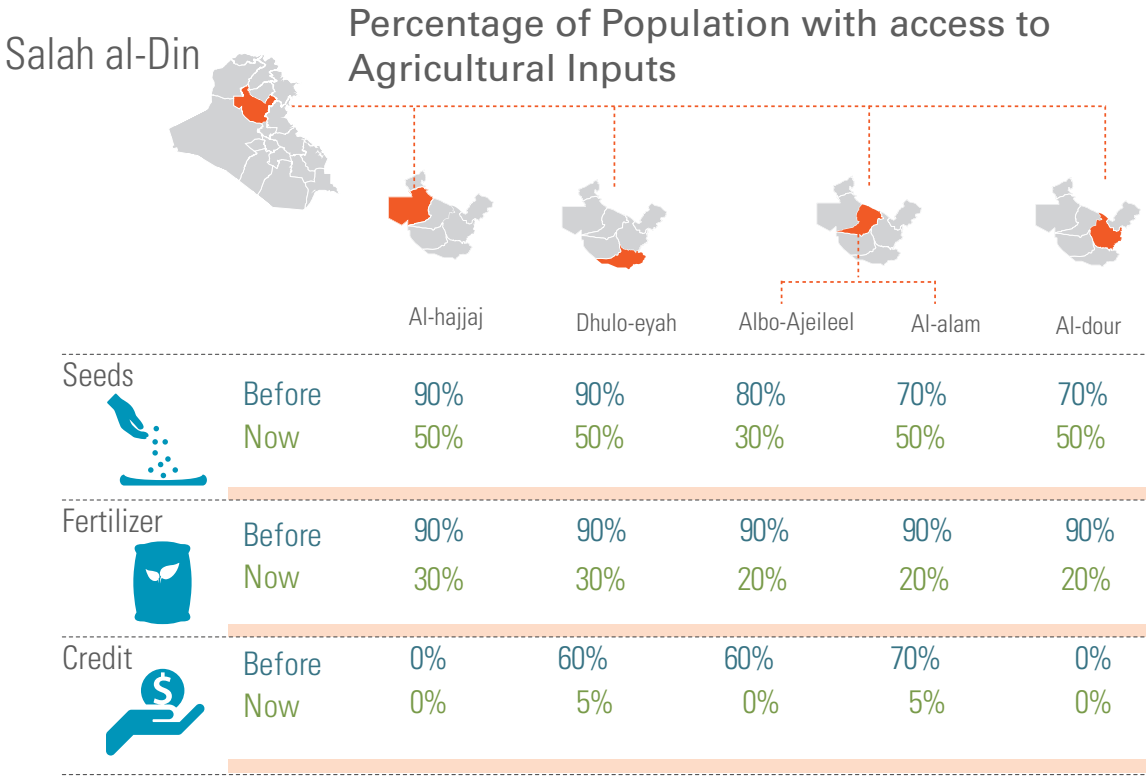
Many farmers who have returned to their villages need time to restore their houses and are currently lacking the means to revive their lands and crops.

Photo 7: Burned out harvester in Kirkuk

Photo 8: A damaged harvester amidst destroyed houses in a rural village in Kirkuk

Farmers also report a strongly reduced access to essential inputs, such as seeds and fertilizers since government support has been suspended, their stocks have been looted, local shops are not yet able to meet demand, transport and therefore supply to markets is difficult, and most importantly the farmers are short on cash.

Figure 15: Percentage of population with access to agricultural inputs



		Al-hajjaj	Dhulo-eyah	Albo-Ajeileel	Al-alam	Al-dour
Seeds	Before	90%	90%	80%	70%	70%
	Now	50%	50%	30%	50%	50%
Fertilizer	Before	90%	90%	90%	90%	90%
	Now	30%	30%	20%	20%	20%
Credit	Before	0%	60%	60%	70%	0%
	Now	0%	5%	0%	5%	0%

The increase in prices of equipment is illustrated by the figures for Zummar (Ninewah) shown in Figure 16; while the increased costs of some services are illustrated by prices for Rabea (Ninewa) in Figure 17.

Figure 16: Increases in price of equipment and pesticides in Zummar

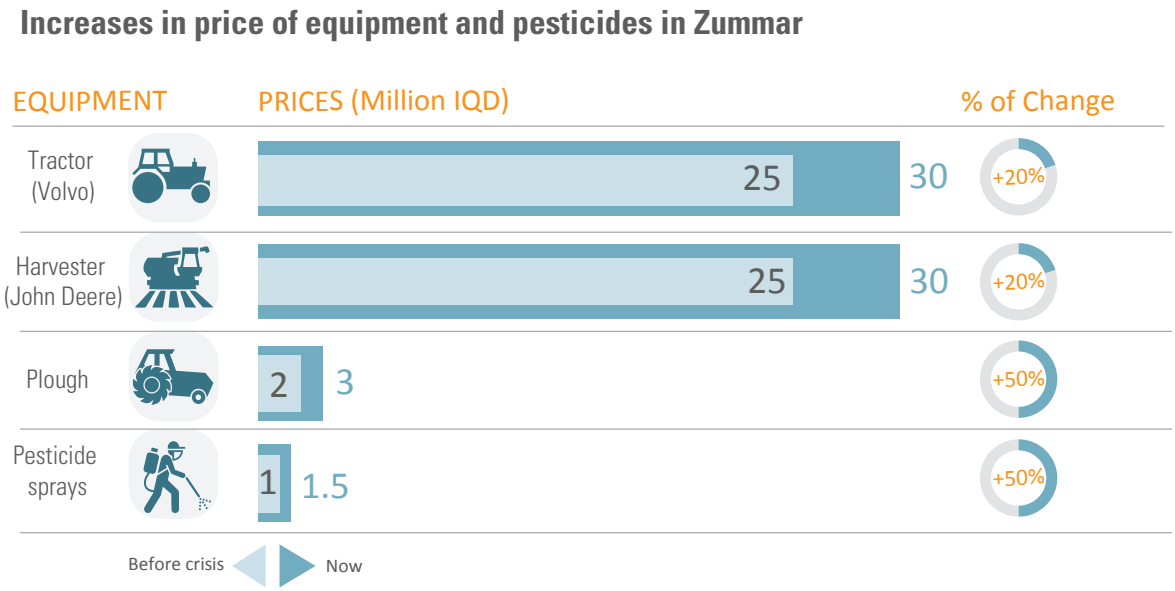
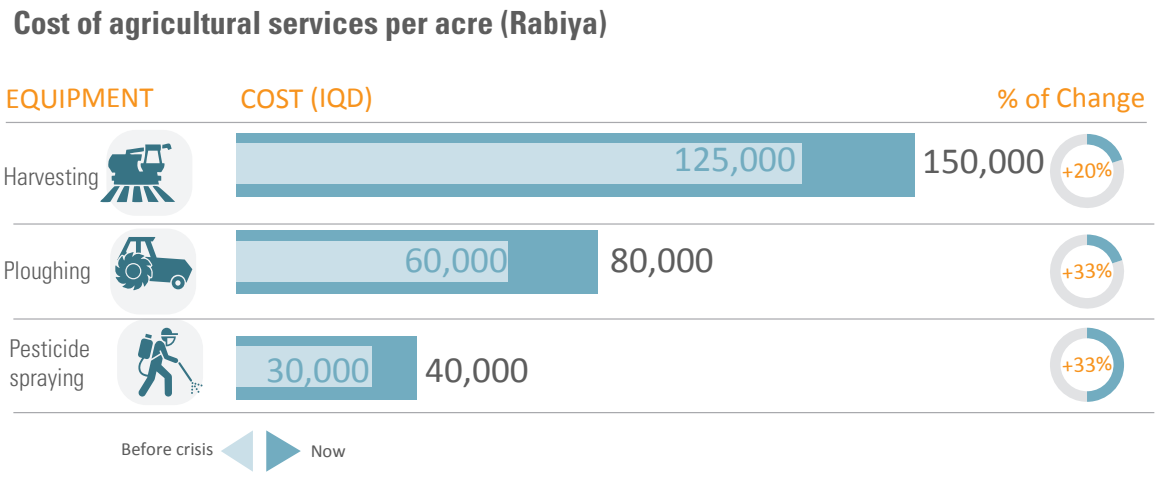


Figure 17: Cost of agricultural services per acre (Rabiya)



The rise in prices can partly be attributed to an increased demand in the post-conflict environment, and partly to a reduced number of suppliers.

Before the crisis, farmers in these districts sourced much of their equipment from the city of Mosul, now occupied by ISIS. As a result, most of the larger equipment is hard to find in the region or available at a more expensive price than before. The prices of petrol and diesel have also increased as a result of reduced supply and curtailment of government subsidies.

In Kirkuk governorate, from Dibis to Yaichi, farmers indicated that the provision of new equipment such as tractors and harvesters are an immediate need to restore crops production levels. Figure 18 lists the current prices of the equipment as reported during focus groups and confirmed by key informants in the areas.

Figure 18: Current prices of equipment needed in Kirkuk"

Current prices of equipment needed in Kirkuk

		Price (Million IQD)	Price (USD $)
Tractor	New Holland Double Axle	50	$ 41.666,-
	Ferguson Double Axle	40	$ 33.333,-
	Ferguson Axle	15	$ 12.500,-
Plough		1.0 - 2.5	$ 835,- to $2085,-
Harvesting	New Holland	135	$ 112.500,-
	John Deere	40	$ 33.333,-

Figure 19: Number of Affected Greenhouses per District

Number of Affected Greenhouses per District

Salah al-Din	Before	Damaged	Destroyed	Not affected
Dhulo-eyah	450	140	225	85
Al-alam	100	-	90	10
Al-dour	17	-	17	-
Al-hajjaj	10	-	10	-
All	577	140	342	95

In all three governorates, a large number of greenhouses was damaged or destroyed during the conflict. In Dhulo-eyah district alone, where greenhouse production was most developed, over 80% of greenhouses was either damaged or completely destroyed. Figure 19 shows the number of greenhouses in Salahadin which were affected by the conflict per district.

Greenhouses are an important means for vegetable production in Salahadin, mainly used to cultivate tomatoes, eggplants and cucumber. Replacing the greenhouses is beyond the farmers' current financial means. The prices, summarised in figure 20, vary slightly across districts. Based on these numbers, the damage caused by the destruction of greenhouses across the five districts in Salahadin alone runs into the millions of US dollars.

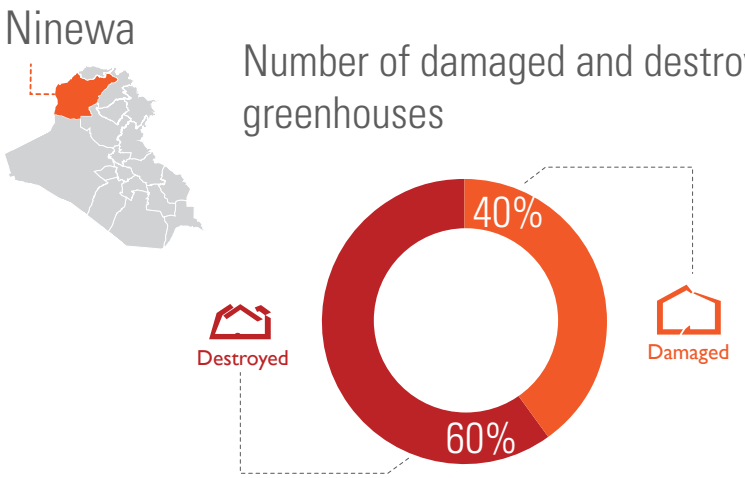
Similarly, in Ninewa, the conflict damaged greenhouse production of potatoes and other vegetables. Of the 100 greenhouses available before the

Figure 20: Price of greenhouses in Salahadin

Specifications	***price (post-conflict)***
Small unequipped greenhouse made out of local, improvised material Length: 13 meter Width: 2 meter Height: 3,5 meter	125.000 Iraqi Dinar $ 113,- US Dollar
Large, iron frame greenhouse Length: 56 meter Width: 9 meter Height: 3.5 meter	6.000.000 – 5.000.000 Iraqi Dinar $ 5.423 $ – 4.519 US Dollar

crisis, 60 were completely destroyed while the remaining 40 were so heavily damaged that no production is currently possible. With the average price of a greenhouse increasing by 50% from 4.000.000 IQD to 6.000.000 IQD, neither the farmers nor the local government can afford the reconstruction of this sector.

