



# ANALYSIS OF KEY VALUE CHAINS IN THE AGRICULTURE AND FOOD-PROCESSING SECTOR

IN MUQTADIYAH, DIYALA GOVERNORATE, FUNDED BY DANIDA





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### **ABOUT SREO**

SREO Consulting Ltd. (SREO) is an independent monitoring & evaluation and research consultancy committed to serving humanitarian, stabilization and development actors operating in the most challenging environments around the world by providing unbiased and actionable data, analysis and research. Our international team combines local insight with interdisciplinary expertise to deliver information from those in need to those who need it most.

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### **ABOUT DRC**

The Danish Refugee Council assists refugees and internally displaced persons in 40 countries across the globe: providing emergency aid, fighting for their rights, and strengthening their opportunity for a brighter future. DRC works in conflict-affected areas, along the displacement routes, and in the countries where refugees settle. In cooperation with local communities, they strive for responsible and sustainable solutions and work toward successful integration and – whenever possible – for the fulfillment of the wish to return home. The Danish Refugee Council was founded in Denmark in 1956 and has since grown to become an international humanitarian organization with more than 9,000 staff and 7,500 volunteers. DRC's vision is a dignified life for all displaced.

Cover photo: a farmer with his cattle in Zeham village, May 2020, SREO Consulting.

# LIST OF ABBREVIATIONS

AQI	Al-Qaeda in Iraq
DRC	Danish Refugee Council
FM	Field monitor
FGD	Focus Group Discussion
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis and Critical Control Point
HLP	Housing, Land and Property rights
IDP	Internally Displaced Person
IS	Islamic State
KAP	Knowledge, Attitude and Practice (survey)
KII	Key Informant Interview
KRI	Kurdistan Region of Iraq
PMF	Popular Mobilization Forces
PwD	People with Disabilities
SCAS	State Company for Agricultural Supplies
ToR	Terms of Reference
UAE	United Arab Emirates

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### **EXECUTIVE SUMMARY**

As Iraq emerges from nearly four years of conflict and displacement, the security context remains unstable in many parts of the country. The COVID-19 outbreak in early 2020 brought fresh challenges, including closed borders, curfews and restrictions on movement. Forecasts predict a negative impact on livelihoods and employment, with the economy expected to contract by 9.7% by the end of the year<sup>1</sup>, and Small and Medium-Sized Enterprises (SMEs) in the agriculture sector reporting reductions in sales and incomes<sup>2</sup>. To tackle some of these challenges and support the recovery of the agricultural sector in Diyala, DRC is developing a program called "Promoting Diyala's economic recovery through market-based support to agricultural value chains". This program aims to support targeted local agricultural producers and processing enterprises with small cash grants to enable the replacement and upgrade of productive assets, promote the transfer of skills and knowledge, create business development opportunities, reinvigorate the agricultural market, and create decent jobs in the local area.

This report, analyzing the value chains for tomatoes, dates, pomegranates and dairy cows, will inform the further development of DRC's program. It is based on a thorough desk review of project documents, publicly available data and related secondary literature. Primary data collection included 85 household surveys (Knowledge, Attitude and Practice KAP surveys), which informed an assessment of social cohesion and protection issues, barriers to participation of women and People with Disabilities (PwD) in agricultural value chains, and consumer preferences. 40 Key Informant Interviews (KII) were also conducted with producers, processors, traders (wholesalers, retailers, etc.) and key experts from government organizations, to understand the challenges, constraints and opportunities of the pomegranate, date, tomato and dairy cow sectors.

The analysis shows that supply in all four of the identified agricultural value chains (dairy, pomegranate, date and tomato) in Diyala is characterized by many smallholder farmers operating small-scale family farms. Farmers in all of the value chains have suffered losses of equipment, damage to their land and facilities, and a downturn in production and income, as a result of the crisis. They all indicated a need for support to help them recover their businesses. Significant knowledge of traditional farming methods exists in the area, which could be built upon through targeted capacity-building programs and training. Relevant topics for training might include farm management, pest control, organic and synthetic fertilizer use, and irrigation techniques.

All of the farmers interviewed mentioned the difficulties associated with obtaining loans, grants or credit. They reported stringent application requirements, the need for guarantors, and high interest rates which make commercial banks inaccessible for most. Likewise, there is a lack of government grants and loans, and farmers were largely unaware of micro-credit organizations working in the area. As such, providing soft loans or small grants to farmers is likely to be a highly beneficial component in any future intervention in the identified value chains.

Demand for local dairy, pomegranate, date and tomato products is quite strong. Furthermore, there is a general perception among consumers and other actors in the value chain, that local Iraqi products are of good quality, and when the price, quality and availability are good, they are generally preferred to imported products. There may be opportunities to improve on locally-made products such as pomegranate and date syrup. Routes from farm to market, either directly to local consumers or through established relationships with traders, wholesalers and vendors, also appear to be quite strong and functioning well. The markets in all four value chains are mainly local, with some products being traded elsewhere in Iraq. Very little currently enters export markets, although for dates in particular, opportunities may exist. Generally, interventions in any of the four value chains should focus on improving the quantity and quality of supply, by working primarily with farmers. Environmental degradation and water scarcity are serious challenges for farmers. A sustainable approach must include the restoration and the enrichment of soil quality in the long term and support with water usage and irrigation.

<sup>1</sup> Impact of COVID-10 on Small and Medium Sized Enterprises in Iraq, IOM, June 2020: http://edf.iom.int/Content/Cov19/SME%20 report%2003.06.2020.pdf

<sup>2</sup> Ibid.

Many of the challenges facing agriculture in Diyala require government action, notably to eliminate security threats from militias in the area, and to reduce the economic impacts of cheap foreign imports. Advocacy on behalf of local farming communities might encourage government efforts to improve security in agricultural areas, restrict foreign imports and reduce smuggling, and take action on environmental degradation and water scarcity. Farmers in the area have also traditionally relied on the state for support, for instance in the form of government-run storage and distribution facilities, or in the form of subsidies. Creating or supporting farmers associations could help farmers improve their autonomy, bargaining power, representation with government agencies, and provide channels for the exchange of knowledge, information and mutual support.

Support to women working in the value chains might be targeted at small-scale household processors of agricultural products, particularly producers of pomegranate juice and syrup, date syrup and vinegar. This might include forming groups or associations for women processors of agricultural products; offering grants or soft loans for upgrading or buying new processing equipment; offering training; and encouraging the small-scale production of tomato paste to allow women to diversify the range of products they can offer and stimulate demand for local tomatoes.

## **1. BACKGROUND AND CONTEXT**

Iraq is emerging from nearly four years of conflict and displacement. The occupation of large parts of the country by the Islamic State (IS) and the subsequent international military operation to counter the armed group have resulted in extensive recovery needs across the country<sup>3</sup>. Since military operations ended and the Government of Iraq declared victory over IS in December 2017, the situation has largely stabilized. However, the country remains fragile, rates of unemployment and poverty are high, and the political/security context continues to be turbulent – as illustrated by violent demonstrations which caused disruption in Baghdad and other major Iraqi cities in late 2019. The outbreak of the global pandemic of COVID-19 disease in early 2020 brought fresh challenges, including closed borders, curfews and restrictions on movement. Forecasts predict a negative impact on livelihoods and employment, with the economy expected to contract by 9.7% by the end of the year<sup>4</sup>. Small and Medium-Sized Enterprises (SMEs) in the agriculture sector reported reductions in sales, availability of supplies, and incomes, as a result of the pandemic<sup>5</sup>.

Since 2017, the focus of many humanitarian actors in Iraq has moved from emergency response towards early-recovery interventions. As such, DRC's country strategy seeks to facilitate "the transition from meeting basic needs to sustainable solutions for individuals and communities affected by conflict and displacement<sup>6</sup>". Part of DRC's programming to address Iraq's post conflict needs is focused on economic recovery, aiming to support self-resilience and sustainable livelihoods for affected communities, including interventions targeting the agricultural sector.

Around one-third of Iraq's 36 million people reside in rural areas and depend on agriculture for their livelihoods. Crop production is the largest agricultural subsector and provides 75 percent of the sector's income, followed by livestock, particularly cattle, goats and sheep<sup>7</sup>. After public service and trade, agriculture is Iraq's third largest employment sector in the country and the largest for its rural population<sup>8</sup>. Yet, like many parts of the economy, Iraq's agricultural sector has been seriously affected by conflict and displacement. Before the crisis, the sector was relatively robust and accounted for some of Iraq's exports, as well as meeting domestic demand. Factors such as poor water access, deteriorating soil quality, a challenging legislative environment, weak

<sup>3</sup> Humanitarian Needs Overview 2020, Iraq, online at: <u>https://reliefweb.int/report/iraq/iraq-humanitarian-needs-overview-2020-november-2019-enarku</u>

<sup>4</sup> Impact of COVID-10 on Small and Medium Sized Enterprises in Iraq, IOM, June 2020: <u>http://edf.iom.int/Content/Cov19/SME%20</u> report%2003.06.2020.pdf

<sup>5</sup> Ibid.

<sup>6</sup> DRC Iraq Country Office Factsheet, September 2019, online at: <u>https://drc.ngo/media/5399136/drc-iraq-factsheet-sep-2019.pdf</u>

<sup>7</sup> Agriculture and Livelihoods Needs Assessment, FAO February 2016: <u>https://reliefweb.int/sites/reliefweb.int/files/resources/FAO</u> Assessment1.pdf?fbclid=lwAR1r5Za0CB7JQCmTDBg3SwRHXoJNKo-VPSCeRH7-iBMKfXO\_ProTM\_JaiJo

<sup>8</sup> Agriculture damage and loss needs assessment, FAO 2017, http://www.fao.org/3/a-i7810e.pdf

economic infrastructure, and the lack of productive assets and technologies for production and processing of agricultural produce, have all contributed to underdevelopment in the sector. Many people have migrated from rural areas to the cities in search of work. Access to irrigation has declined sharply, with water scarcity in some areas including the Diyala river, and a combination of lack of maintenance and deliberate targeting of irrigation infrastructure by militants leading to many systems ceasing to function, and others incurring large water losses. High salinity is a problem with some water sources. This depresses agricultural yields, especially for sensitive crops such as tomatoes<sup>9</sup>.

Imported products have been a major challenge for Iraqi agriculture and often a significant political issue. Since 2018, Iraq has been working to reduce imports and increase food sovereignty, and in 2019 was close to achieving self-sufficiency in grain crops. Protests in late-2019 included boycotts of Iranian products in favour of Iraqi-grown food. At the end of May 2020, in response to COVID-19, the Ministry of Agriculture (MoA) imposed a ban on the import of 25 agricultural goods due to sufficient domestic production, including cucumber, corn, eggplant, cabbage, cauliflower, carrots, lettuce, garlic, watermelon, green pepper, dates, table eggs, live chicken, slaughtered chicken, tomatoes, beetroot, honey, potatoes and frozen marine fish. Restrictions on movements across the Iranian border due to COVID-19 may also have led to an increase in demand for local products.

The government has also taken other measures intended to encourage agriculture. On June 23, the MoA revised Law No. 35 (1983), allowing farmers to rent 1.25 to 2.5 ha of government land for 10 to 25 years and establish orchards. The revisions also stipulated that farmers who cultivate approximately 4.4 ha or less in the semi-arid and arid rangelands, known as the Badia, will be allowed to rent more government land in the future. The MoA also announced measures to enforce Law No. 117 (1970), which determines land ownership, by establishing a Certification Documentation Division within the Agricultural Land Department to improve documentation.

Named for the river which flows through the governorate, Diyala contains some of the oldest cultivated lands in the world and was historically known for its orange and date orchards. It is an area rich in natural resources and cultivable land, where agriculture is a major economic activity, with as much as ninety percent of the population traditionally employed in the sector. However, this has changed as a result of the conflict, with substantial reductions in people working in agriculture at all stages of the value chain. Due to a lack of job opportunities, many people have sought work in the service sector, often taking short-term contracts under poor conditions, which negatively affects their income and economic stability. This has been compounded by a lack of financial support for the agricultural sector, competition from cheaper imported products, and a reliance on outdated production and processing techniques.

From the mid-1990's, the United Nations' Oil-for-Food program was initially instrumental in improving the productivity of vegetables such as tomato in Diyala governorate. The yield levels of major vegetables, especially tomato, have increased significantly during the 2000s. This was mainly due to the supply of high yielding varieties and appropriate technical support under the program. Date palm and pomegranate are among the main fruit crops grown in Diyala. However, the quality of fruits produced is generally low, largely due to improper harvesting techniques and post-harvest handling. Pomegranates are generally used for juice extraction, with the juice used for cooking and other purposes. Dairy cow production is highly seasonal and lasts on average no more than four to five months in spring, declining from June onwards. Soil quality has also declined over recent decades in many parts of the country. This is due to factors such the removal of organic matter from the land for use as animal feed, lack of crop rotation and fallowing, soil compaction from overstocking of animals and use of heavy machinery, erosion due to monoculture planting, and in some areas, contamination from chemicals and land mines.

The lack of finance available to Small and Medium-Sized Enterprises (SMEs) in all sectors is a particular problem for many businesses in the agricultural sector in Iraq, as their incomes are often seasonal and many struggle to meet capital costs of buying farm inputs in bulk or replacing damaged equipment. Borrowing from conventional banks is difficult, with stringent application criteria and

<sup>9</sup> Iraq Economic Monitor: Turning the Corner: Sustaining Growth and Creating Opportunities for Iraq's Youth, World Bank 2019, http://documents1.worldbank.org/curated/en/848371571505101026/pdf/Iraq-Economic-Monitor-Fall-2019-Turning-the-Corner-Sustaining-Growth-and-Creating-Opportunities-for-Iraq-s-Youth.pdf

in most cases, the requirement for the applicant to be backed by an employee of the Iraqi state as a guarantor. An alternative is local money lenders, who offer small sums over short periods, demand stringent repayment schedules and charge very high rates of interest. Despite the unattractive terms, many Iraqi businesses believe that such loans are the only available option<sup>10</sup>. More positively, the microfinance sector in Iraq has grown significantly over the past 10 years, albeit from a very low base. Two larger Micro-Finance Institutions (MFIs) control more than half the market in Iraq. 38% of the outstanding portfolio is held by CHF, and 18% is held by Al Thiqa. Therefore, ten other smaller MFIs hold the remaining 44% of the outstanding portfolio. MFIs currently do not offer savings, insurance, or payments and transfer services. Al-Thiqa is the only microfinance institution operating in Diyala according to a USAID report.

Before the crisis, many farm inputs were imported and publicly distributed by the Ministry of Agriculture's State Company for Agricultural Supplies (SCAS) through the SCAS governorate branch to district-level local agents and then to farmers. Some imported inputs were also privately distributed through wholesalers and retailers, and a smaller share was produced domestically and distributed through either public or private chains<sup>11</sup>. The SCAS system is no longer viable and, as such, the system now relies mainly on importers and distributors dealing directly with private wholesalers. Due to severe disruptions to this system in retaken areas, some places have no received government inputs from more than 4 years and access to local functional markets for agricultural inputs is also restricted in many areas. Physical structures such as shops, markets, roads and transport storage facilities have suffered significant damages. Other challenges to obtaining farm inputs include lack of quality control mechanisms and restrictions on importing and transporting fertilizers and pesticides because of their potential use in explosive devices.

To tackle some of these challenges and support recovery of the agricultural sector in Diyala, DRC is developing a program with the title "Promoting Diyala's economic recovery through market-based support to agricultural value chains". This program aims to support targeted local agricultural producers and processing enterprises, with small cash grants to enable replacement and upgrade of productive assets, transfer of skills and knowledge, and business development opportunities, to reinvigorate the agricultural market and create decent jobs in the local area. This report, analyzing the value chains for tomato, date, pomegranate and dairy cow, will inform the further development of this program.

### 2. STUDY DESIGN & METHODOLOGY

This report aims to improve DRC's understanding of the local value chains for pomegranate, tomato, date and dairy cow production, processing and marketing, as well as the relevant local actors, such as farmers and producers, and their dynamics/relationships, in Diyala. These value chains were identified following DRC's initial studies in the local area. The study also aims to provide actionable insights to inform DRC's economic recovery programming in the area, providing analysis of the four identified value chains, as well as the socioeconomic status of local actors (primarily producers, processors and traders) and their relationships to the local labor market. In addition, the study includes relevant contextual information regarding, for instance, socioeconomic and cultural factors affecting local labor markets and any consequent barriers to entry, and analysis of opportunities for marginalized and vulnerable actors such as women and youth to enter the market and labor force.

<sup>10</sup> How To Get A Loan In Baghdad - At 30% Interest, Repaid In 3 Months, Niqash, December 2018. <u>https://www.niqash.org/en/articles/economy/5983/</u>

<sup>11</sup> Iraq: Agriculture damage and loss needs assessment, 2017. http://www.fao.org/3/a-i7810e.pdf

#### **Study Objectives**

The overall objectives for the study (taken from the Terms of Reference – ToRs) were:

- **1.** Evaluate constraints affecting the performance of selected value chains and opportunity for improvement.
- **2.** Assess underlying causes of market actors' inability to independently improve their own performance.
- **3.** Recommend pathways for promoting value chain development, SME growth and employment creation for conflict-affected men, women and youth.

#### **Research Questions**

The study aimed to cover the following research questions, for each of the four targeted value chains:

- **1.** Mapping the current status of selected value chains (EMMA), including consideration of:
  - A. End-market opportunities
  - **B.** Enabling environment
  - **C.** Inter-firm cooperation
  - **D.** Existence of support markets (inputs supply, infrastructure, storage, finance)
  - E. Access to firm-level upgrading
- 2. What are the factors currently affecting selected value chain performance? Consider:
  - A. Constraints and opportunities for producers, processors and distributors
  - **B.** Value chains integration
  - C. Market access
  - D. Supporting functions
  - **E.** Rules of the game
- **3.** What are the current opportunities and challenges for privately-owned SME's growth within the selected value chains?
- **4.** What are the key functions and roles of poor and conflict-affected men, women and youth in selected value chains?
- 5. What are the constraints to poor and conflict -affected men, women and youth engagement in key value chains? Consider:
  - A. Skills
  - B. Resources
  - C. Social/cultural restrictions
- 6. What are the main opportunities for making the market work for the poor and conflictaffected men, women and youth? Consider both recommendations for advocacy and program implementation.

The geographical focus was Muqtadiyah, one of five districts of Diyala governorate which includes the city of Baqubah in the southwest and the town of Mudtadiyah in the northeast, and particularly the villages located around Sinsil village. This area is a center for agricultural activity, located north of Muqtadiyah town, in the Diyala river valley. SREO visited the villages of Al Bayat, Al Daraweesh, Al-Esewid, Al-Humada, Al-Jazeera, Barawana, Joumerkhy and Zeham, as well as visiting government experts located in Baqubah.



#### Figure 1. Map of Muqtadiya district, Diyala Governorate, Iraq

#### 2.1. Methodology

SREO used a mixed methods approach for the study, drawing upon primary and secondary sources, and both qualitative and quantitative data. Evidence was collected from key stakeholders through field visits to accessible target locations. Mixed methods allow for data triangulation and cross-referencing, thus increasing the reliability of findings and recommendations. Qualitative and quantitative data further yield complementary findings, as quantitative data primarily describes broader trends while richer qualitative data can help explain reasons for quantitative observations.

Methods used included:

- **Desk review** of project documents, publicly available data and related secondary literature, such as reports published by other organisations and UN agencies working in the area.
- 85 household surveys (Knowledge, Attitude and Practice KAP surveys). SREO conducted a Knowledge, Attitude and Practice (KAP) survey with 85 households, including 41 women and 44 men, located in seven villages: Al Daraweesh, Al Esewed, Al Hammadah, Al Jazeera, Barawana, Joumerkhy, and Zeham. SREO conducted these surveys on Kobo Collect, the most suitable mobile data collection platform for this purpose. The sample included differing household statuses, socio-economic statuses and demographic characteristics. The survey results informed an assessment of social cohesion and protection issues, as well as a barrier analysis, exploring socio-cultural factors which might limit participation of women and People with Disabilities (PwD) in agricultural value chains in Diyala. These findings are discussed in

Parts 3 and 4 of this report. The KAP survey also collected the perspectives and preferences of the participating households as consumers, or potential consumers, of the products of each of the identified value chains. These findings are incorporated in this report within the analysis of each value chain.

• **40 Key Informant Interviews (KII)** with producers, processors and traders (wholesalers, retailers, etc.) for each value chain, as well as with key experts and representatives from government organizations, such as the Regional Directorate of Agriculture. These were conducted person-to-person with individuals who have direct knowledge about the relevant value chains and included the perspectives of men and women involved at different stages of the streams. These actors shared their knowledge of the challenges, constraints and opportunities of the pomegranate, date, tomato and dairy cow sectors.

#### Photograph 1. Cows and palm trees in Barawana Village



Topic/Question	Participants	Methods	Analysis
Mapping of current status of Value Chains (EMMA)			
<ul> <li>Identification of value chain actors most relevant to the study</li> <li>Enabling environment (infrastructure and policies, institutions and processes that shape the market environment)</li> <li>Service providers (the business or extension services that support the value chains' operations. eg. Input supply, infrastructure including water/irrigation systems, storage, finance)</li> <li>Inter-firm cooperation/competition</li> <li>Access to firm level upgrading</li> </ul>	- Producers -Processors -Traders (wholesalers, retailers, etc.) -Consumers -Government experts (e.g. Ministry of Agriculture) -DRC programme staff	(Qualitative) -Desk Review of secondary documents -Key Informant Interviews	Value Chain Analysis including selection of: -Actor/community mapping -Functional analysis -Geographic / flow analysis -Commercial analysis -Political analysis
Value Chain Performance		1 	
<ul> <li>Socio-economic situation assessment, economic sector mapping w/emphasis on business restoration / expansion</li> <li>Constraints and Opportunities for producers, processors and distributors</li> <li>Assess key ripple effects of market stress / shocks, including local gov't capacity, private sector response capacity, effect on supply/demand</li> <li>Opportunities and challenges for SME growth</li> <li>Evaluate value chain potential for increasing productivity, income, employment opportunities;</li> <li>Assess relationships between each actor group in value chain including power</li> </ul>	-Sample of Households (variety of male/ female headed, statuses, locations) -Producers -Processors -Traders (wholesalers, retailers, etc.) - Government experts (Ministry of Agriculture) - FAO experts	(Quantitative/ Qualitative) -Desk Review -Household Surveys (KAP / Perception Surveys) -Key Informant Interviews	- Barrier Analysis -Economic / Financial analysis -Organizational analysis
Socio-economic Integration of Conflict-affected commu	nities	 	 
<ul> <li>Highlight different roles and responsibilities of men, women and youth women in selected value chains</li> <li>Identify barriers / opportunities for each group to engage in economic activity (skills, resources, social/ cultural barriers)</li> </ul>	- Sample of Households (variety of male/ female headed, statuses, locations)	((See above) -Household Surveys	-Barrier Analysis -Gender Analysis -Sociological Analysis

### 2.2. Challenges and limitations

The methodology originally proposed for the study included eight Focus Group Discussions (FGDs) and four interprofessional workshops. However, due to the outbreak of COVID-19 in March 2020, Iraq closed borders and implemented a curfew and restrictions on movement. Due to these restrictions, data collection was delayed until May 2020, which meant fieldwork coincided with Ramadan. As such, data needed to be collected ideally in the morning, when fasting local people were more likely to participate. Furthermore, in order to reduce the risk of spreading COVID-19 for both the local residents of Diyala and SREO's field teams, SREO agreed with DRC that the FGDs and interprofessional workshops should be omitted. In order to compensate, SREO increased the number of KIIs conducted from 28 to 44.

The security situation in Diyala also presented challenges. IS militants continued to be active in the area, recently lighting farmers fields on fire in Al Jazeera Village, 10 km away from Muqtadiyah town. SREO's field teams noted that many villages are semi-deserted and local people were anxious and afraid. Villages are controlled by armed militias, and field staff needed to pass roadblocks and liaise with various armed groups to obtain access. On some occasions they needed to change routes due to reports of landmines or snipers in the area.

The following security incidents were reported in Diyala, during the period of data collection:

- May 22 IS militants attacked a security checkpoint in the Abbara subdistrict in Diyala province, wounding two Iraqi policemen who were present at the checkpoint.
- May 23 IS militants attacked and burned wheat farms near Qara Tappa northeast of Baquba in Diyala province.
- May 27 IS militants kidnapped two civilians near Kifri in Diyala province. The victims came under attack around dawn while preparing to harvest their wheat field.
- June 7 security sources said an armed attack on a police patrol injured three Diyala policemen. The attack occurred in the village of Sheikh Saeed between Baquba and Muqdadiyah.
- June 12 Iraqi security sources said that seven mortar rounds hit the village of Umm al-Hunta near the Jalawla subdistrict in Diyala province. The sources added that IS militants later opened fire at Iraqi army forces that responded to the mortar attack.
- June 13 IS gunmen attacked Kakai villages near Khanaqin in Diyala province, killing six people and wounding six others, including members of the Iraqi security forces.
- On June 24 Iraqi security sources said five mortar shells struck the villages of Mukhaisa and Abu Karma in Diyala province. The attack caused material damages but there were no reports of casualties.

As a result of the longstanding security conditions, levels of trust are low and people in the area were hesitant to answer questions and to be seen speaking to SREO's field staff. For instance, on the first day of work, SREO's field teams reported that they needed to speak to around twenty people in order to find two who were willing to participate. Participation rates gradually improved on subsequent days, as the team worked more closely with community leaders and was able to gain greater acceptance from the communities.

Field teams also faced some challenges with access to government experts, who requested access letters from the Governorate Headquarters in Baqubah before they would speak to SREO's researchers. SREO was able to obtain the letters, but some government officials still insisted on reviewing the questions in advance and discussing their answers with their teams before responding.

### **3. SOCIAL COHESION AND PROTECTION ASSESSMENT**

Diyala has a history of ethnic and sectarian conflict, dating back several decades. The governorate has an ethnically diverse population, composed of Kurds, Arabs and Turkmen people, and significant religious diversity, with Sunni and Shia Muslims, Christians, Yazidis and members of the Ahl Al-Haqq group all living in the area. Tensions between some of these groups have led to the governorate gaining an unfortunate reputation as a flashpoint for conflicts.