Figure 21: Number of damaged and destroyed greenhouses (Ninewa)



Mejodal Bandar Salih Abdullal, Farmer

The 47-year old ex-Iraqi military officer Mejodal Bandar was born in Salah ad-din at Albo To'ma village. His family counts 10 members and all were living in one big house in the same village, planting and cultivating their 220 acres of land together.

Their land was an important source of income for the family which used to plant wheat, maize, malt and some main types of vegetables (cucumber, tomato, eggplant, potato). The family also had 70 green houses, livestock and three fish ponds. In short, they had all the resources needed to live a very comfortable life.

When seventeen trucks full of ISIS elements entered the village, Mejodal asked his family to prepare themselves to leave the house and go towards his land where he had a small house capable of hosting the entire family. After two hours the family arrived having brought only the most basic possessions such as a small stove, a generator, some mattresses and duvets and medications for their parents. They stayed at the small house for nearly five months living completely of their cattle and the vegetables they had planted earlier. Their situation and living standard grew worse and worse however and their parent's medications soon ran out. Finally, the family made the decision to move towards Kirkuk, where they would be safer. They stayed in Kirkuk, using up all of their family's savings, until their village and surrounding areas were liberated from ISIS.

When they returned back to their village, they found a destroyed home, two burned panting tractors, and all of their planting tools as well as their livestock stolen or looted by unknown people. "It is really so difficult for people like me to start working again, as you can see I have nothing to start with! I can't even provide for my family the most basic living standards. We need your support to enable us to prepare our lands and plant them again for the coming season", Mr. Mejodal said.

In Kirkuk, especially in Daquq, where greenhouse production was most prevalent, the damage is significant and farmers currently do not have the financial means to restore this sector. With the average costs per greenhouses reported to be 4.500.000 IQD, or 3.750 US dollars, it can be estimated that the damage in Daquq alone surpasses half a million dollars. Although greenhouse production has not been significantly developed in Dibis district, farmers attending in every focus group have expressed great interest in starting up greenhouse activities but declared they need technical and financial assistance, especially during the first six months.

Figure 22: Number of affected greenhouses per district (Kirkuk)

Number of Affected Greenhouses per District

Kirkuk

	Before	Damaged	Destroyed	Not affected
Daquq	150	-	145	5
Yaichi	19	16	-	3
Dibis	-	-	-	-
All	169	16	145	8

4.5 Infrastructure and storage facilities

Food and agricultural stores were heavily damaged during the fighting in Dhulo-eyah district and Albo-ajeel sub-district in Salahadin In Dhulo-eyah, two large stores for pesticides and fertilizers were also completely destroyed in an operation to liberate the area from ISIS elements. Farmers reported heavy damage to fertilizer stores in Albo-ajeel sub district as well with 60% of stores damaged and 1/3 completely destroyed. In Al-alam, farmers are prohibited from using Urea fertilizer as it is sometimes used by armed groups to make explosive devices.

In addition, farmers in Dhulo-eyah report that movement of goods and people is very difficult due to the security situation. Because of insecurity or damage roads are either inaccessible or farmers have to receive special approval from local security officials before being allowed to use them. Consequently, the movement of labour and agricultural inputs such as seeds, fertilizer and pesticides needed for cultivation of the land is severely hindered, adding to the imminent reduction of cultivated area or reduction in yields of the planted crops. The situation is similar in Ninewa and Kirkuk except that Salahadin is less stable

Most importantly, since ISIS invasion in June 2014, is the fact that the government has stopped its support to local farmers. The government was a vital part in the market-chain as they not only provided farmers with agricultural inputs such as seeds, fertilizer and pesticides but also bought wheat and barley produce at fixed rates above the market price. Each farmer received 22 kg of high-quality barley seed, and 18 kg of wheat seed per Donum [16], plus 40 to 55 litres of fertilizers. Since the summer of 2014 however, farmers have not received any of their payments for already delivered production. Where the government previously provided a guaranteed market and price for these crops, farmers now have to sell their cereals for much lower prices on the local markets. However, the area in which farmers are able to do so is severely limited and confined, still due to ongoing conflict in the regions. Many farmers can only sell part of their produce at local markets close to their villages.

Photo 9: destroyed storage facilities in Kirkuk

Photo 10: Destroyed home and adjacent storage in Kirkuk

[16] 1 Ha =10 metric donums/ 4 Iraqi donum

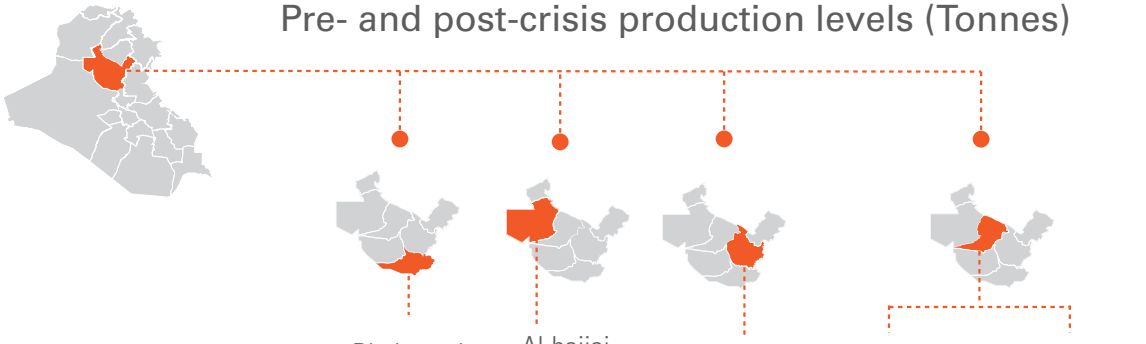
4.6 Reduced production levels

As a consequence of the circumstances described in the previous sections, production levels have fallen sharply in all three governorates. Despite liberation, farmers in Ninewa, Kirkuk and Salahadin expect a much lower yield this year due to disruptions in the crop-cycle and their current inability to work the land as they have done before. Expected yields vary from governorate to governorate and between districts alike but figure 23 illustrates the heavy losses incurred by farmers by presenting the data of each district in Salahadin. In absolute numbers, the damage is most significant in the wheat sector with

Figure 23: Pre- and post-crisis production levels (tonnes) per district in Salahadin

Salah al-Din

Pre- and post-crisis production levels (Tonnes)



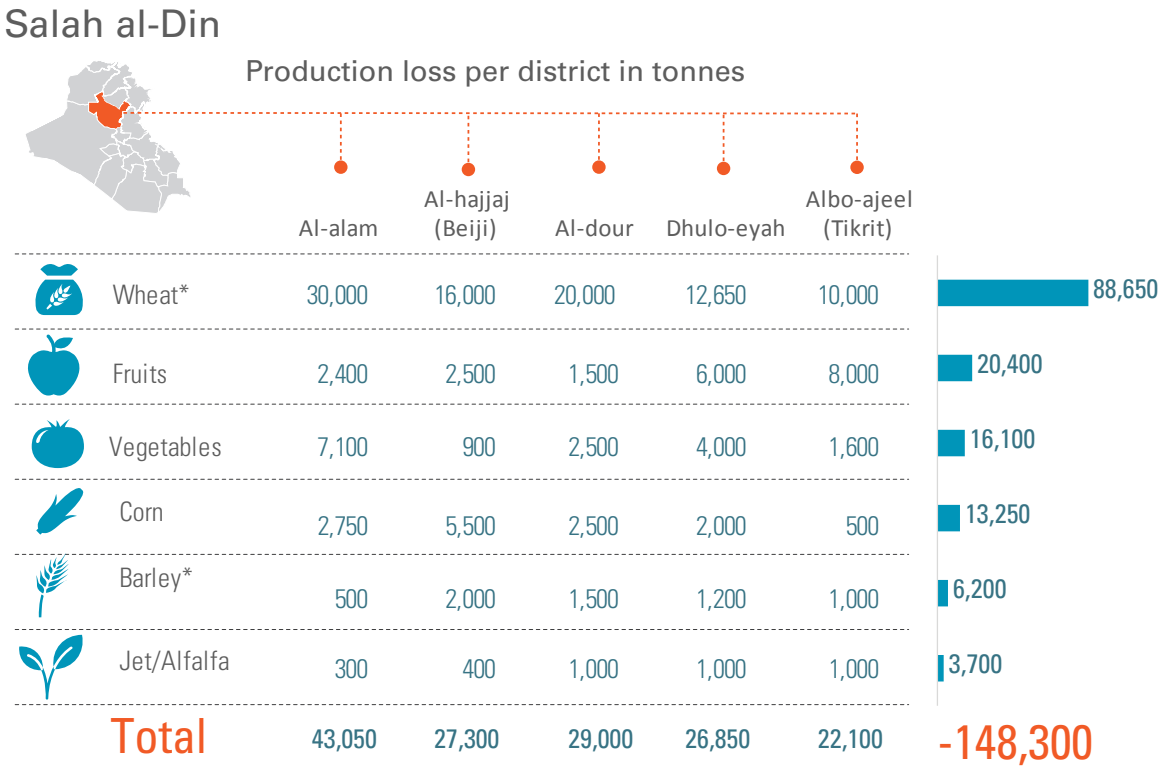
		Dhulo-eyah	Al-hajjaj (Beiji)	Al-dour	Al-alam	Albo-Ajeileel
Wheat*	Before	20,000	30,000	65,000	80,000	17,500
	Now	7,350	14,000	45,000	50,000	7,500
	% change	-63%	-53%	-31%	-38%	-57%
Barley*	Before	1,200	9,000	2,000	3,500	1,000
	Now	0	7,000	500	3,000	0
	% change	-100%	-22%	-75%	-14%	-100%
Corn	Before	2,000	5,500	6,500	10,000	1,250
	Now	0	0	4,000	7,250	750
	% change	-100%	-100%	-38%	-28%	-40%
Fruits	Before	12,000	3,000	2,500	3,900	11,000
	Now	6,000	500	1,000	1,500	3,000
	% change	-50%	-83%	-60%	-62%	-73%
Vegetables	Before	7,000	1,000	3,500	8,100	3,000
	Now	3,000	100	1,000	1,000	1,400
	% change	57%	-90%	-71%	-88%	-53%
Jet/Alfalfa	Before	1,000	400	1,000	300	1,000
	Now	0	0	0	0	0
	% change	-100%	-100%	-100%	-100%	-100%

(*) expected yields

farmers expecting significant losses totalling up to 88.650 tonnes. Relatively, fruit and vegetables production has been hit the hardest with average losses in yield reported to be 66% and 72% across districts. Figure 24 shows the production loss throughout Salahadin.

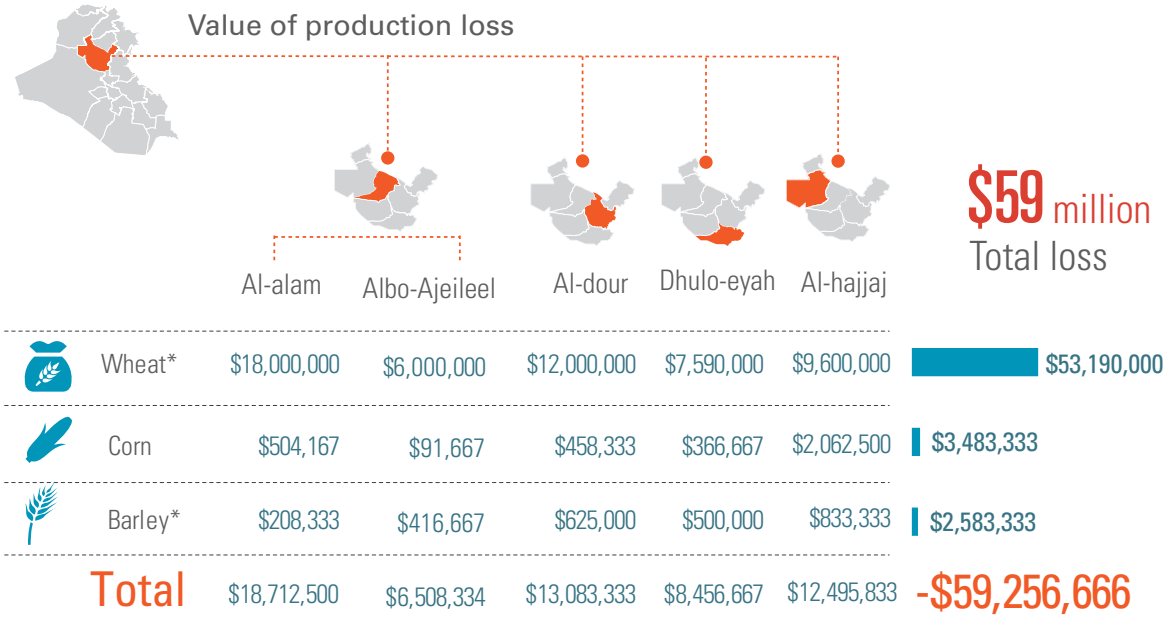
Farmers in the five districts will produce in total 148.300 tons less than in

Figure 24: Production loss per district in tonnes (Salahadin)



normal pre-crisis years. Quantifying the lost production of crops in terms of value is difficult due to variation in prices across districts as well as individual types of fruits and vegetables. However, taking the reported prices for the three main cereals in each district, figure 25 reveals that the loss of income for farmers collectively is close to 60 million dollars. Prices of wheat and barley are fixed across districts but the price of corn varies from 220.000 per ton in Al-dour to 450.000 in Al-hajjaj, where production has collapsed completely. Financially, Al-alam district has been most impacted. However, it is important to note that this figure does not include losses of fruit and vegetable production.