One key faultline has been disputes over territory between Kurds and Arabs. During the 'Arabization' campaigns which took place under the Ba'athist Party's rule from the mid-1970s, Kurdish people were forcibly displaced from Diyala, taking refuge in Sulaymaniyah, Dohuk and Erbil. Arabs from other parts of Iraq moved to Diyala, often being enticed by the promise of land, and many formerly Kurdish homes were allotted to these settlers<sup>12</sup>. In 2003, following the American-led intervention in Iraq, Kurdish forces seized control over some areas of the governorate, and many Arabs fled. Arab families who stayed faced discrimination, threats and forced eviction, and many homes were reallocated to Kurdish families<sup>13</sup>.

<sup>12</sup> Diyala Governorate Profile, NGO Coordination Committee for Iraq. <u>https://www.ncciraq.org/images/infobygov/NCCI\_Diyala\_Governorate\_Profile.pdf</u>

<sup>13</sup> Ibid.

During the presence of American and international armed forces in the country, sectarian tensions and violence in Diyala worsened, with Al-Qaeda in Iraq (AQI) emerging as an important actor. A series of offensives by American and Iraqi forces in 2007 led to a return to stability for some years, but by 2012 AQI was resurgent in the area, and in 2013, the group officially became IS. During this period, IS took control of the northern part of Diyala, including Saadiyah and Jalawlah less than 50 kilometres from Muqtadiyah, from where they launched attacks and incursions in the area. During this time, IS gifted parcels of land under its control to supporters; secondary occupancy of private and public properties was common; and many property documents were lost or destroyed, further problematising Housing, Land and Property rights (HLP) in the area<sup>14</sup>. Diyala was re-taken from IS control in 2015, but sectarian tensions, instability, and militant activity continue.

There has been a resurgence in activity linked to IS since the second half of 2019. This is partly because the Iraqi government has been contending with other crises, including the protests and unrest which roiled urban centers across Iraq in late 2019, and the COVID-19 pandemic which emerged in early 2020<sup>15</sup>. Since the killing of Iranian General Qassem Suleimani in Baghdad by a US strike in January 2020, and the subsequent heightened US-Iranian tensions, the American military presence in Iraq and aerial activities aimed at monitoring IS have also been reduced<sup>16</sup>. IS militants have taken advantage of these factors to partially regroup in Diyala and elsewhere, attacking armed forces and paramilitary groups, burning agricultural lands and killing civilians.

Within this context, SREO asked a series of questions within the KAP survey designed to understand how local people perceive factors such as social cohesion and tensions in their local areas. Only 9.4% (n=8/85) of the respondents believed there are social issues within ethnic, religious or social groups, citing as reasons: insecurity; lack of proper governance and law enforcement; religious conflict and sectarianism; inherited norms and traditions; and lack of proper religious education and guidance. 69% (n=59/85) of respondents said there were no problems in this area, and 15% (n=18/85) did not know. There was no significant difference between genders in their responses in this area. Similarly, only 10.6% (n=9/85) of respondents believed it was common to see physical conflict between different social groups. The low number of respondents answering yes to these questions might be counterintuitive, given the context of ongoing insecurity and instability described above. It is possible that local people attribute unrest and insecurity to the conflict between militias and terrorist organisations, rather than blaming other social groups. One recent study by IOM might support this interpretation, suggesting that a high proportion of people in Diyala attributed the destruction of private property during the recent crisis to fighting between various armed groups, rather than blaming IS alone<sup>17</sup>.

When asked if they regularly socialise with people of other faiths or ethnicities, 59% (n=50/85) said no, and 41% (n=35/85) said yes. These figures indicate erosion of the social fabric between communities. In a governorate where formal registration of commerical and agricultural land with state authorities is less than 20%<sup>18</sup> and mediation of disputes by religious and tribal authorities is commonplace, these low levels of social cohesion suggest that the potential for land disputes between communities remains. Men are more likely than women to socialise with our faiths or ethnicities – a majority of men (57%, n=25/44) answered yes to this question, while only a small minority of women (24%, n=10/41) gave a positive response. This difference may be because men are more likely to spend more time outside of the house – as suggested by strong agreement among respondents that taking care of the home (95%, n=82/85) and childcare (91%, n=79/85) are a woman's responsibility. This might suggest that there is a place for women's groups aimed at improving social cohesion between different religious and ethnic groups. Similarly, 56% (n=48/85) of respondents believed it is not common for an employer to hire someone from a different social group, suggesting that such social divisions do impact the ability of local people to enter into employment.

<sup>14</sup> Housing, Land and Property (HLP) Issues facing Returnees in Retaken Areas of Iraq – A Preliminary Assessment - IOM - https://www. iom.int/sites/default/files/our\_work/DOE/LPR/Hijra-Amina-HLP-return-assessment.pdf

<sup>15</sup> With ISIS resurgent, can Iraq's New Government Avoid a Repeat of the Past? World Politics Review, June 3 2020:

https://www.worldpoliticsreview.com/articles/28806/in-iraq-isis-is-resurgent-can-the-new-government-avoid-a-repeat-of-the-past 16 How Tensions Between the US and Iran Ended Up Strengthening ISIS: https://foreignpolicy.com/2020/05/29/how-tensions-

between-the-u-s-and-iran-ended-up-strengthening-isis/
 Housing, Land and Property (HLP) Issues facing Returnees in Retaken Areas of Iraq – A Preliminary Assessment - IOM -https://www.

<sup>17</sup> Housing, Land and Property (HLP) issues facing Returnees in Retaken Areas of Iraq – A Preliminary Assessment - IOM - https://www. iom.int/sites/default/files/our\_work/DOE/LPR/Hijra-Amina-HLP-return-assessment.pdf

<sup>18</sup> Ibid.

Significant minorities of respondents were aware of efforts being taken to promote improved social cohesion. 52% (n=44/85) of respondents were aware of initiatives such as the national reconciliation plan to increase intra-social acceptance; 31% (n=26/85) were aware of government or non-government groups working to mend intra-social issues; and 41% (n=35/85) were aware of strategies to help people of different social groups to better understand each other, through dialogue, inter-group exchange, problem-solving workshops, peace education, artistic performances, media campaigns, or similar activities. Of those people who were aware of such initiatives, 91% (n=31/34) were supportive of them. Overall, 79% (n=67/85) of respondents were optimistic, believing that intra-social issues will be mended in the future. Overall, these responses suggest a relatively receptive environment for efforts to promote social cohesion, which might be a consideration in designing future programming. For instance, fostering cooperation between different actors in the agricultural value chain, cutting across religious and ethnic groups, might have a positive impact both on livelihoods and social cohesion, by helping to build trusting trading relationships. Given that women appear to have less contact with other social groups than men, such programming might particularly benefit women.

# 4. GENDER AND DISABILITY ECONOMIC ASSESSMENT

#### 4.1. Gender

Iraqi women have suffered from years of repression due to a strong conservative culture, economic turmoil and conflicts. Many women are unable to participate economically or socially, struggling to increase their participation in economic activity, and are often confined to traditional activities in textiles, services and basic agriculture. Female labor participation in Iraq is very low – in 2019, only 12.1% of women aged 15-64 participated in the labor force, compared to 76.7 percent of men, according to World Bank data.

Consequently, SREO asked several questions regarding women's access to education and financial services, andtheir ability to participate in the labour market and in household decision making. When asked if gender equality, meaning men and women are equal, has come far enough already, 86% (n=71/85) of respondents agreed, while the remaining 14% (n=12/85) had no opinion. 76% (n=65/85) believed that gender equality has already been achieved and the same proportion agreed that work to achieve gender equality today benefits mostly well-to-do people. These responses suggest a conservative attitude to gender equality prevails in the area.

Responses to the survey also suggest that women face barriers to entry in the agricultural sector. SREO's findings indicated that women perceive their communities as having negative views on women working outside the home, with only 19% of women (n=8/41) stating that community attitudes were positive. Furthermore, women believed that the community had negative views of people breaking gender norms. For instance, 34% (n=14/41) of women stated that it was viewed negatively if a woman plays a role that is typically male, while only 11% (n=5/41) of men shared the same opinion. Similarly, 80% (n=33/41) of women stated that it was viewed negatively when a man plays a role that is typically female, while only 11% (n=5/41) of men said the same. Therefore, traditional gender roles may present a barrier for women adopting roles in the agricultural sector which are traditionally reserved for men and may limit them to farm labor and manual processing work. Women's work on family farms is an important contributor to food production and family budgets. However, because such work is often considered part of their domestic responsibilities, often women are not formally considered to be farmers or businesswomen in terms of their inclusion in agricultural development and entrepreneurship programs. Some women lacked the confidence to expand a business because of prevalent negative views about the acceptability of business as a career choice, and because of stereotypes that undervalue women's managerial abilities and business skills.

Furthermore, the data indicates the community as a whole does not view the agricultural sector as an appropriate pursuit for women, despite the prevalence of women in the agriculture. This seems to stem from a prevailing attitude in target areas in Diyala that women are physically weaker than men, usually limiting women's employment and business opportunities to industries that are often less profitable and less viable. When asked about economic sectors where women can contribute, 42% (n=36/85) of survey respondents stated that women can participate in education/teaching and 25% (n=22/85) stated that women could work in nursing/health. Only 7% (n=6/85) of all respondents considered farming as an acceptable sector for women. This finding is interesting given that in Iraq 49% of women who participated in the formal economy worked in the agriculture sector, as of 2011, falling to 43.7% in 2017<sup>19</sup>. SREO also found women to be active in agriculture in Diyala, particularly in manual labor and harvesting work, and in domestic processing and small-scale production of goods such as pomegranate syrup. Gaining access to financial tools and capital seems to be a primary challenge for women in Divala to overcoming poverty and building resilience. Access to finance is a priority concern or impediment to starting a business. It is common for women to be extensively involved in agricultural production yet lack ownership of the land they work. Women have less access to start-up capital because of their lower economic status and lower earning power. They face difficulties in accessing credit, primarily because they do not own the type of collateral needed to secure loans (e.g., real estate, equipment, and land).

### 4.2. Disability

The KAP survey also incorporated the Washington Group Short Set of Questions on Disability<sup>20</sup> to identify respondents with a disability, allowing their answers to be disaggregated and their perspectives to be reflected in the analysis. Questions were also included to capture the views of all respondents – those with and without disabilities – towards people with disabilities.

The survey data indicates that the prevalence of disability in Diyala is higher than the regional average and women are disproportionately affected. The MENA region as a whole has a prevalence of disabilities of around 2% of the population (Saad, Mourad Ali Eissa, and Beata Borowska-Beszta, 2019). In comparison, 25% (n=22/85) of survey respondents gave a positive answer to at least one of the Washington Group questions, suggesting a high incidence, particularly of impairments to vision and mobility, as follows:

		#	%
А	Do you have difficulty seeing, even if wearing glasses?	15/85	17.6%
В	Do you have difficulty hearing, even if using a hearing aid?	3/85	3.5%
С	Do you have difficulty walking or climbing steps?	15/85	17.6%
D	Do you have difficulty remembering or concentrating?	5/85	5.85
Е	Do you have difficulty (with self-care such as) washing all over or dressing?	0/85	0%
F	Using your usual (customary) language, do you have difficulty communicating, for example understanding or being understood?	1/85	1.2%

Across the MENA region, women tend to have a higher rate of disability then men and disabilities are positively correlated with aging (Saad, 2019). The same is true of the survey respondents. All survey respondents under 32 years of age indicated that they did not have a disability, and the youngest respondent to have a disability was 33 years old. Of the 22 respondents who did have a disability, 81% (n=18/22) were female and 18% (n=4/22) were male. Women experiencing more health problems than men could be due to the "health survival paradox" where women live longer than men but experience more health problems.

<sup>19</sup> Gender Profile Iraq – A situation analysis on gender equality and women's empowerment in Iraq, December 2019. UN Women/ Oxfam. https://oxfamilibrary.openrepository.com/bitstream/handle/10546/620602/rr-gender-profile-iraq-131218-en.pdf

<sup>20</sup> Washington Group Short Set of Questions on Disability: http://www.washingtongroup-disability.com/washington-group-question-sets/short-set-of-disability-questions/

In a report written by UN Economic and Social Commission for Western Asia (ESCWA) in 2018, the leading cause of disability is related to mobility. SREO's data collected from survey respondents in Diyala also correlated with this trend. 68% (n=15/22) of the respondents who indicated they had a disability stated that they had trouble walking or climbing upstairs, while an overlapping 68% (n=15/22) also indicated that they need glasses.

The rate of unemployment for those with disabilities is high in Iraq, at 25.3% for men with a disability, compared to 16.9% of men without a disability (ESCWA, 2018). SREO's survey respondents clearly indicated that those with disabilities are not expected to support their families financially. People with disabilities, specifically women with disabilities, do not always have the power to make their own decisions related to employment, housing, education, health care, etc. Men and women with disabilities do not live independently within a community. Instead, they are encouraged to live with family, which is consistent with the local cultural norms and practices. Only 18% (n=16/85) of respondents indicated that men with disabilities should have a job, and only 12% (n=11/85) of respondents stated that women with disabilities should have jobs. Furthermore, only 36% (n=8/22) of respondents with disabilities stated they earned money when asked. It is clear that having a disability in Diyala is a barrier to finding employment and local communities do not expect those with disabilities to have jobs or support their families. Moreover, due to stigma and lack of accessibility, women with disabilities seem to be more isolated than either men with disabilities or women without disabilities. The discriminatory family structures and gender violence that are a part of the patriarchal social systems in the target areas in Diyala doubly marginalize women with disabilities. This isolation has ramifications for all areas of life and cuts across the domains of attitudes, practices, power and decision-making.

### **5. DAIRY VALUE CHAIN ANALYSIS**

### 5.1. Context: The Dairy Sector in Diyala

Prior to the crisis created by IS, livestock accounted for around one-third of the total value of agricultural production in Iraq. Animal husbandry was also an important source of income and food for female headed households in rural governorates such as Diyala<sup>21</sup>. The crisis led to significant reductions in the numbers of livestock, through loss or theft, death or injury. Around three-quarters of Iraq's cattle, sheep, goats and buffalo were lost<sup>22</sup>. Provision of medicine, vaccines and other veterinary services were available from the government prior to the crisis but are now limited due to insecurity and financial crisis<sup>23</sup>.

Iraq used to be self-sufficient in dairy products. However, dairy production has collapsed and most of the dairy products consumed in Iraq are imported. Of the production capacity, 40% of the local milk production is processed by industrial dairies and another 40% by artisanal 'cottage' dairies. Imports include fresh and powdered milk, cheese and yoghurt. Imports come primarily from Iran (which accounted for 46% of dairy imports in 2016), Turkey and Saudi Arabia, as well as several European countries. Turkey and Iran have also reportedly made investments in dairy infrastructure, including the largest dairy processing factory in the country at Abu Ghraib<sup>24</sup>. Cross-border smuggling also distorts the market, and the lack of enforcement undermines the effectiveness of governmental import controls. For instance, one study indicated that unofficial or illegal imports of milk powder from Jordan were almost 7 times higher than could be identified from official trade data<sup>25</sup>.

Key products in the local dairy value chain are milk, condensed milk, butter, yoghurt, kaymak and cheese. Milk is reported to sell at retail, for anywhere from IQD 1,000 – 2,500 (US \$0.83 – 2.03) per

<sup>21</sup> Agriculture damage and loss needs assessment, FAO 2017, http://www.fao.org/3/a-i7810e.pdf

<sup>22</sup> Agriculture damage and loss needs assessment, FAO 2017, http://www.fao.org/3/a-i7810e.pdf

<sup>23</sup> Agriculture damage and loss needs assessment, FAO 2017, http://www.fao.org/3/a-i7810e.pdf

 $<sup>24 \</sup>quad https://www.tellerreport.com/news/--turkish-company-invests-in-the-largest-dairy-factories-in-iraq-.BJbcwfo58E.html \\$ 

<sup>25</sup> Irish Dairy Board: Iraq Dairy Market, 2018. Online; https://www.bordbia.ie/industry/news/food-alerts/iraq-dairy-market/

litre, depending on price variations according to demand and location. Drinking yoghurt is typically of comparable price, although often slightly more expensive.

To understand the dairy value chain, SREO conducted 6 KIIs with actors at various stages of the dairy value chain in Diyala, including 3 producers/farmers (who were also processors of their own dairy products) and 3 traders. Speaking to large-scale dairy processors, particularly those using Iraqi produce, proved to be very difficult, which is discussed in more detail below. In addition, SREO also spoke to 2 government experts about the dairy subsector in Diyala. The KAP survey also asked a number of questions about the consumption of dairy products from local households.

The profiles of the key informants are included below:

Producers/Farmers	Location: Al Hammalah village, Al Muqtadiyah Gender: Male Age: 30 Experience in sector: since childhood Type of business: smallholding/family business Farm land: 5 - 6 dunams Number of workers: 5 – 6 workers, family only Heads of cattle: 8 Reported production: mainly milk, some yoghurt Reported income: approx. 2 million IQD per annum
Location: Zuham village, Al Muqtadiyah Gender: Male Age: 62 Experience in sector: 30 years Type of business: private business Farm land: 10 dunams Number of workers: 12 workers7 (4 female, 8 male) Heads of cattle: 23 – 25 Reported production: approx. 500 bottles of drinking yoghurt Reported income: approx. 4 million IQD per annum	Location: Barwana village, Al Muqtadiyah Gender: Female Age: 27 Experience in sector: since childhood Type of business: smallholding/family business Farm land: not provided. Number of workers: 7 (family only) Heads of cattle: not given Reported production: milk, yoghurt, cheese, butter Reported income: not provided
Traders	Location: Barwana village, Al Muqtadiyah Gender: Male Age: 45 Experience in sector: "Years for a long time now" Annual volume of dairy transactions: 10 tonnes daily Type of business family business Reported income: not provided.
Location: Ziham village, Al Muqtadiyah Gender: Male Age: 40 Experience in sector: 5 years Annual volume of dairy transactions: 45 tonnes milk per year Type of business private business Reported income: approx. 10 million IQD per annum	Location: Barwana village, Al Muqtadiyah Gender: Male Age: 52 Experience in sector: 10 years + Annual volume of dairy transactions: 500-600kg per day Type of business private business Reported income: approx. 360 million IQD per annum

Dairy Processor	Location: Shomokh, Sheikh Zaza, Jalawlaa Gender: Male Age: 38 Experience in sector: 7 years Annual volume of dairy transactions: buying 4 – daily, to produce yoghurt and cheese Type of business: factory – private business	5 tonnes of milk
Government Experts	Location: Baqubah Gender: Male Age: 32 Role: Agricultural Engineer Organisation: Livestock Division, Directorate of Agriculture, Diyala	Location: Baqubah Gender: Male Age: 50 Role: Director of Livestock Division Organisation: Livestock Division, Directorate of Agriculture, Diyala

### 5.2. Dairy Production

SREO conducted KIIs with three dairy producers/farmers in Al Hammalah, Barawana and Zeham. Two respondents were male and one was female. The respondent with the largest farm had been in the agricultural sector for 30 years and described their operation as a private business, with 25 heads of cattle, 10 dunams of land and 12 workers. The other two were smallholder farmers with family businesses, having around 8 heads of cattle, 5 – 6 dunams of land, and employing 5 – 7 people, primarily family members. The largest of the farms was specialized in producing drinking yoghurt, producing around 500 bottles per year. The smaller farms produced a variety of dairy products, with one producing milk and yoghurt, and the other producing milk, yoghurt, cheese and butter.



Photographs 2 & 3: Examples of containers used by producers for dairy products



All of the farmers reported using some farm machinery, for instance to cut grass or transport animal feed. The farmers reported production of around 3 – 4 tonnes per year, although one of the respondents with a family farm highlighted that production varies enormously according to how much the animals eat – "if they don't eat, they don't produce any milk" – suggesting that providing a steady supply of farm inputs, e.g. animal feed, may be a challenge for some smallholders in the region. All of the farmers bought animal feed from the market; none grew their own. The shortage of animal feed is one of the major constraints to ruminant production and affects all other aspects. The availability of animal feed is constrained by seasonal droughts, which affect both the rangelands and the availability of agricultural by-products. The potential for milk production in Diyala is dependent on the availability of fodder and whether supplementary feeding is practiced, not only on the milking potential of the cattle itself. Such production is highly seasonal, and in the case of cattle, lasts on average no more than four to five months in spring and declines from June onwards.

Running costs of the farms were reported as 3 to 5 million Iraqi Dinar (IQD) (approximately USD 2,500 – 4,200) per year. The major costs were animal feed and fodder, followed by staff costs, as well as vaccines for the cattle. Better use should be made of veterinary infrastructures in Diyala to deliver effective clinical services to local livestock owners, carry out vaccination and deworming campaigns and actively participate in disease surveillance and epidemiological studies for proper planning of disease control strategies.

The informants were affected by the security context in Diyala. One reported having lost 5 or 6 dairy cattle during the conflict with IS, while others indicated that insecurity has had a general negative effect on their business. One indicated that investments in roads would be beneficial to enable producers to move their products more easily.

The key informants reported that imported foreign dairy products are available at lower prices than local products, which had depressed production. Informants indicated that while this was challenging, they were able to compete with foreign imports by emphasizing their personal local relationships between farmers and consumers in the villages, by producing higher quality products, as well as by pricing their products competitively. One key informant wanted to see controls on foreign imports to protect the local dairy industry. Local dairy production does not fully meet local needs and there is little or no surplus production or potential for export to other areas (e.g. Salah-al-Din, Kirkuk, Sulaimaniyah, Erbil, Baghdad, etc.). This is due to a range of factors, including farmers'

skill levels, the availability or machinery and equipment, losses of livestock, and variations in the availability of feed.

Informants indicated that price information is largely gathered by word of mouth and from local shop owners and traders. There are seasonal variations in demand and pricing, with consumption reported as increasing in winter and decreasing in summer, although these variations do not appear to be profound. Producers also reported some variations in demand according to the levels of imported produce available on the local market at the time.

In terms of the regulatory and financial environment in which farm businesses operate, all of the producers reported that there is little in the way of effective regulation, government and financial support such as credit and grants, or formal cooperation between producers, such as farmers associations. Prices are determined according to local supply and demand, with no price control body at the government level or from trader unions. Increasing the quality of the dairy commodities produced in Diyala Province, and how they are linked to the market, would be the main opportunity to increase the prices received by farmers. The establishment of market information systems would support farmers and agribusinesses in their linkages to markets and traders. Moreover, market price monitoring at different levels would help producers to adapt their prices and practices to meet emerging market opportunities. All of the producers indicated that such support would be beneficial, suggesting a possible role for:

- Micro-credit or grant schemes to support local farmers to make investments in purchasing and replacing equipment
- Support to establish local farmers associations, cooperatives or producers groups. In the context of significant insecurity, such measures might also have the effect of helping to build trust and social capital between groups.

The demand for training among the producers was mixed. The smallholder farmers both felt they had the skills they needed within their family and did not identify any training needs. The larger farm owner suggested a need for greater training for women, for instance in farm management, to help reduce their barriers to working in the sector. Similarly, while both male respondents gave relatively detailed answers about the sales and annual income of their business, the female respondent was not aware. This could suggest that someone else in the family business – perhaps the respondent's husband, since she reported being married – was primarily responsible for financial aspects of the business. This might indicate a need for women to learn business and enterprise skills that might empower them and enable greater financial independence – for instance, basic bookkeeping, calculating profits and losses, marketing, etc.

### 5.3. Dairy Traders

SREO conducted KIIs with three dairy traders, all men, based in Barwana and Ziham villages.

Broadly, SREO spoke to two types of trader. Two of the traders were selling relatively small volumes of dairy within the local area, for instance selling milk collected from farms in the rural areas in the market at Muqtadiyah town. One trader was dealing in larger volumes of dairy produce – between 250 to 360 tonnes per year – including milk, cream, yoghurt, cheese, butter and meat from rural areas around Muqtadiyah and Sinsil. In addition to Muqtadiyah, significant markets for larger traders included Baqubah, Baghdad, Suleymaniyh, Erbil and Kirkuk. One trader indicated there had previously been a large dairy factory at Al Muqtadiyah – referring to 'Taza', once known as one of the largest dairy factories in Iraq, which closed in 2003 at the time of the American-led intervention. The site is now rumored to be used as a base for the Popular Mobilization Forces (PMF). All of the traders indicated getting market information and prices directly from traders and vendors in the large cities.

The traders generally suggested that local produce was of good quality. One trader indicated there was demand for Iraqi cream and was preparing a project to supply it to market. However, the traders were also aware of pressure on prices from imported products, citing Syria, Turkey and Saudi Arabia as major suppliers. One trader indicated a preference for domestic products, suggesting that imported products are more likely to be expired or damaged during transportation. The traders

emphasized the importance of quality, as much as price, in selling their produce competitively. As one trader stated, "if the quality and type of product are good, you can put the price you want". This suggests that a key means for local dairy produce to compete with cheap inputs – in the absence of decisive government action on imports – would be to conduct marketing based on quality.

All of the traders indicated seasonal variation in demand throughout the year, highlighting some national holidays as times of lower demand for instance. The same trader also indicated their demand was reduced during Ramadan, which is counterintuitive as demand for food and dairy products usually increases. They also pointed to a number of factors making their work more difficult, including insecurity and military operations, and poor road infrastructure, which make the logistics of moving produce from farm to market more difficult. Security factors in particular were cited as a cause of losses for the traders, as produce spoils if not sold within a reasonable time frame. Generally, however, the traders did not indicate specific challenges with storage.

The larger trader indicated that he buys from the same suppliers and sells to the same buyers on a regular basis, and has done for 10 – 15 years, relying only on verbal agreements instead of any written contract. This indicates a key role for trust between the parties, in an environment in which there are relatively low levels of social cohesion and indications of low levels of trust in the ability of the government to enforce contracts. Traders indicated that they are not generally members of any organization, such as traders' associations, and do not cooperate with other traders. There was a positive response when asked whether such cooperationmight improve bargaining power in the future. Traders indicated that they have not been supported by any state agency, private company, NGO or Business Service Provider, to improve their operation. Similarly, they were skeptical about the availability of credit and grants, highlighting the complex application process requiring sponsors who work for the state, and high interest rates on loans. This suggests a possible role for business support services and finance to help traders develop their businesses. None of the traders was operating under a brand name.