Figure 25: Value of production loss



Thus, the actual damage for each district, including Al-alam, would be much greater. It is also clear to see that wheat farmers are among the ones most impacted by the conflict with a reported loss in production of 88.650 tonnes and a value of 53 million USD.

In Ninewa, average wheat production also fell by 50% from ½ ton per acre to ¼ ton. For barley, average yield dropped even further by 66% from 1 ton per acre to 1/3 ton per acre. Similarly, production levels in Kirkuk have dropped steeply as nearly all farm lands have been seriously affected by the crisis and a significant proportion of standing crops were lost due to destruction or could not be harvested and stored due lack of adequate storage facilities. Farmers were forced to store crops in open fields where they were subjected to pests, mould etc. and this led to the fast decay of recently harvested crops.

One of the main reasons for reduced production and expected yields reported by farmers is a lack of irrigation and access to water. As a temporary solution, or quick fix, wells can be dug and serve as a coping strategy for as long as repair of the irrigation systems is not realised.

The lack of government support in providing seeds, fertilizer and pesticide also severely hampers crops production. Many farmers have lost their stores of fertilizer and seeds due to theft or because their house was destroyed (most farmers stored these in or adjacent to their house). Moreover, diseases and pests are spreading more easily and rapidly due to a lack of pesticides among farmers. The fact that the government has not paid much of the money owed to farmers for their produce over 2014/15 means the farmers currently lack the capital needed to invest in and recover their agricultural activity. Finally, the current security situation means many farmers who do have some capital savings are reluctant to invest in their crops as ISIS attacks are still imminent and could mean a loss of their investment. Likewise, the current security situation results in a reduced access to labour as many young people from these districts have joined armed forces in an attempt to shelter their community from ISIS attacks.

5. IMPACT OF THE CRISIS ON LIVESTOCK

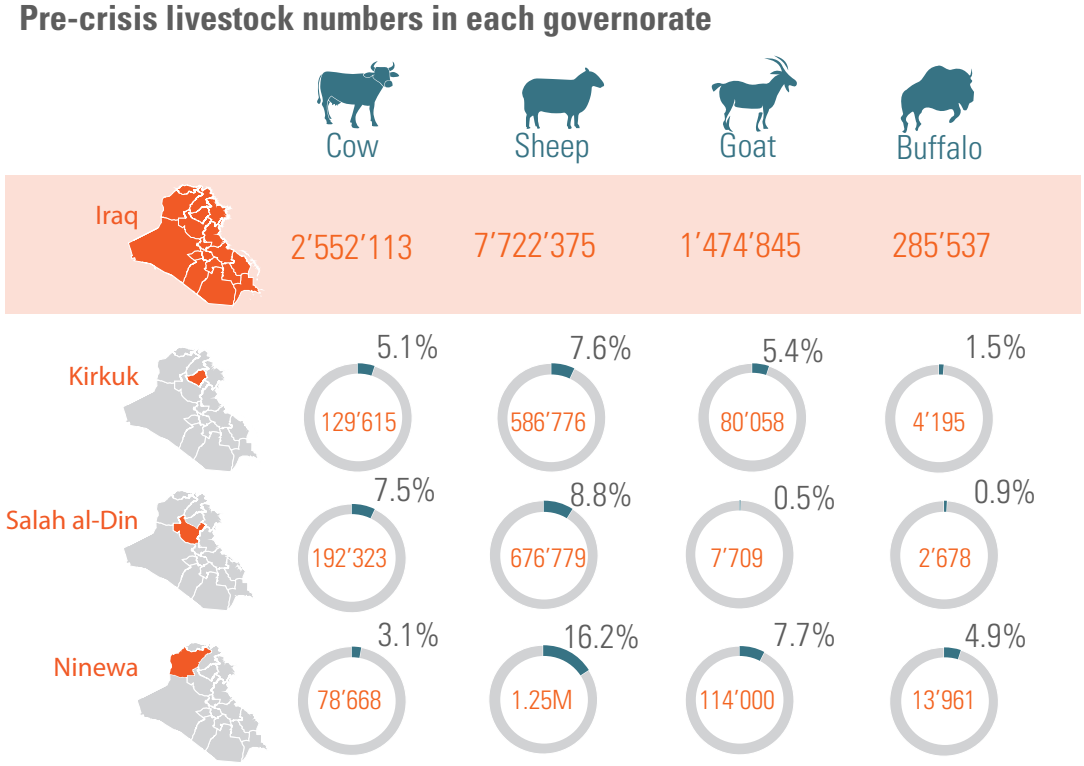
Key messages

- Livestock related livelihoods and food supply suffered major disruptions.
- Animals were lost or found dead or injured. Up to 80% Sheep and goats and up to 50% cows were lost. Chickens suffered the highest mortality rates at about 90%.
- Only 10 to 20% shelters remain intact, the others are damaged or destroyed.
- Access to medicine, vaccines and other veterinarian services previously available from government are no longer because of financial problems.

5.1 Introduction

Animal husbandry is used both as a means of generating income and as a source of food. Unfortunately, there is dearth of exact data on herd sizes and livestock ownership. However, to get a picture of the pre-crisis situation, one can review the following figures presented in figure 26 and obtained from the Ministry of Agriculture of Iraq, based on the last survey conducted in 2008 and published in 2014.

Figure 26: Pre-crisis livestock numbers in each governorate



Most farmers perform activities related to livestock in parallel with crop production. The main animal products are meat, eggs and dairy products such as milk, yoghurt and cheese. Although not included in the previous figure, poultry is also an important sector in the three governorates. For example, Salahadin is the largest producer of eggs in the country and second largest, only after Baghdad, of broilers (small chicken for raising).

The conflict has caused major disruption of livelihoods connected to livestock rearing. The main reasons for the decline of herd sizes are the result of displacement, looting and death or illness as a result of inadequate shelter, lack of fodder and poor or absence of vet services.

5.2 Deaths, injuries and losses

In the summer of 2014, as ISIS advanced on the areas covered by this study, many farmers had to flee and leave their villages at a moments' notice. Some farmers were able to smuggle a limited number of animals to safety in the weeks prior or directly after the attacks. Farmers who tried fleeing with their flock however, lost a significant part along the way. Some of the saved animals were destocked during the displacement, in order to generate some income to cover their expenditures during the displacement. Most farmers were forced to leave their herd behind only to find all of their animals looted, slaughtered, stolen or otherwise missing upon their return.

Figure 27 shows that Salahadin sheep and goat herds suffered the greatest losses reaching 80% in many districts. An additional 10 to 15% were injured and a few found dead. In the case of cows, 40% to 50% were lost, 10 to 35 % were found dead and from 5 % to 25% were injured across districts. Chickens suffered the highest mortality rates around 90%; while 5% to 15 % were lost across districts.

Figure 27: Livestock losses in Salahadin per district

On the other hand, in Sanoni (Ninewa) all cows and beehives were lost, as shown in Figure 28.

Figure 28: The loss of animals in Sanoni

The loss of animals in Sanoni

	Before	Now
Sheep & Goat	95,000 + 25,000	35,000*
Cow	500	NONE
Beehives	1'000 hives	NONE

**Total number of sheep and goats (no disaggregate data available)*

Most of the livestock lost in Kirkuk concerns sheep, goats and cattle with numbers of sheep and goats lost running in the tens-of-thousands. In Dibis alone, it is estimated that farmers have lost 4.000 cows, 20.000 goats and 15.000 sheep collectively. Taking local prices per animal in Dibis district (see Figure 29), it becomes clear that the financial damage suffered by farmers is more than they can recover from without assistance.

Figure 29: Number, price and value of animals lost in Dibis (Kirkuk)

Number, price and value of animals lost in Dibis (Kirkuk)

Total Damage **$ 15.3** million

	Animal Lost	Price per animal	Value of damages
Sheep	15,000	$ 18,750	$ 2,812,500
Goat	20,000	$ 125-	$ 2,500,000
Cow	4,000	$ 2,500,-	$ 10,000,000

STORY OF MOHAMMED ALBRO: YAZIZDI LIVESTOCK FARMER FROM SANONI.

Mahmod Albro is 54 years-old and lives in Sanoni sub-district. He is one of the Yazidis who has returned with his family consisting of six children and his wife.

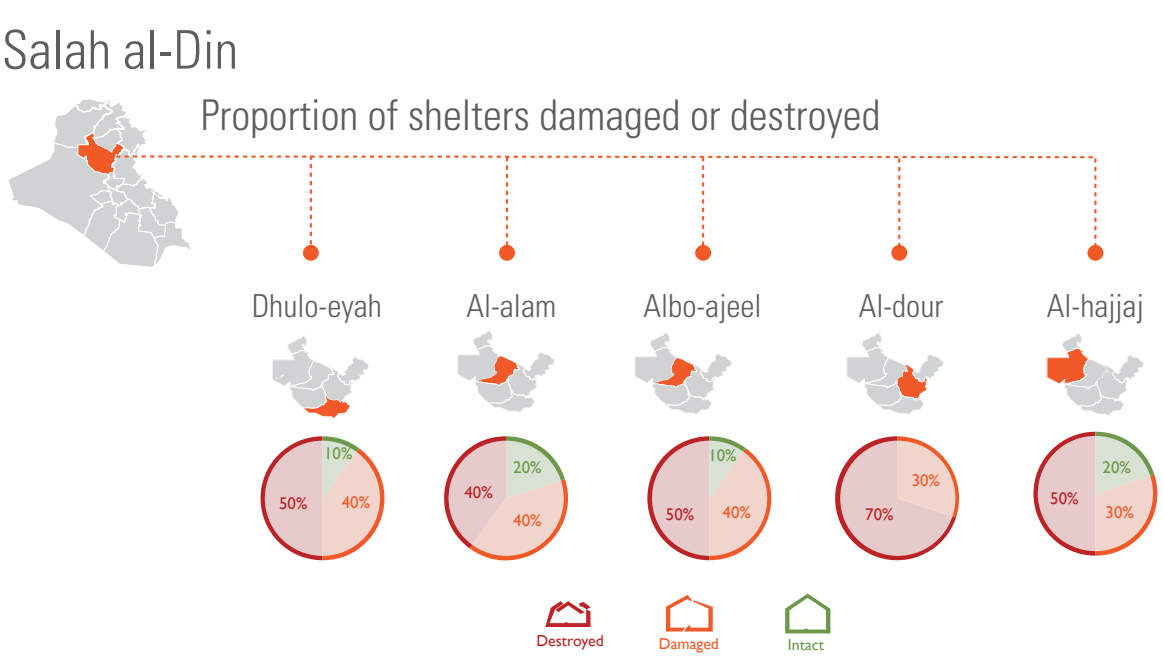
Mahmod has no source of income at the moment, but before the ISIS attack, Mahmod kept sheep.
On Aug 2-2014 Mahmod left his house with his family after the ISIS attack on the Sanoni region. He left his sheep and the shepherd at the mercy of ISIS.
Mahmod was in contact with his shepherd after he left and as the situation worsened, he told him to leave the area and take the sheep secretly to the safe areas under control of the Peshmerga forces.

During the long journey of over 60 km, the shepherd lost many of the sheep due to lack of fodder and water for the animals.
After the liberation of the region by the Peshmerga, the people began to return to their homes. Mahmod found the animal shelters destroyed along with the stores of fodder. This led to the spread of disease and some of the sheep lost their lambs further decreasing the number of sheep in the herd.
Despite all of these losses Mahmod will continue to work to regain the livestock that he once had to support himself and his family.