#### 5.4. Dairy Processors

Dairy production and processing in Diyala is largely characterized by small-scale private farms and smallholders, who also undertake a certain amount of processing themselves. For instance, the dairy farmers who were interviewed for this study were all undertaking some small-scale milk processing to meet local demand, with products such as butter, yoghurt or cheese. Most reported selling these products directly to consumers in their village and local area, or into local shops. The largest farmer was selling in both his local village of Zuham and at the market in Muqtadiyah town, the district center. None reported selling their products farther afield, for instance in Baqubah or Baghdad. Farmers contain their products in plastic packaging, bottles or metal containers bought locally, and distribute them in the area using their own cars or motorbikes. Distribution is sometimes complicated due to bad road conditions, security threats and roadblocks. Establishing local farmers associations might allow farmers to cooperate on distribution.

There is no consistent cold-chain in the processing and distribution of dairy products. Some farmers and processors reported using refrigeration to store their products, and others did not. Those who used refrigeration complained of power cuts and the costs of running generators to maintain the correct temperatures. Milk and dairy products are often stored in old or inadequate plastic and metal containers, or left without refrigeration for relatively long periods of time. As such, contamination and spoiling of the products may be an issue, particularly during hotter weather.

Although they are not common, SREO was able to identify one larger-scale dairy processor, the owner of a factory located in Jalawlaa, producing yoghurt, kaymak and cheese. The factory owner stated that he did not know of any other factories in the area producing similar products, with most dairy processing being done domestically in households and on smallholder farms. He was also aware of the pressure from imported products, suggesting that Iranian imports are the factory's main competitor, although he also believes many people prefer local products.

The factory uses around 4 to 5 tonnes of milk per day in winter and 3 to 4 tonnes in summer, sourced from approximately 30 farmers, within Diyala and beyond. The owner indicated he currently pays approximately IQD 325,000 for a tonne of milk, because of reduced demand during the COVID-19 period. He also cited significant variability in the price of milk, sometimes paying as much as IQD 1,000,000 per tonne, with prices changing from week to week. As a result, the prices of the factory's products also vary, with kaymak ranging from IQD 10,000 to 20,000 per kilogram.

The factory has ten staff members, but only employs men. The owner explained that previously women had worked there, but due to concerns about how this might be perceived by the community and authorities in a tribal area, their work was stopped. The owner summarized, "no women work here as this is a tribal area".

The factory uses equipment purchased from Turkey. The factory owner said no bank loan or government support was available to him, although he was able to negotiate payment by installments with the supplier of the equipment. Having access to credit on reasonable terms was one way in which the owner felt the government could better support factories like his, as well as streamlining bureaucratic processes associated with registering company brand names. He also suggested that taking steps to reduce foreign imports would benefit Iraqi producers and processors.

He described challenges regarding the irregularity of the electrical supply, which sometimes delivers one-phase power, while the factory's machinery requires three-phase. As a result, fuel for generators is a significant cost. The factory owner also indicated that transporting milk to the factory is problematic because of harassment at roadblocks and demands for bribes from militias affiliated with the authorities, particularly when milk is being brought from outside the local area. The factory has its own laboratory for testing milk arriving in the factory. However, testing of the finished products is done outside. Most of the factory's products are sold in Jalawlaa or in Kalar, some 50 kilometres to the north. Some also goes to Northern Iraq, particularly to cities such as Suleymaniyeh. The factory owner noted the effects of COVID-19 in the area, stating that: "now coronavirus is a problem. We have more supplies than demand. No markets are buying, there are no schools, nothing is open and everyone is sitting at home. That all affects the market negatively... the markets are not good. The roads are blocked. There is no activity now."

SREO also contacted factories in Baghdad, as the closest major industrial center. However, those interviewed were largely processing imported dairy products – for instance, using imported powdered milk to make bottled yoghurt drinks. This also confirms what the producer key informants reported above – that much of their production is directed towards local, rather than national, markets. With as little as 10% of Iraq's dairy demand met from domestic production, it is also intuitive – we might expect larger factories who intend to order in large quantities and for whom price is a key concern, to prefer to place bulk orders for imported long-life dairy produce such as powdered or UHT milk, rather than trying to source fresh products through fragmented networks of small-scale rural producers. Since rural producers in Diyala have also indicated that they are not organized into unions, farmers associations, or cooperatives of any kind, larger processors wishing to purchase dairy produce in significant quantities would not have a single point of contact through which to place orders. Instead, they would need to liaise with numerous smaller suppliers – as the factory owner in Jawalaa needs to – potentially adding to cost and creating potential unpredictability in supply chains. As such, in order to supply to these larger processors and compete with imports in doing so, producers might need to come together in an organization of some kind that could negotiate on behalf of farmers and manage the process of receiving and fulfilling orders. Further study would be required to understand the feasibility and demand for doing so.

#### 5.5. Government Experts - Dairy

SREO spoke to two government experts at the Directorate of Agriculture in Baqubah. They highlighted that production in Diyala is based around small-scale production by family farmers, who sell their products locally, or to established traders. The small family businesses are not generally linked with the government. As such, production is on a small scale and fragmented among many small actors, who are not well coordinated.

Experts indicated that building companies or associations who can develop Diyala's dairy business on a larger scale would be effective in creating job opportunities and allowing Diyala's dairy sector to become more competitive. Such organizations had existed in the past and stopped due to the security situation, with investment largely halted and many businesses suspended in Diyala due to the crisis. One expert believed that cooperatives were effective, as they had been established in the past but were no longer operating. These organizations had helped to create collective bargaining power for producers and had a positive effect on the market as a whole. The experts felt that the producers were the dominant actors in the dairy value chain, suggesting that producers associations might have the most impact – raising production and helping to market their product based on its higher quality, rather than cost. Experts felt that most consumers prefer Iraqi products, on the basis that the quality and freshness is better than imports. Demand for these products exists, but domestic production cannot meet that demand, with imports filling the gap.

They also suggested that State intervention could help, through for instance coordinating the collection of milk at dedicated distribution centers and preparing markets to receive the products. Experts indicated that there are no organizations dedicated to supporting the dairy value chain. The agricultural faculty at the University of Baqubah has a Food Industries Department, with students working on projects in local production. Another strategy that experts indicated had been beneficial in the past was to support the market for farm inputs, to help producers obtain the inputs they need to produce at appropriate quantities and quality. They also indicated that women are engaged in dairy production, and that development of the dairy value chain would benefit women. The experts also highlighted the significance of imported products, noting that around 90% of Iraqi dairy demand is met by imports. Local products cannot compete effectively in Diyala with these products.

### 5.6. Dairy Consumers

Consumer preferences were captured through a question set appended to the KAP survey. Survey respondents in all locations indicated that they were primarily using local products in preference to imported products. Popular local dairy products include milk, yoghurt, cheese and cream, with consumers emphasizing the quality of the products more than price.

92% (n=78/85) of surveyed households thought that local products were of good quality and several indicated that they regarded dairy produce, particularly cheese, as a local specialty. Consumer's suggestions for improving quality focused on providing more support to farmers, either through financial support to increase production, reducing imports, or improving storage conditions. 84% (n=71/85) of respondents thought local products were easy to find in local markets and indicated that there is some seasonal variation in availability and prices – with availability increasing and prices dropping in summer, and vice versa in winter.

### 5.7. Dairy Value Chain Conclusions and Recommendations

Diyala province has significant potential for improvement and development of dairy commodity production, processing and marketing. The area is constrained by traditionally poor marketing infrastructure, poor organization of farmers, and low levels of access to advanced production technologies. The dairy sector needs to be modernized in order to increase its productivity, efficiency and specialization to ensure the competitiveness of dairy products. The analysis suggests that the dominant actors in the dairy value chain are smallholder farmers, conducting some level of processing themselves to produce not only milk, but also cheese, yoghurt, butter and other similar dairy products.



Figure 2: Mapping of Main Actors in Dairy Value Chain (Note: Weak or absent linkages are denoted by a red cross)

There are opportunities to develop programs targeting smallholders and cottage dairies to support development of the dairy sector. Not only do these smallholders make up the major part of the dairy sector in Diyala, they are also closest to poor consumers. Such support might have impacts on safer food production, better access of poor consumers to milk, poverty alleviation for local farmers, and job creation in the dairy sector. Such programs might also be accompanied by advocacy work to influence policies supporting domestic dairy products and reducing imports from neighbouring countries.

Dairy farmers in Diyala are fragmented and therefore their production and distribution tend to be highly localized. The dairy value chain in Diyala does not rely currently upon existing strategic partnerships and networks (horizontal connections) providing producers with opportunities for dialogue, capacity building and joint action and knowledge transfer. Bringing these producers together by fostering the creation of farmers associations would be a useful step. Such associations could set their own priorities, but might initially focus on: cooperating on distribution and transport, sharing market information and negotiating prices; sharing production knowledge; sharing the costs of hiring equipment; and providing a forum for the representation of local farmers to government bodies and other organizations.

DRC could also target its support among small cottage dairies by supporting them with farm inputs and facilitating access to traditional dairy equipment for pasteurisation, bottling and autoclaving. DRC could identify the local supply chain for key farm inputs, broker deals between suppliers and the new farmers associations, and offer grants or soft loans to farmers who need to replace lost or damaged equipment or make improvements to facilities.

Opportunities also exist to develop small scale village milk processing to improve income levels in areas of Diyala with poor market access. This might include developing small-scale milk processing techniques, providing training activities and financial support, establishing milk producer groups, and integrating crop and livestock systems for ruminant feeding.

The majority of farmers deliver milk directly to local markets whereas a minority get their milk collected by processors who transport it to urban areas for distribution by wholesalers and retail traders. In addition to a shortage of transportation facilities, poor access to credit and lack of milk processing machines hinder the farmers' ability to add value to their raw products. DRC could explore the economic feasibility of providing investment for producers to get their milk to processors through solar-cooled collection points and cooled/insulated transport mini-containers, possibly

loaded on small trucks. The main aim would be to ensure the safety and quality of the product while reducing spoilage. Cost should be offset by improved quality of supply, volumes and reduced losses.

Finally, dairy marketing might build upon the perceived good quality of local dairy produce, working with farmers on quality assurance and certification, and emphasizing quality, rather than attempting to compete with foreign imports on price.

### 6. POMEGRANATE VALUE CHAIN ANALYSIS

#### 6.1. Context: Pomegranates in Diyala

Pomegranates originate in Iran, as well as northern Iraq and southern Turkey, where their cultivation dates back to antiquity. They are now grown in numerous countries across the Middle-East, North Africa, Southern Europe and the United States. In Iraq, the fruit is either consumed fresh, used to make juice, or made into pomegranate molasses or syrup, a sweetened fruit concentrate, usually with added sugar and lemon juice, which is used in various dishes in Iraq and the wider Middle-East. The size and structure of the businesses producing pomegranates is dominated by smallholdings of families and individual farmers, which tend to use conventional and artisanal agricultural practices, with limited extension services or support to improve the production of pomegranates. The pomegranate products of small farmers are mainly destined for local sale and tend to be of inconsistent quality.

Along with oranges, Diyala was once famous for its pomegranate cultivation, although the recent crisis has led to many orchards being abandoned and a decline in quality and production levels. Some pomegranate farmers also produce other fruit crops, such as apples, pears, grapefruit and apricots. Varieties of pomegranate reportedly grown in the area include Cherabani, Selimi and Al-Mudalla, with the latter being popular among consumers for its large, juicy seeds and medium-sized fruits. However, production levels and quality remain low and are insufficient to meet domestic demand. As a result, Iraqi pomegranates often struggle to compete with higher quality and cheaper foreign imports from countries such as Egypt, Iran, Syria, Turkey, and Yemen.

To understand the pomegranate value chain, SREO conducted 10 KIIs with actors at various stages of the value chain in Diyala, including 3 producers/farmers, 3 traders, and 4 small-scale processors producing pomegranate juice and syrup. There are no large-scale industrial processors or pomegranates in Diyala; processing takes place in the home, often by women in farming households. In addition, SREO also spoke to 2 government experts about the pomegranate subsector in Diyala. The KAP survey also asked a number of questions about the consumption of dairy products from local households.

The profiles of the key informants are included below:

Producers/Farmers	Location: Al Humada
r rouucers/r armers	Gender: Male
	Age: 52
	Experience in sector: 10 years
	Type of business: Private company
	Number of workers: family labour
	Reported production: 100 – 150 tonnes
-	Reported income: IQD 60 – 70 million
Location: Zeham	Location: Barawana
Gender: Male	Gender: Male
Аде: 65	Age: 54
Experience in sector: since childhood	Experience in sector: "all my life"
Type of husiness: family husiness	Type of husiness: family husiness
Earm land: 14 dunams	Earm land: 90 duname
Faill tallu. 14 duilailis	Number of workers: C
Number of workers: 7	Number of workers: 6
Reported production: 5 -6 tonnes	Reported production: 12 tonnes
Reported income: "very weak"	Reported income: IQD 250,000 – 300,000 per ton – "which is very low"b v
Traders	Location: Al Humada
ITauers	Gender: Male
	Age: 63
	Experience in sector: 20 years
	Type of husiness: family husiness
<b>'0'</b> 0'	Type of business, furnity business
Location: Zeham	Location: Barawana
Gender: Male	Gender: Male
Age: 56	Age: 51
Experience in sector: 37 years	Experience in sector: 30 years
Type of business: private company	Type of business: sole trader
Processors	
Location: Sinsil	Location: Barawana
Gender: Female	Gender: Female
Age: 44	Age: 40
Experience in sector: "a long time"	Experience in sector: 20 years
Type of husiness: family husiness	Type of husiness: family husiness
Type of business, failing business	Type of business, failing business
Location: Ballour	Location: Al Humada
Gender: Female	Gender: Female
	Ago: 42
Age. 24	Age. 42
Experience in sector: 2 years	Experience in sector: 5 years
Type of business: family business	Type of business: family business

Government Experts	Location: Abd Alhameed	Location: Baqubah
	Gender: Male	Gender: Female
	Age: 51	Age: 34
	Role: Agronomist, Head of	Role: Agronomist
	Horticulture Division	Organisation: Horticulture
	Organisation: Directorate of	Division, Directorate of
	Agriculture, Diyala	Agriculture, Diyala

#### **6.2. Pomegranate Producers**

SREO conducted KIIs with three pomegranate farmers, all of which were private family businesses, employing primarily family members. Farmers reported impacts from the security situation in the region. One farmer indicated that only part of his land nearest his home is currently accessible for cultivation, while some of his land located further away has been abandoned because of security threats. He also reported that large parts of his land had been burned by militias. As a result, his farm's production fell, and his income was badly affected. Another mentioned that some areas of agricultural land were affected by burning, or contaminated by explosive devices or landmines, and that the threat from IS made it difficult to farm in the area. They also mentioned that wild pigs eat the fruits, reducing production, and that orchards need to be fenced in. Pomegranate producers also complained about the poor standard of the roads and electrical supply in the area.

#### Figure 3. Seasonal Calendar for Pomegranate in Diyala

POME	GRAN	ATE									
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
HARVES	т									HARVES	т

Machinery and equipment in use included mechanical pesticide pumps and spraying equipment, ploughs, tools for working the land, and irrigation systems. Farmers indicated that such machinery and equipment is expensive. Some owned such equipment and others hired it as required. Other important costs were staffing and farm inputs, such as fuel and fertilizer. Farmers indicated that overall these costs were high and tend to squeeze their profit margins.

Products produced included fresh pomegranates, which are stored in simple buildings at ambient temperatures and last for around three months before spoiling. Some farmers indicated that having refrigeration allows longer storage, which enables farmers to take advantage of price variations, selling their crop when prices are high. However, the capital cost of refrigeration equipment was prohibitive for the farmers. Prices were reported as being highly variable, ranging from a maximum of 750 IQD to a minimum of 350 IQD, and generally higher in winter. Farmers believe that this variability relates to the timing of imports entering the Iraqi market. There is also significant variability in prices depending on the quality of the fruits, with higher quality fruits commanding better prices. Farmers suggested that this makes it difficult to estimate their income, as they are dependent on a good quality harvest. The farmers were aware of the pressures created by foreign imports and believed that while the quality of local pomegranates is good, the level of production is not high enough to meet demand. They also reported strong competition on price, with imported fruits bringing prices down.

Products are sold primarily to local wholesalers, on a weekly basis, with the farmers delivering the goods to the wholesalers' premises using their own vehicles. The respondents indicated they tend to supply to the same buyers consistently for many years and that there is no formal commercial agreement in place with the buyers. Sometimes buyers from Baghdad, Basrah, Diwaniyah and Nasiriyah will come to purchase crops. One farmer transported some of his crop to Baghdad for sale, at his own cost. One farmer indicated that, on occasion, as much as 25 – 50% of his pomegranates are rejected by the traders due to quality. Pricing and market information is gathered by calling the buyers, and traders control the prices received: "The sellers control the profit. We accept our prices, we cannot determine them. It depends on supply and demand, and according to the quality."

Farmers reported some level of collaboration between producers, although this seems to operate informally through family networks. At least one of the respondents was skeptical about whether enhancing collaboration and partnership could work: "partnership is not accepted... we depend on ourselves." One farmer reported that associations used to exist, but are no longer functioning. There is no formal quality certification and no support from government or other organizations in terms of finance, business service providers, advice, etc. Where loans are available – for instance from banks or private money-lenders – they have high rates of interest, stringent terms and conditions, or require sponsors. Farmers requested financial support and access to credit services on reasonable terms, to help them obtain farm inputs and technology. This fragmented production and distribution structure leads to critical challenges in supply consistency as well as affects the competitive advantage of the locally produced pomegranates. Overall, it leads to a higher unit production cost for locally produced pomegranates.

Most skills in pomegranate cultivation are acquired through experience on family farms. Workers tend to be recruited locally. The attractiveness of working in the sector is currently low because incomes are meager and agriculture has been badly impacted by recent crises. Some farmers indicated a need for training and skills development, including farm management, caring for the trees and managing crop diseases, hygiene, cold storage, food safety standards and marketing. However, other farmers believed they already had the skills required – they believed the main challenges were financial, with lack of capital for ramping up production, and low prices due to competition from imports. None of the farmers had a brand name for their products and none were engaged in active marketing or promotional activities, believing that quality would speak for itself – "if the crops are good, the customer will buy" and "if you have good pomegranates, you will sell well".

### 6.3. Pomegranate Traders

SREO conducted interviews with three pomegranate traders. The traders ran small private or family businesses, or worked alone, trading from 5 or 6 tonnes per year for the smallest business, up to 20 – 100 tonnes for the largest. By volume, approximately half of the traders' business was pomegranates, with the remainder made up by other fruits such as oranges and dates. Two of the traders worked primarily in the Muqtadiyah area, while one sold his produce in Baghdad, Erbil, Sulimaniayah and Shahrabar. Most of the traders were involved in related areas of business as well – one is involved in exporting dates to United Arab Emirates (UAE), another was also a farmer, and one was involved in processing pomegranates to make juice and syrup. Traders sold pomegranates for consumption fresh, or for processing into juice, syrup, jam and some medicinal formulas.

Traders indicated that currently there is a demand for both imported and domestic pomegranates, depending on the customer's preferences for variety, price and quality. Popular varieties include Selimi. They were divided over whether the quality of Iraqi pomegranates is superior to imports. One trader believed that those grown in Iraq were inferior because of "primitive methods of cultivation" when compared with importing countries, lack of pesticides and problems with pest damage and cleanliness of the fruit. The quality of Iraqi pomegranates had once been among the best in the world but has declined, he suggested, as a result of the effects of insecurity and lack of government support. Another trader disagreed, believing Iraqi pomegranates are well regarded for their large size, flavor, cleanliness, and freshness. They also stated that there are regional variations in prices, with higher prices being charged in Baghdad compared to the cities of the north for instance. Prices for fruit generally are around 10% higher in Baghdad compared with Erbil, and the Kurdistan Region of Iraq produces a large volume of fruit, including 29,000 tonnes of pomegranates per year<sup>26</sup>.

There are also variations as a consequence of supply and demand in the market and a seasonal decline in prices in November and December, due to greater supply. Traders also mentioned the effects of imports on prices, and noted that the recent crisis had affected trade and reduced volumes being sold. Those traders selling to other wholesalers, for instance in Baghdad, stated that they have formal commercial agreements in place, while others operated on the basis of verbal dealings only. None of the traders is currently a member of a formal association, although they described having positive relationships and cooperation with other traders. Two traders had been members of an agricultural association in the past, but it has suspended operations.

<sup>26</sup> Brand KRI, Pomegranate Production, 2018: https://brandkri.com/pomegranate-production/

Traders store the fruits in ventilated rooms – "the traditional old way" – without refrigeration, for up to three months. Some mentioned storage problems from overstocking, heat and rodents causing damage to the fruits. The traders make deliveries using their own vehicles or hired vehicles. Traders believed that Iraqi farmers have sufficient capacity to meet domestic demand, but that price pressure from imports and damage to farmlands and infrastructure from recent conflict have damaged this capacity. One trader indicated that water supply in the region may be a factor suppressing growth of pomegranate production. One trader stated that farms in Muqtadiyah had once supplied the whole of Iraq, but that around half of farms were damaged by conflict. Another indicated that Muqtadiyah has the potential to meet the entire country's requirements.

Traders noted that there are variations in prices, with price changes not exceeding two per month. The minimum price is around 750 IQD and the maximum is around 1,500 IQD per kilo, for the firstclass quality. Traders considered their profit margins small. None of the traders had received any formal business assistance, from the government or other organizations. One trader suggested that loans are available but the application procedure is arduous, the terms and conditions are unfavorable, and interest rates are too high to be affordable. They also indicated a lack of government support for local products.

Traders indicated they used family labor in their business and had learned the required skills from their family. They mentioned that they would benefit from relevant training if offered, particularly to improve and modernize storage techniques and facilities, and to learn about agricultural guidelines, regulations and hygiene.

#### 6.4. Pomegranate Processors

Pomegranate processing in Diyala is predominantly small-scale, often undertaken by women in the household, who sell their products on the local markets. There is little to no commercial processing. SREO interviewed four processors, all women, working within small family businesses to produce pomegranate products such as juice, syrup/molasses, and jam. Labor in processing came from women and in some cases children. In some cases, producing such products was partly a way for farming households to cope with surplus production on the farms, allowing the produce to be stored for longer as syrup, or sold more easily when demand for fresh fruit might be lower. For others, processing was a cottage industry in its own right, purchasing fruit from suppliers and producing syrup or juice as demanded by the market. Products are sold from the processors' home or distributed to local markets. Processors indicated that occasionally batches of their products are taken by traders to Baqubah or Baghdad to be sold there.

Processors were affected by variation in prices, and their production depended largely on the cost of raw materials. As costs of fresh fruit increases, due to supply in the market, so the volumes the processors can purchase and process are reduced. Accordingly, incomes from processing are highly variable and difficult to predict. Prices for syrup are higher than for juice, reflecting the additional work that is required to produce it, and the higher demand. Syrup is used in cooking and in some medicinal preparations.

These producers indicated they received no support or finance and that there is no quality certification in place. Interest rates on loans are prohibitively high. There are also no associations in place to support collaboration and exchange between these small-scale processors. The work is primarily done by hand or using small domestic appliances such as gas cookers, mixers and household refrigerators and freezers. Purchasing equipment which might enable larger-scale production is out of reach for these processors. The processors also do not have transport and so primarily sell locally. Some processors share equipment and hire transport.

#### 6.5. Government Experts - Pomegranate

SREO interviewed two pomegranate experts. They indicated that demand for pomegranates is good and growing, with pomegranates being regarded by consumers as a desirable product. However, farmers need support to compete with foreign imports and to increase production. Prices and demand for local pomegranates are reportedly declining under pressure from imports, particularly from Yemen, Tunisia and Egypt, with first-class quality pomegranates being purchased from farmers at 400 – 500 IQD per kilogram. Some actors in the pomegranate value chain have closed their businesses due to such pressures, especially larger companies, which struggled to compete both on price and quality. Many traders and vendors prefer imported pomegranate because they are readily available and the quality is more consistent. This pressure from imports has reportedly stopped any development in the value chain and left a market which is local in character and dominated primarily by small-scale farmers, serving traders or consumers located within the governorate. Some pomegranates from Diyala also go to Baghdad, Kirkuk and the southern parts of Iraq. Experts confirmed that Muqtadiyah is an important center of pomegranate production within the governorate, with a good quality product.

According to the interviewed experts, pomegranate products such as syrup and juice are not produced in factories but are made by hand in the household, from fresh fruits – as also evidenced by the KIIs conducted with processors. Experts believed that there could be demand for pre-processed and bottled juice and syrup products, which would add value to the product and improve the profitability of the value chain.

The interviewed experts indicated that barriers to entry in pomegranate farming include the costs of farm inputs such as fertilizer and pesticides and indicated that there is little support available to farmers. While the respondents were not specific about which fertilizers or pesticides they require, the most common fertilizer requirement for pomegranates is nitrogen fertilizer, such as ammonium nitrate, or ammonium sulphate if the soil is insufficiently acidic. Zinc is sometimes applied as a micronutrient if there are signs of zinc deficiency (e.g. yellowing leaves, late blooming of flowers and leaf buds). Less commonly, phosphorous or magnesium might also be applied, although evidence supporting their benefit is limited. It is also possible to successfully grow pomegranates organically, using compost and manure as fertilizer. Even where chemical fertilizers are applied, manure and compost techniques are highly beneficial to improve soil quality in the long-term, as well as to help reduce pollution and avoid over-reliance on chemical fertilizers. Pesticide requirements for pomegranates are similar to many other fruit trees, with the most common pests being insects, requiring insecticide treatment.