5.3 Vet services, shelter and fodder

The majority of shelters have been damaged or destroyed during the fighting, often after the displacement and in absence of the farmers. After being displaced for a prolonged period of time, many farmers who returned to their communities have found their animals missing and shelters ruined. During the harsh Iraqi winter many animals are currently being sheltered by improvised structures. However, veterinarians report that due to inadequate floors and ceilings, the shelters are too cold in winter, and will be equally too hot in summer. This has already led to lung disease and infections among the animals in some areas. Figure 11 illustrates the damage to animal shelters in the districts of Salahadin. In Ninewah diseases such as plague, smallpox and Foot & Mouth disease are spreading faster and more easily than usually before. Other rising ailments such as inflammatory bowls and lungs are caused by a lack of adequate shelters.

Figure 30: Proportion of shelters damaged or destroyed (Salahadin)



Another serious problem is the access to medicine, vaccines and other veterinarian services. The government has largely stopped paying veterinarians' salaries as well as their provision of vaccines and medicines for animals. Prior to the crisis, this type of government support ensured that most farmers (70 – 100%) had access to vaccines and medications. Now, farmers are forced to rely on more expensive local market where demand is high while supply is low. Due to the suspension of government support, many farmers also report a shortage of fodder.

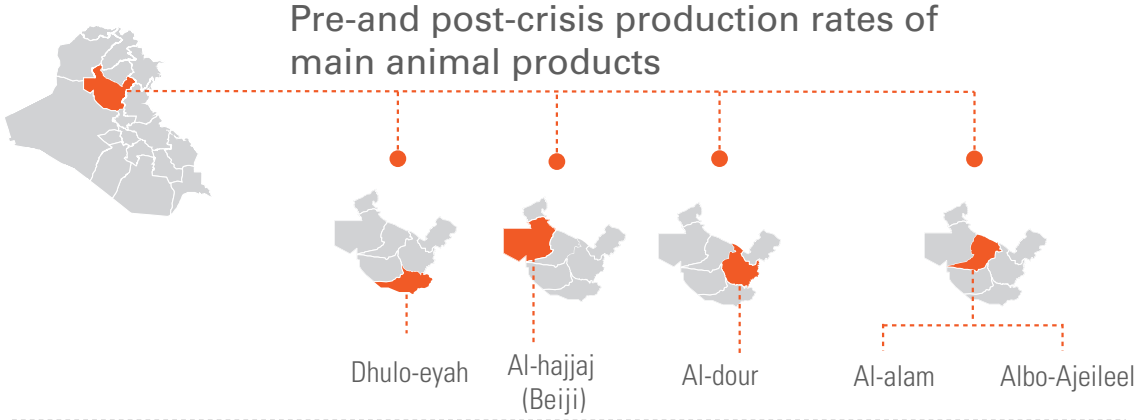
5.4 Reduced production levels

Due to displacement, loss of animals, negative coping mechanisms such as distress selling of animals, and a lack of adequate fodder, farmers have not been able to meet their pre-crisis production levels. In Salahadin, the main products; meat, milk and eggs, average a production loss of 53%, 71% and 62%, respectively across the five districts. The dairy sector is particularly impacted with a loss of sometimes 75 or 80% in Al-alam and Dhulo-eyah districts. Figure 31 gives a detailed overview per district.

Figure 31: Pre- and post-crisis production rates of main animal products

Salah al-Din

Pre-and post-crisis production rates of main animal products

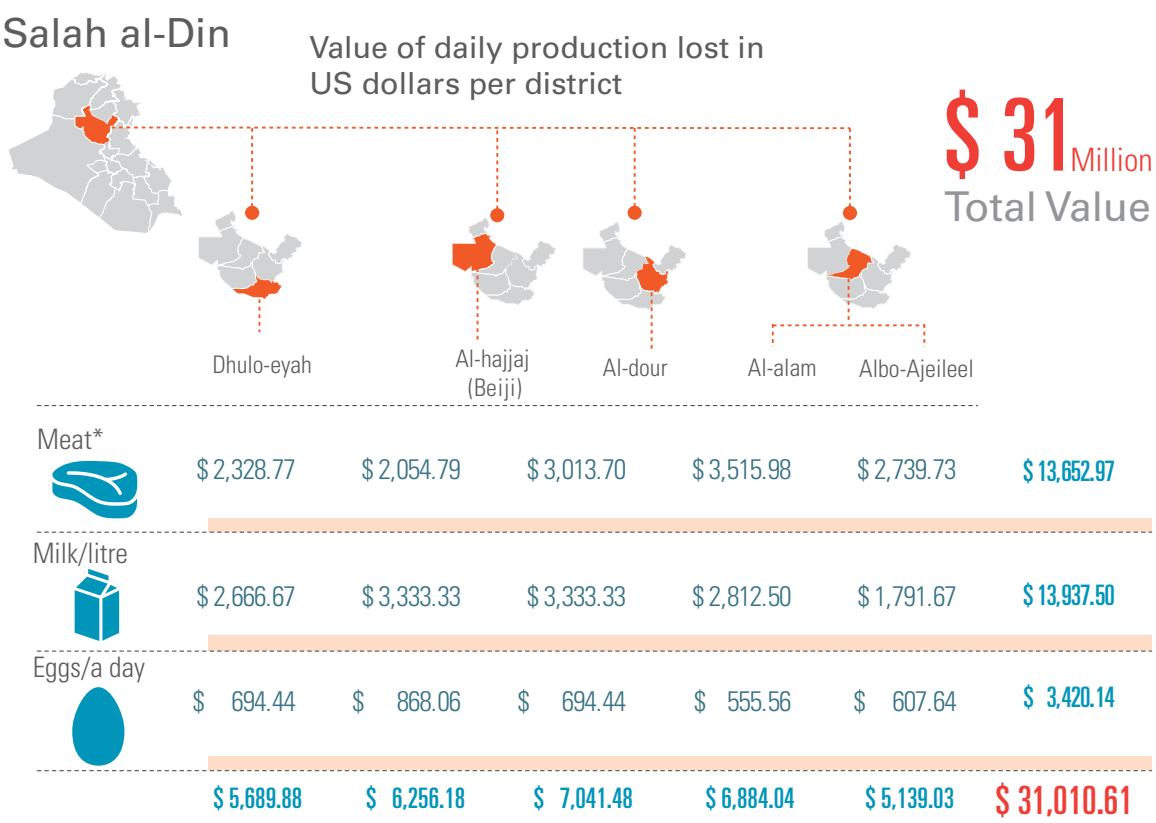


		Dhulo-eyah	Al-hajjaj (Beiji)	Al-dour	Al-alam	Albo-Ajeileel
Meat*	Before	185	150	200	180	180
	Now	100	75	90	70	80
	% change	-46%	-50%	-55%	-61%	-55%
Milk/litre	Before	5,000	3,000	3,000	4,000	3,000
	Now	1,000	1,000	1,000	1,000	1,000
	% change	-80%	-66%	-66%	-75%	-66%
Eggs/a day	Before	7,000	8,000	6,000	8,000	6,000
	Now	2,000	3,000	2,000	4,000	2500
	% change	-71%	-63%	-66%	-50%	-58%

(*) ton per year

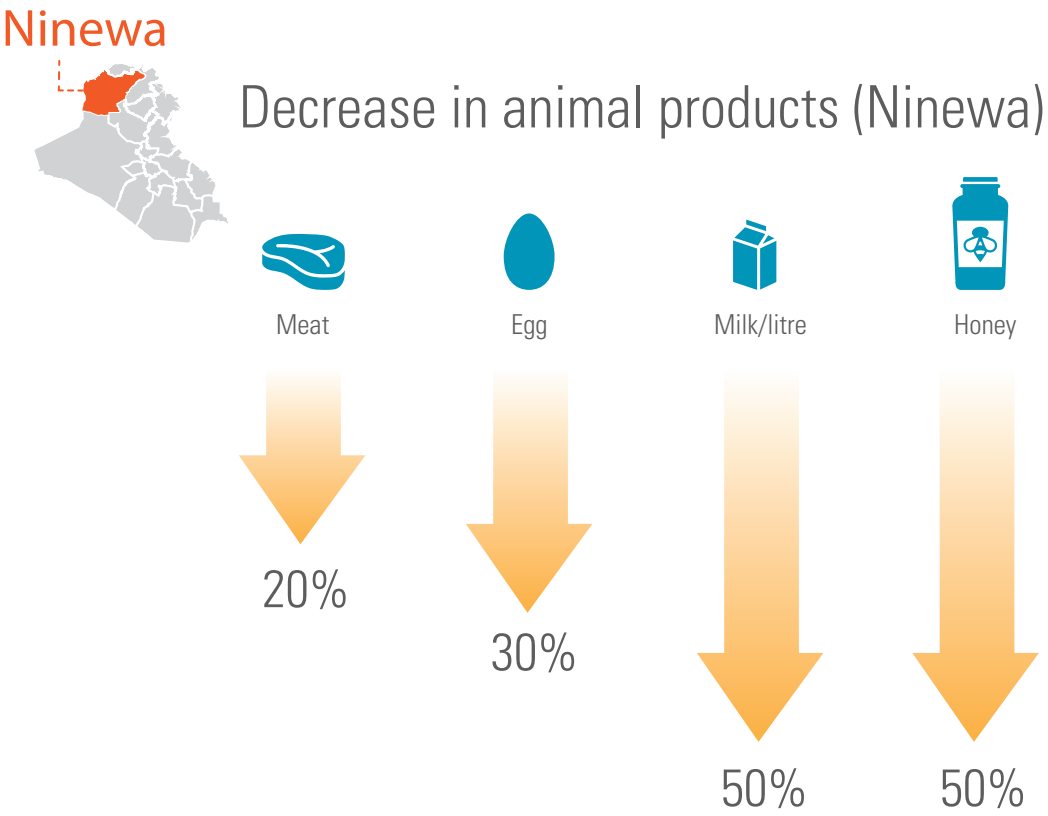
If we assume local market prices reported in each district, we can equate the loss in production quantity with a value in US dollars. Figure 32 shows a collective loss of all farmers in the five districts of Salahadin to be 31.000 US dollars – a day.

Figure 32: Value of daily production lost in US dollars per district (Salahadin)



This loss of income impacts livestock holders especially bad since incomes are already under strain due to increasing costs of keeping animals. In the absence of governmental support, farmers are dependent on prices in the local market. However, as the availability of fodder and veterinarian services is compromised, prices of medicine, vaccines and feed for animals have risen sharply. The loss of animal products in Ninewa is shown in Figure 33. As a result of the smaller herd sizes, animal products have decreased significantly. The daily production of meat and eggs has decreased by 20 and 30 percent, respectively, while production of milk and honey has even declined by as much as 50 percent.

Figure 33: Decrease in animal products (Ninewa)



To restore livestock production, farmers report an immediate need for fodder and adequate animal shelters. Additionally, there is a pressing need for the restoration of the availability of veterinarian services in the region, in particular medicines and vaccines. Although the federal government has stopped providing veterinary inputs such as medicine and vaccines to the farmers, this vacuum was partially filled by the Kurdistan Regional Government (KRG) who has started supplying the farmers in Ninewa with some types of vaccines. However, farmers still report an urgent need for medicine and other vet services. Additionally, farmers currently lack income and cash to buy back animals previously sold under stress.

6. IMPACTS OF THE CRISIS ON FISHERIES AND AQUACULTURE

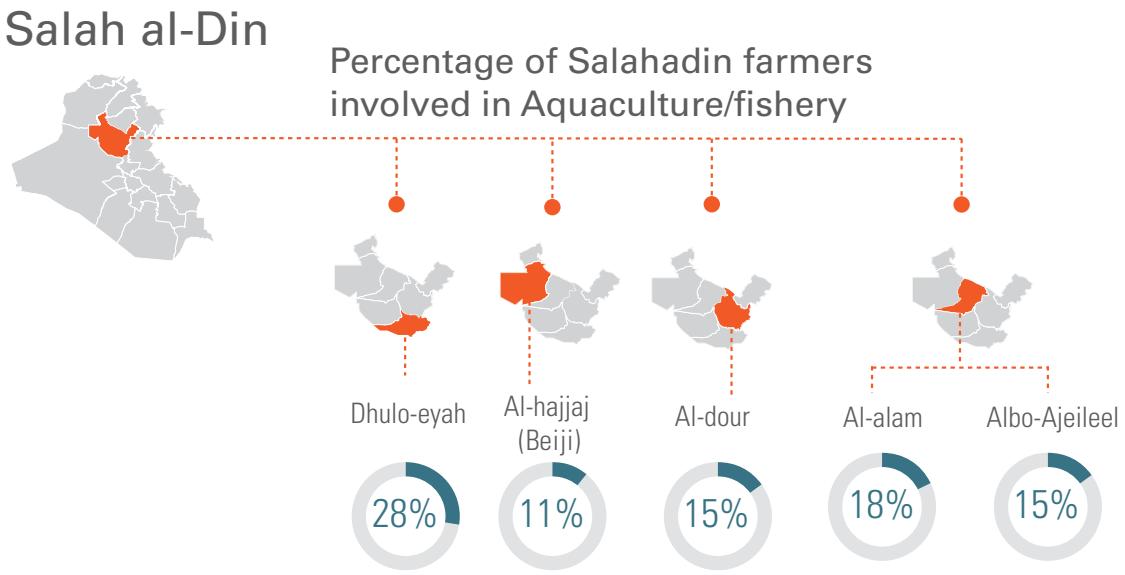
Key messages

- In some areas up to 28% farmers engage in aquaculture and nearly 18% breed fish.
- On average 46% of fish ponds were destroyed while in some place up to 90% boats were destroyed.
- On average 50% hatcheries were destroyed, while damage to tools ranged from 10 to 100% across districts.
- Post crisis production of fish is about 20 to 50% pre-crisis levels.

6.1 Introduction

In addition to farming and keeping livestock, Iraqi farmers often engage in aquaculture activities. This pattern is conspicuous in the places covered in this study. In fact, aquaculture is considered to be an important livelihood for farmers in those areas as the figure below shows. In Aldholou'ia Salahadin, discussants reported that around 28% of the farmers are involved in aquaculture while in Al-alam around 18% breed fish. Farmers mainly use ponds for fish farming in these areas, although they also venture out on lakes and rivers to catch fish, but to a lesser extent. The main types of fish bred are Carp, Karl and Silver.

Figure 34: Percentage of Salahadin farmers involved in Aquaculture/ fishery



In Ninewa, three types of catch are common: Carp and Sheklat, both caught in spring from March 15th – April 15th, and Carp from April 1st – June 15th. Most fishing is done legally by using boats and nets but occasional use of illegal methods such as explosion, electricity and poison has also been reported.

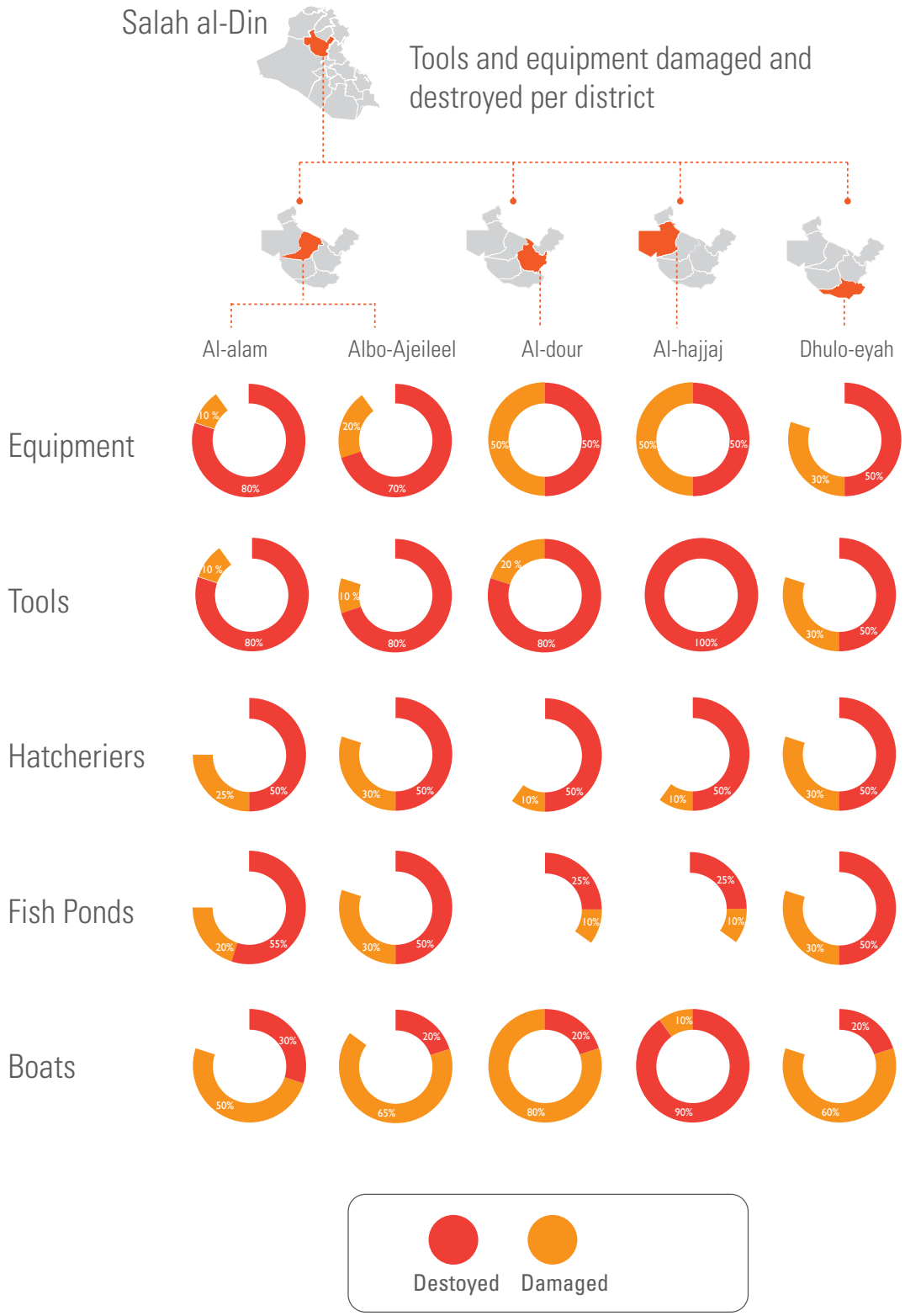
6.2 Equipment Damages and Losses

The discussions highlighted that the majority of the tools and equipment used in aquaculture were either destroyed or damaged during the conflict. As figure 35 illustrates, on average around 46% of the fish ponds in assessed areas in Salahadin were reported to have been completely destroyed. Al-alam district was most impacted with 55% of its fish farms destroyed. Figure 35 also indicates that 90% of the boats in Al-hajjaj sub-district were destroyed. In Al-dour district around 80% of the boats were badly affected. With regards hatcheries, 50% destruction was reported across the five places assessed in this study whereas the highest percentages of damage were reported in Aldholou'ia and Albo Ajeel, 30% each. Farmers have lost all of their tools used for fishing and breeding in Alhajjaj sub-district. Finally, Aldour district and Alhajjaj reported the highest percentage of damaged equipment, 50%, followed by Aldholou'a, Albou Ajeel and Alalam, 30%, 20% and 10% respectively.

In Ninewah governorate, boats and fishing tools were usually made and sold in Mosul. A boat with engine cost about 3.000 USD. However, since Mosul became inaccessible since June 2014, most fishermen now buy their fishing tools (rods, paddles, nets etc.) from the town of Zakho. However, fishermen report a lack of quality and supply in tools. In May 2015, no boats were sold in Zakho but the salesmen selling fishing tools reported they had the capacity to build and sell boats for 450.000 IQD, or 375,- USD (no engine) and with engine 2.5- 4 million IQD (2.000 – 3350,- USD). Since merchants in Zakho buy their tools from Istanbul or Baghdad, the supply chain is lengthened, increasing costs for fishermen.

In Kirkuk, fish farming and aquaculture activities are less common with farmers reporting only to engage in such activities on a limited scale in Daquq district. In Dibis and Yaichi sub-district, none of the farmers reported to have had any fish farming facilities prior to the conflict. Although the importance of fish breeding in Kirkuk is thus marginal, it could constitute an appealing opportunity to build-back-better as it would help farmers in the Kirkuk governorate to diversify their activities and thus the local economy/ agricultural sector. However, before such conclusions can be drawn with certainty, a more thorough market-analysis may be needed.

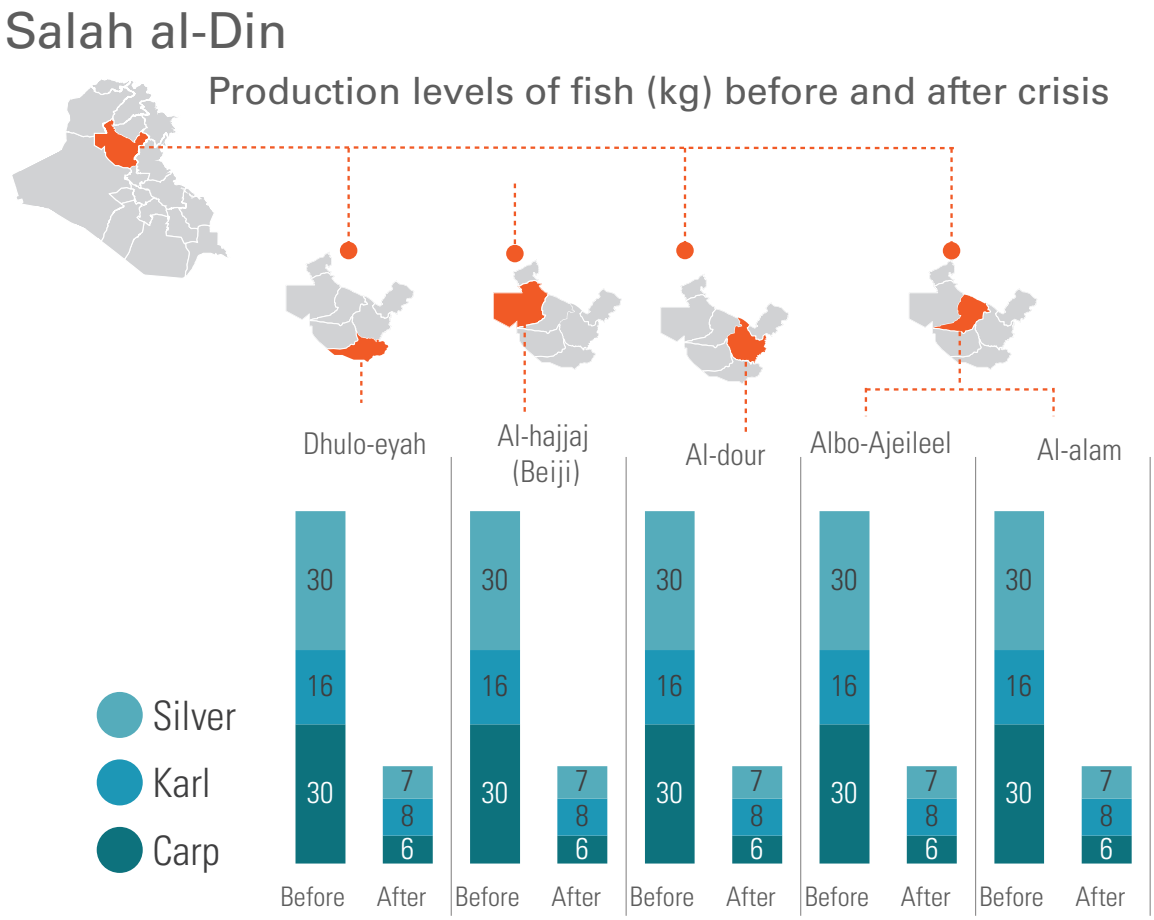
Figure 35: Tools and equipment damaged and destroyed per district (Salahadin)



6.3 Production levels

IS's offensive in 2014 had grave effects on fish production levels in the five places assessed. In comparison to pre-crisis situation, farmers' average daily fish catch has sharply declined. Prior to June 2014, data from Salahadin indicates that on average 30 Kg of Carp, 16 Kg of Karl and 30 Kg of Silver were fished daily. However, current production levels are much lower. Average production is now only 6 Kg for Carp and 7 Kg for Silver while Karl production has halved in all five district in Salahadin.

Figure 36: Production levels of fish (kg) before and after crisis in Salahadin



Due to the decrease in production and supply, prices of fish have gone up in most areas except for Al-alam where the price of carp has dropped slightly. Compared to the pre-crisis situation, Carp fish has increased in price in all of the other areas by 750 IQD ($ 0, 63) per kilo on average. Karl fish price on the other hand, has changed only in two areas, Alhajjaj and Aldour. In Aldour the price has gone up by 50%, whereas in Alhajjaj the increase has reached 25%. Silver fish changed slightly in Alalam district only by 12.5%. It is worth mentioning that compared to pre-June 2014 situation, collective fish breeding income in the assessed areas is now reduced by around $980 daily.