Growing pomegranates requires "continuous service and full agricultural operations" – that is, it is a crop which requires care and attention from the farmer to produce at high quality. Climatic conditions in the region can be challenging and high temperatures, easily reaching 44 degrees celsius in summer, can lead to some scorching of the fruits, although overall quality is reportedly high. Insecurity and displacement in Diyala has also been a major challenge, causing disruption to production and distribution. As such, farmers profit margins are small and the income made by most farmers barely covers costs.

Experts indicated that the Ministry of Agriculture has plans to reduce the importation of foreign products help stimulate demand for domestic produce. Past government support was also reportedly successful, such as State-sponsored provision of loans and farm inputs such as pesticides. Currently there is no support to pomegranate producers in Diyala, except for some limited education and information seminars targeting farmers. There is little technological innovation, except for some uptake of drip irrigation systems, which are mainly used for vegetables. This indicates that making finance available to farmers, perhaps in the form of soft loans for the purchase of farm inputs and infrastructure, could stimulate production.

In terms of skills in the value chain, the experts suggested that considerable expertise can be found within university departments, where studies have been conducted on pomegranate fertilization, storage and production generally. However, while higher education on pomegranate production is available, technical training aimed at farmers is lacking. This might suggest an opportunity to strengthen partnerships and improve linkages between university experts and farmers, through

training and capacity-building projects intended to facilitate the exchange of locally produced knowledge on pomegranate production techniques. There are reportedly some existing links and some training and extension courses being conducted by the Directorate of Agriculture in Diyala, five or six times a year. There might be an opportunity to support these and help expand them.

The interviewed experts also indicated that women play a vital role in pomegranate production, and that enhancing the pomegranate value chain would increase job opportunities, both in general, and specifically for women. However, selling and trading of pomegranates is reportedly dominated by men, with women primarily involved in production on the farms and processing of the fresh produce at home.

The dominant actors in the pomegranate value chain were reported as being the traders, who have a strong influence over prices and aim to buy from farmers at the lowest possible cost. The shape, size and overall quality of the fruit are key quality characteristics.

The experts did not believe that pomegranate production has negative environmental impacts, although they did indicate some reliance on petrochemical fertilisers. This might indicate a role for instruction in composting and mulching techniques to help farmers reduce their dependence on fertilisers.

#### 6.6. Pomegranate Consumers

Consumer preferences were captured through a question set appended to the KAP survey. Survey respondents in all locations indicated that they were primarily using local pomegranates in preference to imported products. The most popular product was fresh pomegranate, although pomegranate juice and molasses/syrup were also highly popular choices. 92% (n=78/85) of surveyed households thought that local products were of good quality and participants suggested providing support to farmers, either through financial support to increase production, reducing imports, and improving storage conditions.

### 6.7. Pomegranate Value Chain Conclusions and Recommendations

Local farmers would benefit from training and capacity building on topics such as farm management, crop and pest management, quality control and marketing. Such expertise exists locally in the universities and research centres, suggesting opportunities for partnerships. For instance, Ainkawa Research Centre in Erbil, the Agricultural College at Salahaddin University, Koya University's Engineering Department, and Duhok University's College of Agriculture have relevant expertise on topics such as agricultural extension and rural society, agricultural processing, food technology, animal and crop production, forestry, horticulture, pest management, soil and water sciences.

Pomegranate producers in Diyala face a number of challenges. These include a short production period due to the duration of growing and harvest seasons, the rapid perishment of the fruit without cool storage, and the high cost of transport for taking fresh pomegranate from farm gate to market. Tree management is generally poor, due to lack of strong profit incentives, the low price of fruit and high labour costs arising from the labour-intensive harvest. Many orchards have fallen into a poor condition. Farmers cannot do much of their own processing and marketing to add value to their raw products, because selling fresh pomegranate juice requires a different marketing strategy to compete with international brands.



Figure 4: Mapping of Main Actors in Pomegranate Value Chain (Note: Weak or absent linkages are denoted by a red cross)

Many producers also lack the capital to invest in replacing damaged or lost equipment and machinery, farm inputs, or making improvements to their farms. As such, affordable finance in the form of grants or soft loans might be beneficial. Similar support could also be extended to household processors producing syrup and juice, to allow them to develop and expand their enterprises through better quality control, scaled-up production, and improved distribution and marketing. Since these processors and predominantly women, this strategy would also primarily benefit women, helping them to overcome some of the barriers to economic activity which they currently face.

The pomegranate processing industry in Diyala also requires support to modernize its conventional production methods. The inadequate supply chain limits the opportunities of the industry to compete with imports and to take a higher market share in the local markets. The aim should be to better connect the various small pomegranate producers in isolated areas, who have limited capabilities in reaching different target groups by themselves. Opportunities to increase economies of scale in pomegranate production must also be sought. Small pomegranate producers lack the scale to produce at lower unit costs than other large companies that can produce a high volume of output, benefitting from lower capital and operating costs per unit.

Currently, the packing and labelling of locally made pomegranate products is substandard and it is not attractive to a large portion of the consumer base. Most of the pomegranate products are not packed properly, and the few packaged products are sold unbranded without any labelling or product information. Focusing on branding improvements would make the product more reliable and consistent to consumers. Packaging, branding and labelling products creates product identity and can positively distinguish the national product from imports, in turn increasing the position of the product in the consumer's mind. Also, there must be a focus on marketing and promotional activities for local production to strengthen the market segment.

Because of the traditional and conventional nature of the pomegranate processing industry in Diyala, most of the people qualified for production processes are from older generations; youth are rarely found in this sector except for those working with their parents at the household level. However, this inherited experience is also valuable in terms of the value of the goods. Partnerships with small, existing pomegranate processing units is a critical factor to ensure transfer of know-how from the older generation to youth. New-skill development, however, is required in the product development stages, marketing and promotional activities, food safety, design, packaging, etc.

# 7. DATE VALUE CHAIN ANALYSIS

#### 7.1. Context: Dates in Diyala

Date palms originate in Iraq and have been cultivated in the region since prehistoric times for their sweet fruit. The country was once the world's leading producer, supplying around 75% of the world's dates, which were prized throughout the Middle-East and beyond for their quality<sup>27</sup>. However, in the 1980s, Iraq's date production, processing and marketing was interupted, creating an opening in the international market for high-end table dates, which has been effectively filled by new suppliers (Tunisia, Algeria, Israel). Due to the collapse of prices for Iraqi dates and date products, date groves have been neglected and processing plants have fallen into disrepair. Today, Iraqi farmers are producing only a fraction of what they could and their harvest is not being marketed profitably. As such, Iraq now produces only small proportion of the world's dates – in 2018 Iraq produced 614,584 tonnes, around 7% of the global total. Iraq's production is now less than that of Egypt, Saudi Arabia, Iran and Algeria, who together account for more than 60% of global production<sup>28</sup>.

Iraq produces 8 distinct varieties of dates, the most common being Amir Hajj, Dayri and Khastawi. Male trees usually produce pollen in February, with farmers collecting the pollen and sprinkling it over the flowers of female trees. Trees begin to bear fruit in April or May, with harvest beginning from around late August to September. A single tree can produce 90 – 130 kilograms of fruit each year.

Date palms in Iraq can be susceptible to pests. Dubas bug, Humara pest (Lesser Date Moth), Red Palm Weevil and dust mites have affected date palm production in recent years. Dubas bug infestations have occurred around the country, including Diyala, which has had 2,225 hectares infested, the most of any province<sup>29</sup>. The infestations are being treated with aerial spraying, land spraying and trunk injections. Dust mites have also begun to affect date palms across the country. This pest affects the fruit in the later, ripening stage, with control operations expected to occur in June to July.

The area around Sinsil and the various villages located along the Diyala river nearby, are a center of date production within Diyala. However, many date palm orchards in the area have been damaged by conflict and lack of maintenance as the sector has declined in recent decades. Replacing lost and damaged trees is a long-term investment, as young trees take up to 6 or 7 years before producing fruit, and as long as 15 years to reach maturity. Once established the trees will continue to produce fruit for fifty years.

	Location: Sinsil
Producers/Farmers	Gender: Male
	Age: 71
	Experience in sector: "all my life"
	Type of business: Private family business
	Farm land: 20 dunams
	Number of workers: 5 men, 5 women, all family members
	Reported production: 6 tonnes
	Reported income: not provided.

<sup>27</sup> Iraq to plant 70,000 date palms to revive once legendary crop, Reuters, June 2018. <u>https://www.reuters.com/article/iraq-farming/iraq-to-plant-70000-date-palms-to-revive-once-legendary-crop-idUSL8N1TS3RN</u>

<sup>28</sup> FAOSTAT, World Production Quantity, Dates, 2018. <u>http://www.fao.org/faostat/en/#data/QC</u>

<sup>29</sup> Iraq COVID-19 Food Security Monitor, WFP, June 2, 2020. <u>https://reliefweb.int/report/iraq/iraq-covid-19-food-security-monitor-weekly-update-issue-7-2-june-2020-enar</u>

Location: Zeham	Location: Barawana	
Gender: Male	Gender: Male	
Age: 38	Age: 28	
Experience in sector: 30 years	Experience in sector: 10 years	
Type of business: family business	Type of business: private compar	ıy
Farm land: about 100 dunams "but they burned it"	Farm land: 8 – 10 dunams	
Number of workers: 4 male, 4 female, all family	Number of workers: 20 workers	
members.	Reported production: 40 tonnes	
Reported production: 20 tonnes	Reported income: "not very muc	h" – 1 – 1.5 million IQD (profit)
Reported income: About 8 million IQD (turnover)		
The design	Location: Al Humada	
Traders	Gender: Male	
	Age: 62	
	Experience in sector: 10 years +	
	Type of business: public	
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Location: Zeham	Location: Barawana	
Gender: Male	Gender: Male	
Age: 32	Age: 50	
Experience in sector: 8 years	Experience in sector: 25 years	
Type of business: family business	Type of business: family business	
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Processors	Location: Ballor	
Processors	Location: Ballor Gender: Female	
Processors	Location: Ballor Gender: Female Age: 21	
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### 7.2. Date Producers

SREO interviewed three date producers, whose farms ranged from 8 to 100 dunams in area. All produced and sold fresh dates, and none did any processing themselves. One farmer expressed an interest in obtaining equipment and learning the skills required for processing dates to make juice, syrup or molasses. Farmers mentioned several date varieties, including Barhi, Gharrah, Khadrawi, Khastawi, Maktoum and Zahidi, with many farmers producing more than one type.

DATE											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC
	POLLINATION		GROWING				HARVEST				

#### Figure 5. Seasonal Calendar for Date Production in Diyala

The harvest occurs over a period of around one month, usually in August or September, depending on the ripening of the fruit. The harvested dates last about 4 to 6 weeks in storage, up to a maximum of two months. As such, the farmers report a peak in sales and trading activity in October, when the dates are still fresh. Post-harvest losses can be significant – for instance, one farmer indicated extremely high losses of 75% in 2018. While some of the farmers had access to refrigeration. Others indicated that improved storage and refrigeration would help them to reduce post-harvest losses. It could also strengthen farmers' negotiating position, by extending the window of time during which they can sell their dates, to take advantage of the best prices.

Major costs reported by the farmers include rent, labor, equipment, farm inputs and maintenance. Farmers indicated that prices are quite low and margins are tight. Farmers sell their dates primarily to wholesale traders, who come to the farms with their own transport to buy the products. Farmers indicated that their products are distributed to traders in Baghdad, Haditha, Makbas Al Akhawain and Suleymaniyeh. Some also sell smaller amounts – for example, by the basket – to local traders and families. Farmers reported high variability in prices, from as low as IQD 125,000 per tonne to a maximum of IQD 1,000,000 per tonne. Prices can change annually, or in some cases, monthly. Some farmers reported difficulties with traders, since they largely control the market, the pricing, and decide when to buy. Farmers indicated that formal agreements are in place with the buyers in some cases.

Farmers are primarily using bags or 30 kilogram sacks to contain their dates, although some also use cartons or baskets. One farmer believed that improving the quality of storage containers and packaging, perhaps in protective boxes labelled with a brand name, variety name, a mark of geographical origin, or a quality mark, would allow local farmers to differentiate their products in the marketplace.

Some of the farmers requested technical and financial support. Farmers reported that no technical or financial support has been available from government or from organizations since 2014. The interest rates on commercially available loans are prohibitive for most farmers. Some appeared to be aware that improvements could be made to their farming practices but lacked the capital or technical knowledge to begin.

Farmers requested support to purchase and use fertilizers and improve soil quality. Although they were not specific about which fertilizers they require, date palms prefer rich, well-drained soil. As such, organic fertilizers that enrich the soil in the long term will be particularly useful, such as compost, manure and blood, bone or fish meal if available. Constructing terraces or swales and planting ground cover plants or using mulch to prevent soil erosion, nutrient and water loss, might also be beneficial in some cases. Fertilizers for date palms should provide a balance of nutrients including nitrogen, magnesium, potassium, manganese and iron. The precise requirements depend on the quality and composition of the local soil and whether the trees show any deficiencies, with most nutrient deficiencies presenting as yellowing, withering or spotting of leaves. Where synthetic fertilizers are used, they should be of the long-lasting slow-release type, and over-application must be avoided to reduce water pollution and soil degradation. Because of the mix of nutrients required, fertilization for date palms can be relatively complex (when compared to pomegranates, for example) and farmers might benefit from training in this area, to understand how to select and apply the correct types of fertilizers as part of a wider strategy to manage soil quality in the long term.