In the Zummar region of Ninewa, pre-crisis production was roughly 10 tons of fish per day. It is estimated that current production fell to a mere 2 tons per day. Production costs for fisherman were approximately 300.000 IQD ($ 250,-) per month. Before the crisis, a fisherman could earn up to 50.000 IQD ($ 41, 50) per day. Currently, fishermen can only earn up to 10.000 IQD ($ 8, 35) a day forcing many to look for other jobs to supplement their loss in income. Numbers presented in the FSC assessment suggest daily catch of all three types of fish have roughly decreased by 75% [17]. Figure 37 juxtaposes production and income levels in Zummar related to fish, now and before the crisis.

Figure 37: Pre- and post-crisis fish production and incomes Ninewa[18]

Ninewa

Pre- and post-crisis fish production in (Kg) and incomes

	Daily income (IQD)	Possible Production per Day	Daily Income (IQD)	Possible Production per Day
	IQD 50,000		IQD 10,000	
Shabot	IQD 6,000	8	IQD 5,000	2
Carp	IQD 5,000	10	IQD 4,000	2.5
Sheklat	IQD 1,000	50	IQD 750	13

Conversion: 1200 I raqi Dinar = 1, - US Dollar

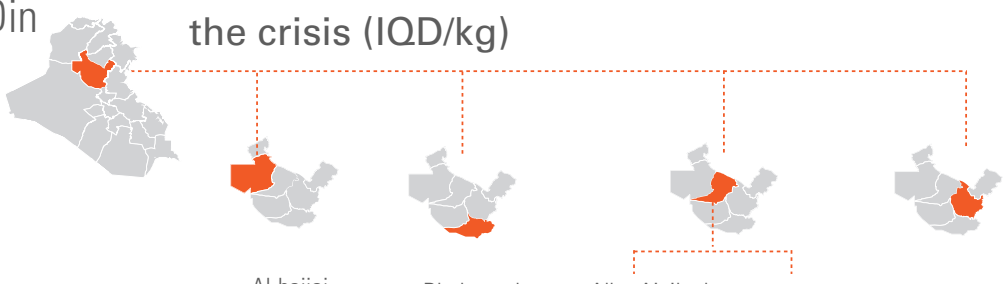
Before the crisis, almost all of the fish farmers had access to fish feed and

[17] Food Security Cluster (May, 2015: p. 34). Recovery and Stabilisation Strategy For Newly Liberated Areas of Iraq: Zummar

[18] Food Security Cluster Report. 2015.

Figure 38: Prices of fish before and after the crisis (IQD/kg) in Salahadin

Salah al-Din



		Al-hajjaj	Dhulo-eyah	Albo-Ajeileel	Al-alam	Al-dour
Carp	Before	5,000	4,000	4,000	5,000	5,000
	Now	5,500	5,000	5,000	4,000	5,500
Karl	Before	4,000	4,000	4,000	4,000	4,000
	Now	5,000	4,000	4,000	4,000	6,000
Silver	Before	4,500	4,500	4,500	4,000	4,500
	Now	4,500	4,500	4,500	4,500	4,500

Conversion: 1200 Iraqi Dinar = 1,- US Dollar

medicine. Yet, due to ensuing insecurity, access to these items has radically decreased to the point where only 10% of farmers in Albo Ajeel, Aldolou'ia and Alalam can obtain these items. In Al-dour and Al-hajjaj, farmers report to be completely unable to get hold of fish feed and medicine. Not surprisingly, prices for these inputs have surged. Currently, in all of the areas evaluated in this study the price of one ton of fish feed range from 600,000 to 1,000,000 IQD, while 5 litres of liquid garlic cost 50,000 IQD. In the short term, the main needs to recover aquaculture activities in the region are the rehabilitation and restocking of fish ponds, as well as the replacing of equipment lost in the previous months.

7. LIVELIHOODS

Key messages

- Farmers' income has been reduced by more than 50% since the war against ISIS with poorest among them having to survive on less than $200 per month.
- Among the most important factors for this downturn is the lack of payment by government to farmers for their crops for nearly two years now.
- People's assets, job opportunities, and small businesses have all been seriously damaged
- A structured approach to meet immediate as well as longer term needs is required.

7.1 Introduction

The war against ISIS has severely impacted overall the livelihood of people in Salahadin, Ninewa and Kirkuk. Before ISIS' attack, the people and communities of Salahadin were doing well and were hosting Internally Displaced People (IDPs) from other areas in Iraq. However, just as those people started rebuilding their lives and gaining foothold in their new communities, they were uprooted again as ISIS rapid advance prompted a quick retreat of the Iraqi Security Forces (ISF) in some of the areas.

Although return rates have been relatively high in Salahadin, IDPs often came back to find all of their belongings and assets destroyed or looted. Especially farmers, who were forced to abandon their lands and livestock, came back to find everything they'd owned gone. Currently, it is estimated that about 87% of people have returned in the districts Al-alam, al-hajjaj and dhulo-eyah. In Al-dour, the percentage of returnees is only 60% because many families are still too concerned about the security situation and the ISF is not allowing the return of some families close to the frontline. Similarly, in Albo-ajeel, a sub-district of Tikrit, over 400 families are reportedly not allowed to return by ISF on account of the security situation in their villages. There is some scepticism as to whether this is the true reason for not allowing the IDPs to return and villagers in Albo-ajeel have reported that trust levels among the various communities deteriorated and got "much worse" in comparison to the pre-ISIS situation.

Since the liberation of these areas in April 2015, many male members from the community have joined the armed forces in an attempt to shield their villages from ISIS attacks. The current security situation has forced these people out of the agriculture sector, the traditional livelihood in the region. Some of the farmers who have remained on the other hand, are hesitant to replant their fields and invest in their lands as long as the danger of ISIS has not been averted completely.
Return rates have been similar in liberated areas of Ninewa and Kirkuk and the livelihoods disruptions quite similar with returnees coming back to little or nothing on the ground with which to rebuild their livelihoods.

Nsayla Rasheed Mahmoud Ibrahim, farmer and mother of two.

Nsayla lived in Albo-ajeel with her husband and two children. The family owned around 90 acres where they planted wheat, tomato, cucumber and eggplant. They also owned a significant number of livestock.

Nsayla's family and close relatives took the decision not to leave their homes and stay until the ISF liberated their village from ISIS elements, as they were afraid their homes might be looted in their absence. Once their area was liberated by the Popular Mobilisation Forces, her husband, father, brother, uncles and cousins were arrested by these forces. Their fate is unknown until this moment in spite of being military officers until 15 June 2014. Later on, the arresting forces evacuated the women and children from the village because the military operations were still ongoing, they claimed. When the family returned back to their homes, they found their house totally destroyed and all of their belongings looted.

Currently, the whole family lives of 130.000 IQD (less than $110,-) per month, which she receives from individual donations and food parcels from humanitarian actors. She often goes to bed without dinner and her children sometimes have to eat lentil soup three times a day for three days in a row.

7.2 Employment, labour and income

Across the three governorates, wage labour in the agricultural sector is one of the main forms of employment. Additionally, shop keeping and employment by the government are important means of generating income. Many civil-servants also supplement their public salaries by working other jobs such as taxi-drivers. In many of the liberated areas the income of farmers has come under increasing pressure, further reducing the number of jobs available in the sector. Before the crisis, each farm employed around 14 workers on average [19]. In the current situation however, due to a lack of markets, falling prices and increasing costs, many farmers cannot afford to hire the labourers needed to work the same amount of land previously cultivated.

[19] FAO (sept, 2014: p. 19). Rapid Resilience Assessment of Farmers in Northern Iraq.

The income of farmers has taken a drastic downturn since the beginning of the war against ISIS. The average income is reported to have declined by more than 50% in most cases with the poorest of farmers now having to get by on as little as 167,- US dollars a month. The suspension of government support in providing farmers with seeds, fertilizers and pesticides means farmers now have to buy these goods themselves at local markets, where prices are rising exponentially. Similarly, the costs of keeping animals have also gone up as farmers' access to fodder and veterinarian services has decreased.

Most farmers and key informants have reported that the delaying (or suspending) of government payment to farmers for crop produce over 2014 and 2015 hurts farmers the most. Previously, the government bought the majority of farmer's produce such as wheat and barley at subsidised prices, above market prices, for storage in regional silos. However, farmers have not received their full payments for over a year and a half now and it is estimated that the federal government owes the farmers of Salahadin alone a total of nearly 181 million US dollars over the foregone period. Figure 39 shows the amounts owed per each district silo.
For many farmers, these funds are essential to invest and plant their fields

Figure 39: Iraqi Government Debt to Farmers in Salahadin

Salah al-Din

$ 181 million

Iraqi Government Debt to Farmers

		Iraqi Dinar	US dollar
Tikrit Silo	IQD	44,000,000,000	$ 36,666,666
Al-alam Silo	IQD	31,000,000,000	$ 25,833,333
Beiji	IQD	76,000,000,000	$ 63,333,333
Al-dour	IQD	66,000,000,000	$ 55,000,000
Total	**IQD**	**217,000,000,000**	**$ 180,833,332**

for the next season. Displacement, lack of capital and access to credit are currently keeping farmers from replanting most of their fields. Additionally, the few farmers that have managed to retain some capital are reluctant to invest in their lands as the danger of ISIS attacks is still looming large. Instead, they'd rather hold on to their savings in case they will need it later. As previously mentioned, the current security situation has also drawn a lot of young men needed to work the land to join the armed forces in order to protect their villages. A significant number of farmers have also left their main jobs and taken up work in construction, or as taxi-drivers and cleaning labourers because they lack the ability or financial means to plant again for next season.

There is an urgent need for cash or income support in all the newly liberated areas. Because of the delayed government payments, the need for small grants and loans to recover livelihood activities is great. Importantly, supporting the recovery of the agricultural sector will provide citizens with much-needed job opportunities. Livestock support is also needed to make sure people can live of the income generated by animal products and to recover previously vibrant markets. The loss of the Mosul market has hit the agricultural supply-chain hard. This, in combination with the loss of guaranteed public procurement, makes it is essential to support activities aimed at creating jobs and boosting market activity in these districts.

The breakdown of the Al-Jazeera irrigation project in Ninewa has affected people's livelihood in two main ways. Firstly, it has largely halted agricultural activity in the region and secondly it was a major provider of job opportunities before the crisis. As a result, average incomes in Rabiya have seen a sharp decrease since the start of the crisis in the summer of 2014.

7.3 Assets, food security and coping mechanisms

Displacement has led to the loss of most possessions for many farmers. As one community leader in the sub-district of Al-hajjaj remarked: "We lost so many people, our lands were destroyed, properties were looted and nothing was left for the people to enable them to start a new life".

The loss of crops, fields, and livestock has impacted the entire population of the newly liberated areas. In many cases, farmers returning found nothing but destroyed houses, yellow dried-up lands and ponds, and fields devoid of the sheep and cattle which they were forced to leave behind when they fled months before.

In their time of displacement, many farmers were forced to sell their assets as well as whatever livestock they managed to take with them during their flight, in order to garner some kind of income for their families. The collapse of the federal food distribution system (PDS) compounded the problems for many farmers and their families as they struggled to retain a sufficient daily nutritional intake. Food insecurity has become more widespread. People eat less expensive food, reduce the number of daily meals and borrow money where they could in order to provide for themselves and their families. Amplifying the problem of food insecurity is the fact that the region is hardly accessible to international organisations and very few NGOs are currently active in the region. Finally, locals report a lack of social cohesion and a deterioration of intra-community trust levels. The main needs for restoring livelihood and recovery of food security are an increase in security, alternatives to the collapsed PDS system such as WFP Food Vouchers, employment opportunities through the recovery of irrigation projects and the agricultural sector, as well as short-term cash assistance.

Ghaniyah, Ekah Sahhab Dhabab Al-doury Widow and mother of three.

Ghaniyah, 36, was living in Jillam, A-dour village with her husband and children before ISIS came. Her husband owned 90 acres of farmland where he cultivated wheat and vegetables. They also owned cattle, sheep, goats and poultry and had their own house and a car.

Under ISIS occupation their power was cut, the irrigation pumps weren't working and they could only sell their produce locally for little money. Ghaniyah and her family decided to leave their lands, property, cattle and livelihood to try and make it to Kirkuk, where it was safer.

In May 2015, the family returned to their village only to find burned land, destroyed irrigation and equipment and a totally empty house as everything was looted. Five days after their return, Ghaniyah's husband went to check on his land and livestock when a bomb near him exploded —killing him instantly. Currently, Ghaniyah lives without any source of income along with her three children. The family is completely dependent on aid provided either by the government or humanitarian organisations to secure basic living needs let alone support needed to restore and replant their land, and pay to renovate their damaged home.

7.4 Main needs identified

Crops: Fertilisers, seeds, pesticides, farming equipment, storage facilities, green houses

Livestock: restocking animals, veterinary services and inputs, animal shelters, access to pastures, poultry feed

Fisheries/Aquaculture: rehabilitation of ponds, boats, fishing equipment, fish feed and medicines

Livelihoods: Grants or affordable loans, improved access to markets, support to restart micro and small businesses; payment of salaries.

7.5 Approach to building resilience

People's livelihoods are a function of their activities, the assets which they own or have access to, their capabilities, the policy/governance environment and the availability of basic services. Activities include jobs as salaried workers or wage labour, small and micro businesses; assets are human, social, natural, physical and financial capital, while capabilities relate to skills, attitudes and personal drive. The policy/governance environment includes issues of security, government support to various livelihoods aspects, various sectoral including agricultural policies, investment climate etc. Basic services include the provision of WASH, education, health communication services, security etc. In all of these areas the situation is worse now than it was before the crisis. In the case of agricultural livelihoods which is the main concern of this study, assets included land, water sources, fishing ponds, animal shelters, agricultural equipment and tools, stores of fertilizers, seeds and pesticides, livestock, standing and harvested crops etc., In each case, as shown in this report, most of these assets have been damaged or destroyed. Jobs and businesses have disappeared. Government support in the form of subsidies, PDS and procurement of farmers' grain has been cut. But the peoples' capabilities and their indomitable spirit to rebuild are still there. However, they need urgent support to move forward. It is impractical to attempt to address all of the issues outlined in the preceding sections of this report at the same time. Therefore, an approach in which immediate needs are met, while at the same time setting the stage for longer term prosperity is required. Such an approach is summarised in the matrix in section 8 below.

8. RECOMMENDATIONS: RESILIENT LIVELIHOODS RECOVERY.

	IMMEDIATE INTERVENTIONS	EARLY RECOVERY INTERVENTIONS	SUSTAINABLE LIVELIHOODS INTERVENTIONS
CROPS	Direct distribution of seeds, fertilizers, pesticides, and temporary storage facilities. Clearance of land mines	Rehabilitation of storage facilities. Support farmers and agro suppliers with credit facilities to improve access to inputs	Introduce crop insurance schemes. Promote alternative crops and more diversified cropping patterns. Improve extension services. Review relevant agricultural policies.
IRRIGATION	Repair equipment. Dig new wells as temporary measure.	Rehabilitation of irrigation infrastructure	Expand advanced irrigation systems and introduce user fees for water
LIVESTOCK	Restocking. Direct provision of feed. Temporary shelter with tarpaulins. Provide emergency vet services.	Rehabilitation of shelters by distribution of building materials or use cash or voucher schemes. Subsidise feeds or feed-mills. Expand vet services. Provide support to expand stocks.	Introduce livestock insurance. Expand Artificial Insemination to increase productivity. Regularise vet services. Provide credit facilities. Improve market access. Review relevant livestock policies
FISHERIES/ AQUACULTURE	Direct support to restocking existing ponds. Direct provision fish feed and meds. Cash for work to rehabilitate ponds/hatcheries	Expand Rehabilitation of ponds/hatcheries through voucher schemes and cash for work. Subsidise restocking.	Provide credit facilities for aquaculture expansion. Introduce effective extension services. Improve/ diversify market access
LIVELIHOODS	Provide food or food vouchers for most vulnerable; cash for work to rebuild community agricultural infrastructure debris removal. Support clearance of mines.	Provide skills development to support complementary livelihood activities. Stimulate redevelopment of cottage agro industries: cheese, yoghurt, preserved fruits etc.	Review total asset and capabilities portfolio of farm and non-farm rural livelihoods systems and make comprehensive recommendations for sustainable livelihoods

ANNEXES

Annex 1

TOR's of the Assessment.

Food and Agriculture organization of the United Nations

Terms of Reference for Consultant/PSA

Minimum number of years of relevant experience required: 1yr ☐ 5yrs ☐ 12+yrs X

Job Title:	International Livelihood and Needs Assessment Specialist (consultant)			
Location:	Initially based in Erbil, Iraq with travel to the field and upon completion of fieldwork homebased			
Expected Start Date of Assignment:	26 November 2015		Duration:	(40 days WAE) (NTE) 15 January 2016
Reports to:	*Name:*	Neil Marsland Fadel ElZubi	*Title:*	Senior Technical Officer (TCE) FAO Representative in Iraq

General Description of task(s) and objectives to be achieved

Background

Due to the prolonged and ongoing conflict, Iraq continues to be a very unstable country. According to FAO country briefing there are an estimated 4.4 million people that are currently in need of food security assistance. Such group includes: IDPs, host communities, returnees and others people who remained in the affected areas during the conflict. In addition, agriculture-based livelihoods face severe constraints across the value chain – from production to marketing and food security conditions are likely to be deteriorated with large number of IDPs putting burden on hosting communities.

The agriculture sector has suffered major disruption in different governorates of the countries which continue to be in the hands of rebel troops, including those recently liberated. Crop farming and animal husbandry are considered among the main source of income for most the households living in the rural areas of the country. The ongoing conflict continues contributing to the interruption of cropping cycle productions, due also to shortages of irrigation water and agricultural inputs, which have caused shortage of food availability, and disturbance to income generating activities. In

addition to that, the livestock sector has been also significantly affected. Insecurity caused difficulties for herders in feeding their animals and in some cases forced them to abandon or sell livestock.

As the situation continues to evolve in many parts of the country, FAO Iraq expressed a strong need to gather in-depth agriculture sectorial information on the disruption of the livelihood activities of communities located in some of the newly liberated areas, including their challenges on crop production, livestock rearing, and accessibility to markets and irrigation water. This information is crucial to provide timely and targeted assistance to the most vulnerable groups and locations, as well as to appeal for the necessary funds to implement rehabilitation interventions and longer-term development projects.

Overall objectives of the Assessment

1. To obtain a realistic picture of the impact/effects of the crisis on the agriculture sector, including crop production, livestock rearing, fishery/aquaculture and irrigation.
2. To assess the agricultural livelihood status of the affected communities and their degree of vulnerability.
3. To identify the different challenges the rural communities are facing in the recovery process.
4. To identify priorities for recovery needs and corresponding interventions for the remainee and returnee communities who depend on agriculture for their livelihood.

Geographical focus of the Assessment

The required assessment will target selected newly liberated areas in three Governorates namely Nineva, Kirkuk and Salah Al Din.

Methodology

Data collection will consist on secondary data collection, review and analysis.

In addition, Focus Group Discussions (FGDs) and semi-structured interviews at community level will be conducted with affected remainee and returnee people. This primary data collection will allow triangulation and validation of the secondary data information and will be the base for short case studies stories.

FAO's national partners (local NGOs) based in the targeted governorates will provide enumerators to conduct both FGDs and interview under the supervision of the FAO international consultant.

Main tasks of the consultant

The main purpose of this consultancy is to make sure that FAO will have an international consultant who will lead and coordinate the Assessment in Iraq on its behalf.

As part of his/her job the consultant will be responsible to ensure that the Assessment will contribute to the following:

1. Evaluate the effect of the conflict on the livelihood patterns of affected population with particular focus on families involved in crop production and livestock rearing with special attention on the returnee and remainee population groups.
2. Develop an understanding on the coping strategies adopted by households in response to the conflict.
3. Study the effect of the conflict on the population groups, with special emphasis on women, children and other vulnerable groups consisting also in the production of short case study stories.
4. Define vulnerability context (shocks, trends, etc.); identify existing livelihood assets and activities (human, natural, financial, social and physical capital).
5. Assess specific needs and potential recovery interventions in order to address them in the short, medium and long term.
6. Examine local institutional arrangements in which community coping mechanisms and hazard specific resilience activities can be enhanced.
7. Produce check list and other data collection tools.
8. Lead the facilitation of the enumerators training.
9. Lead and coordinate fieldwork activities required for data collection.
10. Conduct data analysis and write the final assessment report.
11. Any other tasks as requested by the immediate supervisor.

key performance indicators	
Expected Outputs:	Required Completion Date:
Deliverables: Jointly developed and approved assessment tools as well as fieldwork implementation plan. Conducted training to enumerators. Final endorsed Assessment report including short (emergency), mid-term (recovery/rehabilitation) and long term (development) intervention strategies. Back to Office / mission report.	15th of February2015

Required Competencies
Selection criteria: University degree in agricultural economy, agronomy, rural development or related fields. Broad experience in conducting jointly agriculture, livelihood and needs assessment with other international organizations and government authorities. Good knowledge of assessment methodologies, including data collection and analysis techniques. Good reporting capacities. Excellent mastery of written and oral English. Ability to perform in multi-cultural and multi-disciplinary context.

Annex 2

Training Workshop Agenda.

TRAINING AND INFORMATION GATHERING PREPARATORY WORKSHOP: December 5-December 8; 2105. CANYON Hotel, Erbil.

AGRICULTURE AND LIVELIHOODS NEEDS ASSESSMENT IN NEWLY LIBERATED AREAS (Nineveh, Salah al Din, and Kirkuk) IN IRAQ.

OBJECTIVES:

Data Gathering Objectives:

Participants on Day 1 who will comprise FAO partners as well as enumerators selected for the exercise will use day 1 of the workshop to work in groups to

> Produce outlines of what is already know by them or their agencies of the pre- and post ISIS impacts in the newly liberated areas and list their ideas of what is required for recovery strategies and interventions.

Training Objectives:

At the end of days 2 and 3, workshop participants who will essentially comprise enumerators will be:

> Aware of the PDNA, PCNA, LAT and related assessment tools.
>
> Be able to use selected tools and approaches (FGDs, KIIs, participant observation etc.) for the conduct of agriculture sector and livelihoods needs assessments
>
> Be familiar with the checklists (semi structured questionnaires) and the indicators to be used in the assessment and how to obtain the relevant data in the field using FGDs, KIIs, direct participant observations etc.
>
> Be aware of the field situation and the logistics.

AGENDA.

		Topic	Presenters
		DAY 1. Sunday December 6.	
09.00	09.30	Welcome. Introductions. Workshop Objectives and Agenda.	*Naresh* *All Participants*
09.30	10.00	What do we need to know? Introduce check List 1. Discuss effects in terms of damage and loss , needs, recovery strategy and interventions	*Naresh*
10.00	10.45	Plenary discussion of data requirements, approach to the assessment.	
10.45	11.00	Break	
11.00	13.00	Partner Presentations of the pre and post-conflict situation and discussion (6 x 15 mins presentations) + discussion 5 mins each	*Partners*
13.00	14.00	LUNCH	
14:00	15.30	Recovery Strategy and Possible Interventions. Include Build Back Better, Conflict Sensitivity, Resilience Measures	*Group Work*
15:30	15:45	Break	
15:45	16:40	Plenary. Groups share their findings.	*Group Reps*

		DAY 2. Monday. December 7th.	
9.00	10.00	Data Collection Tools: FGDs, KIIs, direct participant observations, validation/triangulation, report preparation. Presentation and Discussion	*Naresh*
10.00	11.00	Role Play (FGDs)	*Groups*
11.00	11.15	Break	
11.15	13.00	Role Play Cont'd (FGDs)	*Groups*
13.00	14.00	Lunch	
14.00	14.45	Plenary. Group presentations	*Group Reps*
14.45	15.30	Role Play (KIIs)	
15.30	15.45	Break	
15.45	16.30	Plenary. Group Presentations	*Group Reps*
		DAY 3. Tuesday. Dec 8th.	
9.00	10.00	Reflections on lessons learned from Day 2. Identification of what needs to be improved/changed	
10.00	11.00	Group Work to refine Checklists.	
11.00	11.15	Break	
11.15	12.00	Plenary Presentation of Changes. Finalization of semi structured questionnaires for field use.	
12.00	12.30	Logistics Briefing for Field	
12.30	13.30	Lunch (Final questionnaires printed and copied)	
13.30	14.00	Questionnaires circulated and enumerators leave for the field.	

Annex 3

Checklist 1. Overview of Information Required

Main information required for agriculture needs assessment.

The information should be as accurate as possible and disaggregated at Governorate's level (where feasible) or at least should be specifically reflecting the situation in the targeted Governorates of Nineva, Kirkuk, Salah Al Din.

The information can be provided through brief, outline and assessment reports; statistical books; national development plans, publications, case studies, newspaper articles and other informative material.

Section 1 – Crop and plantations

Pre-Conflict information (before Conflict):

Area of land under cultivation, possibly in Ha or acre (disaggregated by each annual and perennial crop including plantations (vineyard, fruit orchards, etc.) and additional cash crop, fodder and staple crop grown in the country.

Expected yield per Ha or acre (for each crop, plantation, etc.).

Seasonality of the crop (cropping calendar).

Amount of stocks in the country (feed, seeds, grain, fertilizer, agricultural inputs, etc.).

Numbers and types of agricultural assets owned by farmers in the country (tractors, farm machinery, equipment, etc.).

Area of agricultural land under irrigation VS Area of rain feed agricultural land (Ha or acres).

Number, length and location of agriculture infrastructures (silos or other storing facilities, government buildings/offices, irrigation scheme, rural roads, etc.).

Price of agricultural machineries (tractors, mechanical hoe, etc.) and inputs (fertilizers, seeds, etc.) possibly retail and wholesale.

Cost of agricultural land (per Ha or acre) both irrigated and non-irrigated.

Market prices for all produced and exported crops and fruits (farm gate, retail and wholesale if possible).

Number of farmers engaging in crop and fruit production (distinction between women and men if applicable).

Post-conflict information (current or as update as possible):

Area of land affected in Ha or acre (disaggregated by each annual and perennial crop including plantations (vineyard, fruit orchards, etc.) and additional cash crop, fodder and staple crop grown in the country.

Expected yield per Ha or acre for each crop, plantation, etc.

Amount of stocks (feed, seeds, grain, fertilizer, agricultural inputs, etc.) damaged or lost.

Numbers and types of agricultural assets owned by farmers in the country (tractors, farm machinery, equipment, etc.).

Area of agricultural land under irrigation VS Area of rain feed agricultural land (Ha or acres).

Current or expected market prices for all produced crops and fruits (farm gate, retail and wholesale if possible).

Price of agricultural machineries (tractors, mechanical hoe, etc.) and inputs (fertilizers, seeds, etc.) possibly retail and wholesale.

Number, length and location of agriculture infrastructures (silos or other storing facilities, government buildings / offices, irrigation scheme, rural roads, etc.) damaged and destroyed.

Cost of agricultural land (per Ha or acre) both irrigated and non-irrigated.

Market prices for all produced and exported crops and fruits (farm gate, retail and wholesale if possible).

Number of farmers engaging in crop and fruit production (distinction between women and men if applicable).

Section 2 – Livestock

Pre-Conflict information (before Conflict):

Number of registered animal for each category (cattle, poultry, goats, sheep, bees etc.) also disaggregated by species if possible.

Total and individual amount of animal products produced by each livestock category as well as specie (milk, eggs, meat, honey, etc.).

Animal feed, medicine and vaccine costs and types (retail and wholesale).

Price of alive and slaughter livestock for each category and species.

Number of livestock facilities/infrastructures (feed and vaccine storages, vet services, etc.).

Number of livestock shelters.

Number of people engaging in livestock production (distinction between women and men if applicable).

Post-conflict information (current or as update as possible):

Number of registered animal dead and injured for each category and specie if possible.

Total and individual amount of animal products produced by each livestock category as well as specie (milk, eggs, meat, honey, etc.).

Animal feed, medicine and vaccine costs and types (retail and wholesale).

Current or expected price of alive and slaughter livestock for each category, specie and animal product (milk, eggs, meat, honey, etc.).

Number of livestock facilities/infrastructures (feed and vaccine storages, vet services, etc.) damaged or destroyed.

Number of livestock shelter damaged or destroyed.

Number of people engaging in livestock production (distinction between women and men if applicable).

Section 3 – Fishery / aquaculture

Pre-Conflict information (before Conflict):

Number of fishponds / fish farms registered.

Number of registered fishery hatches.

Complete list of number and types of most common fishing assets (gears, motors, floats, etc.).

Average fish catch (kg /day / year) or average production disaggregated by fish species.

Fishing feed, medicine and vaccine costs and types (retail and wholesale).

Price of fish for each species sold per kg (farm gate, retail and wholesale if possible).

List of prices for gears and other fishing equipment (boats, engines, nets, etc.).

Number of people engaging in small scale and commercial fishing including aquaculture production (distinction between women and men if possible).

Post-conflict information (current or as update as possible):

Number of fishponds / fishing farms registered affected.

Number of fishery hatches damaged or destroyed.

List of assets (boats, gears, motors, float, nets, etc.) damaged or destroyed.

Average fish catch (kg /day / year) or average production.

Description of fish feed and medicine (type and cost).

Price of fish for each species sold per kg (farm gate, retail and wholesale if possible).

Fishing feed, medicine and vaccine costs and types (retail and wholesale).

Number of people engaging in small scale and commercial fishing including aquaculture production (distinction between women and men if possible).

Section 4 – Livelihood and Food Security

Pre-Conflict information (before Conflict):

Number of people food insecure.

Main causes of food insecurity.

Main coping mechanisms.

Main food assistance programme.

Assets ownership.

Average amount salaries.

Main employments sector.

Main livelihood activities.

Post-Conflict information (current or as update as possible):

Number of people food insecure.

Main causes of food insecurity.

Main copying mechanisms.

Main food assistance programme.

Assets ownership.

Average amount salaries.

Main employments sector.

Main livelihood activities.

Annex 4

FGD Semi Structured Questionnaire.

Iraq Needs Assessment in newly liberated areas

Focus Group Discussion (FGD) checklist 2 template.

N.B. Each FGD should comprise 12-15 persons mainly crop and fish farmers, livestock holders, fisherman and others involved in businesses related to agriculture/animal production and fishery. Half of the people should be female and half male. Before starting FGD introduce the team members. Thanks the interviewee for their time. Explain the purpose of the assessment which is to obtain a realistic picture of the effects of the insurgence and options for recovery in the agricultural sector and its sub-sectors including crop production, livestock, fisheries/aquaculture as well as irrigation in order to support the recovery process. Avoid raising expectations as far as possible. The recovery process will have to build on what they have left and their vision of a better future.

Effect on Crops

1. What are the main crops grown in the village?

Main Crops Grown in the village (list them)	Indicate months of planting	Indicate months of harvesting

2. Which are the main affected crops?

Main affected crops (list them)	Percentage of Hectares affected (expected loss of production)	Percentage of Hectares destroyed (no production)

3. In the affected areas how much will the production decrease (please indicate a percentage)?

Main affected crops (list them)	Percentage reduction of production

4. Are you expecting to have a reduce yield this year compared to before the insurrection? If yes, why?
5. Please indicate the price now and before?

Crops (list them)	Price before	Price now

6. How many people have access on irrigation in the community (indicate %)?
7. Were the irrigation systems affected? If yes, which are the main problems experienced?
8. What is the average size of agricultural land owned by people?
9. Do usually people own or rent land (please specify percentage)

   Owning= %
   Renting= %

10. Did the insurrection result in the loss and/or damage of seeds, fertilizers, pesticide, agricultural tools/machineries? If yes, please list the one which have been affected.
11. Where any storage facilities (food, vaccines, seeds, harvest or fertilizers) destroyed? If yes list them.
12. What are the main needs to restore crop production? (Agricultural inputs, irrigation, tools/machineries, access to land, technical support form extension office, infrastructure, trainings, etc.). Please do not list these options, allow respondent to give their opinion and at the end list the 5 main needs.

Main needs to restore crop production	Short (next 6 month)	Medium (6-12)	Long (>12)

Impact/effect on livestock:

13. Did people lose animal due to the insurrection? If yes, please indicate below.

Animal lost (list them)	Number dead	Number injured

14. Can you please indicate the price of live animal?

Animal (list them)	Price before flood	Price now	Price same time last year

15. Do the people usually vaccine animal (Yes, no)? What percentage of people vaccine now compared to before?
16. Who provides the vaccine?

People buy it
Government
International organization
If no, why not?

17. Was any animal shelter/feed storage destroyed due to the flood? If yes please indicate.
18. What are the main needs to restore livestock production? (Animal restocking, provision of vaccine and vet services, water, shelter, feed, etc.). Please do not list these options, allow respondent to give their opinion and at the end list the 5 main needs.

Main needs to restore livestock production	Short (next 6 month)	Medium (6-12)	Long (>12)

Impact/effect on fishery and aquaculture

19. How many people (men and women) are involved in fisheries or aquaculture (indicate percentage)?

Fishery		Aquaculture	
Man	Women	Man	Women

20. Did the flood cause damaged or losses to equipment, tools, hatcheries, infrastructures, fish ponds, etc.? If yes indicate below.

List of equipment, infrastructure, etc.	100% destroyed	damaged

21. What is the average fish catch a day (kg) by different specie?
22. What is the average production in fish ponds (please indicate size of pond and amount of fish produced).
23. Please indicate the price of fish by specie in the market.

Fish species	Price (KG)

24. What are the main needs to restore fishery/aquaculture activities? (Provision of equipment, boats, fish, hatchery, etc. rehabilitation of fish pond, etc.). Please do not list these options, allow respondent to give their opinion and at the end list the 5 main needs.

Main needs to restore fishery/aquaculture production	Short (next 6 month)	Medium (6-12)	Long (>12)

Impact/effect on livelihood and food security

25. Do people usually engage in agricultural casual labour? If yes which period of the year, at which price and to do what? Please list below:

Casual labour activities	Man %	Women %	Month	Price a day/month

26. Did the people engaged in any negative copying mechanism since the flood? Please list below.

List of copying mechanisms	Percentage of people (%)
Rely on less preferred food	
Reduce number of meal a day	
Borrowing money	
Purchase food on credit	
Begging	
Distress sales of assets	
Others	

27. Do people have access to market? If not which are the main limitation?

28. What percentage people are receiving any food assistance before and after?

If yes, from whom?

29. Have you received any other support after the flood? If yes, what and from whom?

Type of support received	From whom

30. What are the main needs to restore livelihoods (jobs, assets, capabilities) and guarantee food security (access to credit, food assistance, employment opportunity, increase access to market, etc.?

Main needs to restore livelihood and guarantee food security	Short (next 6 month)	Medium (6-12)	Long (>12)

Annex 5

Guidelines for Key Informant Interviews

KEY INFORMANT INTERVIEWS (**KIIs**): (to be held with selected people who might have specific information or insights on the effects or options for recovery). These people could include government officials, political leaders (ministers, mayors, councillors etc.) community leaders, NGOs, business leaders.

The questions to be posed depends on who you are talking to.

For example: for an agronomist, Ask questions about crops damaged, irrigation challenges, inputs, markets etc. livestock officer: about livestock; fisheries officer: about fisheries and aquaculture, extension officer all agro sectors.

For a mayor or councillor, their perceptions of the major effects, challenges to recover, role and capacity of local government to help.

For a business leader: impacts on businesses, levels of employment by business now and before, effects on production chain from sources to markets, credit availability etc.

For an NGO leader: their perceptions of major effects and what it would take to recover. What policies or institutional arrangements need attention?

Use the KII opportunity to obtain more specialised technical information that community members would not be expected to have.

Annex 6

Checklist 3

(Face to face individual story interview)

Here what we want to capture is a good picture of the impact of the conflict on some individual households. We should have 4 face to face interview in each Governorate (2 with a remainee person and 2 with a returnee. At the end we should have 4 stories in total per Governorate. Possibly we should have one male and one female interview for each remainee and returnee group interviewed. The interview shall comprise the presentation of the interviewee (name of the village and district, personal name, age, education, number of kids, main livelihood activities, sources of income, etc.).

After that we want to capture how the conflict affected the life of this person and what his/her family lost in terms of livelihoods, income sources, assets house, (land, water sources, crops, livestock, fisheries, social networks, etc.).

What are the main coping mechanisms? (What did they have to do to survive in terms of food, health, income, basic services, security, etc.?)

Then we can conclude the story asking the main needs to restore livelihoods (agricultural, etc.).

N.B. Each story should not be more than half page. Ask if their real name can be used or they prefer not) we have to take a picture of the person interviewed to be used in the report? Please make sure the picture are taken in an open space outside the house and possibly in the proximity of something that was destroyed or lost by the person (animal shelter or storing infrastructure destroyed, etc.).Only the person interviewed should appear with the family or the kids if possible otherwise only him/her (no other people on the background). Please keep the size of the picture original do not compress it.