One farmer also spoke about pest control. He mentioned that date palms require periodic 'vaccination' – referring to the application of pesticides – and the removal of sick branches. He requested support from agronomists to improve technical knowledge of pest control and financial support to purchase pesticides and associated equipment, e.g. for spraying.

Some of the farmers indicated a need for training, and support for women and young people to enter into employment in the sector. Specific suggestions included training on food hygiene and food safety standards. Farmers believe that the attractiveness of date farming can be increased by increasing incomes and job opportunities – currently there are few jobs and little money in the sector in Diyala.

Date farmers indicated some level of cooperation between one another, and some were either already sharing, or would be open to sharing, the ownership or usage of refrigerated storage facilities and processing equipment. There were once associations for farmers in the area, but these have closed due to conflict. Reinstating such associations, or creating new ones, would be beneficial. If such associations are formally registered, so that they can access finance and own equipment, they may also provide a suitable forum in future for the shared ownership of storage, refrigeration and processing facilities.

#### 7.3. Date processors

SREO spoke to three date processors, all of whom were women processing dates in the household, for sale on local markets. Some of the processors also employed other women, usually members of the same household. One of the processors was a returnee, who had returned to the area from Kafreen a few months ago and was trying to re-establish a small processing business.

The primary product is date syrup or molasses, known as Dibs al-Tamar, or simply Dibs. This is produced by boiling pitted dates in water and pureeing them in a food processor to produce a paste or syrup consistency. The product is bottled and used as a natural sweetener, as a sweet spread, and to give flavor to cooked meats, vegetables and stews. In the past, some households in Diyala would also use dates to produce Arak liquor. Such production was undertaken privately, for household consumption, and appears to have greatly declined or is being undertaken with great discretion. None of the key informants indicated that they were producing Arak.

The processors all indicated that their preferred type of date for producing molasses is Zahdi, a variety known for its sweet golden-yellow flesh and natural syrup content. Some also used Khastawi variety, a soft sweet variety popular in desserts and also high in natural syrup content. Some processors also produce date vinegar, by steeping and aerobically fermenting whole fresh dates or date juice, in open containers of clean boiled water for several weeks.

The processors noted that date production is seasonal, with the season lasting around one month, and sales, prices and production levels vary a great deal. The household processors produce syrup on an ad-hoc basis, in reaction to demand and the availability and affordability of fresh dates. As one processor explained, "I do not calculate things – we just make and sell to live".

Some of the processors who lived in farming households harvested dates from their own orchards for processing. Others reported buying dates from a small number of local farmers, for around IQD 3,000 per box. The quality of the fruit is ascertained from experience, by visual inspection and handling of the produce. One box yields two bottles of syrup, with the bottles sold for IQD 5,000 each. This gives a profit of around IQD 7,000 per box of dates purchased. Even accounting for the costs of labor, fuel and other overheads which must be deducted from this figure, these small enterprises in principle appear to yield good profit margins. However, the scale of the businesses is small and the income is highly seasonal and unstable. Products are sold to markets and traders locally, and in Baghdad, Baqubah, Kirkuk and Muqtadiyah.

Equipment requirements include cookers, food processors, and a variety of containers for cooking and storing the products. The processors indicated that they are mainly using old or small domestic equipment, and the affordability of larger equipment appears to be a key constraint on the ability of these women to grow their businesses. With larger and higher quality cookers, food processors/ juice extractors, cooking pots and storage containers, they believe their production and sales could increase. The women indicated using water from a well or from the tap to make their products, with the water being boiled as part of the production process. They do not use refrigerators, as the finished products can be stored for long periods of time at ambient temperatures.

The women reported some social norms against them working, with one processor indicating that she prefers to partly hide her activities from people in the community to avoid encountering prejudice. None of the women were members of any association, nor were they cooperating with other processors in their area – although they were aware of competitors, "people like me", working to make similar products in similar circumstances. There may be opportunities to create women's groups to support small-scale processing of dates and similar products, and to allow women to exchange knowledge and market information, share equipment, and represent themselves in the market more effectively.

The processors all indicated that there is no financial support available. Most of the processors were unable to clearly answer questions about their annual production volume, turnover and profit, and needed to have interview questions regarding loans, grants and finance explained to them. This may indicate low levels of financial literacy in the area. Making micro-finance and/or better equipment available to these women, together with capacity-building programs that aim to teach basic enterprise skills, such as book-keeping and calculating profits, might enable some of these household businesses to grow into more secure livelihoods and incomes.

#### 7.4. Date traders

SREO interviewed three date traders in Al Humada, Barawana and Zeham. All of the traders indicated that they purchase their dates from the villages around Sinsil, Muqtadiyah, and near to the Diyala river. Some of the traders also had their own small orchards. Traders report that Sinsil is the center for date production in Diyala, with numerous villages in the area cultivating good quality dates. One trader attributed this to fertile soil and clean water supplies in the area.

The traders report that preferred date varieties are Zahidi for exportation and Khastawi for the domestic market, based on demand and consumer preferences. Dates are graded according to quality, into three categories – Grade 1 for food consumption; Grade 2 for juice and syrup production; and Grade 3 for animal fodder. Traders report a shelf-life for fresh dates of around 2 months and for packed dates up to 7 months, meaning dates for export must be shipped within no more than 4 months. Any unsold Grade 1 dates can also be sold for processing, and dates of any grade which are older than one year are sold for animal fodder. Dates are packed in bags and cartons, of various sizes. Traders also indicated domestic demand for other varieties, such as Barhi and Maktoum, which are sold at markets in smaller 1 or 2 kilogram boxes. Traders were aware of competition from imports, particularly from Iran, Jordan, Saudi Arabia and UAE. However, they did not mention any effect from government restrictions on the import of dates imposed in May 2020. Most of the traders believed the quality of Iraqi dates is superior, although one disagreed and suggested that dates from Saudi Arabia and Jordan were of better quality and available at cheaper prices. One trader stated that Iraq has enough production to meet domestic demand, and so foreign imports have the effect of reducing prices and suppressing domestic production.

Traders reported seasonal variations in supply and demand. Demand increases in winter due to colder weather and decreases in summer, while supply peaks when the new harvest reaches market during September and October. Dates are also a popular and traditional food during Ramadan, and demand also increases at this time. Prices also vary widely, from IQD 250,000 per tonne to IQD 1,600,000, depending on the quantity available on the market. Key costs for traders are the labor involved in cleaning and packing dates for export or market, electricity and fuel for generators. Dates are traded in Baghdad, to the cities in the north of Iraq, and also transported to Basra for shipping abroad. Trade volume was previously 4,000 to 5,000 tonnes per year but has declined due to conflict and reduced production. Profits can be in the region of IQD 10 million per 1,000 tonnes, but due to the high variability of prices, losses are quite common. One trader reported losing IQD 75 million in the previous year. Traders tend to cooperate among themselves and there are traders' associations, which they reported were beneficial. All of the traders were men, and some suggested that prevailing conservative attitudes towards women's participation in agricultural value chains may present a barrier to women's engagement in the sector. However, several of the traders employed women, for instance in the cleaning and packing of fruit.

Challenges reported by the traders included storage, lack of finance and pest control. One trader suggested that the State should provide centralized storage facilities to improve the conditions in which dates are kept, including refrigeration to extend the life of fresh products. Another reported that expanding the business is difficult because of the stringent application requirements for loans from commercial banks. Traders reported a negative impact from pests, including Rhynchophorus Ferrugineus, the Palm weevil, which affects production, and rodents which primarily lead to losses during storage. Traders indicated that greater efforts to reduce pests would be beneficial.

SREO also spoke to one other larger-scale date processor, the owner of a 700 m2 factory in Al Jazeera, who requested to remain anonymous and preferred to answer only some of the interview questions, due to time constraints. The factory employs up to 47 workers, both men and women, with a capacity of around 4,000 tonnes per year. The factory currently packs Khastawi and Zahdi dates, sourced from Muqtadiyah, Baquba, Khanaqin and Saadia, for export, mainly to UAE. Dates are exported in cartons or nylon bags. However, due to lack of capital to buy equipment and upgrade refrigerators, the factory owner has been unable to implement plans to improve the packaging options, or to begin processing dates into molasses. As with the smaller scale producers, lack of finance on affordable terms also appears to be a key issue for larger factory owners.

#### 7.5. Government experts - dates

SREO interviewed two government experts in the Horticulture Division at the Directorate of Agriculture, Diyala, with knowledge of date value chains.

They confirmed that dates are an important crop for Iraq, with three main markets – domestic consumption of fresh dates, local production of syrup and vinegar, and dates for export. Experts suggested that traders are the dominant actors in the value chain and are capable of setting prices sometimes to the detriment of farmers. The experts noted that many of the exported dates go to factories where they are canned or syrup is produced. For instance, some Iraqi dates are sold to Saudi Arabia where they are canned, and some are then sold back into Iraqi markets. While this might suggest future opportunities to establish processing factories in Iraq, experts believed that first the focus should be to improve the production of farmers, with attention to both increasing quantity and raising quality standards. Domestic demand is good and excess production can be processed into syrup and sold. Increasing production would help displace imported dates from the Iraqi market, increase the overall cashflow in the date value chain, and might eventually make larger-scale investments such as factories more attractive.

Zahedi and Barhi varieties were identified as important. The Zahedi variety is mainly suited to industrial processing, and along with the Sayer variety, it is mainly used by the cereal industry in cereals, cereal bars, and muesli. The experts noted that some lesser known date varieties are grown in Diyala, which can command higher prices due to their rarity and exceptional quality, including al-Qurunfuli which can sell for as much as IQD 25,000 to 100,000 per kilogram. The Directorate of Agriculture wishes to expand production of this variety in Diyala, for its economic potential and its importance as rare and special variety. The experts noted the challenge from the red palm weevil pest and indicated that further efforts are required to bring this infestation under control.

Experts also highlighted that opportunities for women already exist in the date value chain, particularly in processing to produce date syrup. Other opportunities might exist in using and selling palm fronds, which can be used in various traditional products such as mats, chairs, etc. However, the lack of support, particularly financial support for purchasing equipment, is a barrier for poor women to enter the sector. One expert indicated that in the past projects to support rural women to develop small enterprises and income generating activities had been popular and successful, but such support is now lacking. Experts also believed that providing soft loans would be beneficial to allow local people to rehabilitate existing facilities, restore damaged land, purchase equipment, and so on. Experts were also positive about the role associations could play, especially if they could be created in coordination with government agencies. However, such associations largely ceased activities in 2003, and most government support stopped in 2014 with the onset of the IS crisis.

Experts noted that there are few factories in Diyala, with one or two companies storing and packing dates for market and export. Experts were aware of one processing factory, al-Omara'a vinegar in Bani Saad which uses large quantities of dates and produces vinegar and molasses. The experts also indicated that there are research and cooperation programs considering new products and technologies in Baghdad, although not in Diyala. There are no agreements with universities or technical schools for research, training and capacity-building specifically on dates, although some initiatives exist for agriculture generally and for other crops.

#### 7.6. Date Consumers

Consumer preferences were captured through a question set appended to the KAP survey. Survey respondents in all locations indicated that they were primarily using local dates in preference to imported products. The most popular product was local fresh dates, with more than twice as many men than women reporting they bought these.

According to FAO, the consumption of table dates is unlikely to increase significantly in the near future and is actually declining throughout the MENA region, with the exception of the month of Ramadan, when consumption increases significantly. Evidence from surveys conducted in Iran and the Gulf area indicates that date consumption is much lower among the new generation. Although SREO's survey did not detect any significant correlation between age and date consumption in Diyala, this wider macro-level trend may have an impact on consumption in future.

The second most popular product was date molasses or syrup (Dibs al-Tamar), with imported fresh dates also fairly popular. Date vinegar was consumed less frequently. 92% (n=78/85) of surveyed households thought that local products were of good quality and participants suggested providing support to farmers, either through financial support to increase production, reducing imports, and improving storage conditions.

### 7.7. Date Value Chain Conclusions and Recommendations

Local farmers would benefit from soft loans to allow them to invest in replacing damaged or lost equipment and machinery, farm inputs, or making improvements to their farms. Similar support could also be extended to the predominantly female household processors producing syrup and vinegar, to allow them to develop and expand their enterprises through better quality control, scaled-up production, and improved distribution and marketing. Creating or reinvigorating farmers and producers associations would also allow improved sharing of knowledge, market information and cooperation regarding equipment, distribution and marketing.



Figure 6: Mapping of Main Actors in Pomegranate Value Chain

Training and capacity building would also be beneficial, aimed at improving pollination, pest control, quality control and harvesting techniques. Topics might include farm management, crop management, propagation, water management, soil analysis, fertility, pollination and post-harvest processing, pruning, irrigation, plant nutrition management, pest management, quality control and marketing. Awareness sessions on food safety, quality and legal requirements affecting food production would also be helpful, perhaps using the Good Manufacturing Practice (GMP) and Hazard Analysis and Critical Control Point (HACCP) frameworks. Farmers should be encouraged to evaluate inter-cropping among date groves which can affect pest infestation and competition for water resources. There are also opportunities to make improvements in propagation techniques, including promoting propagation of desired varieties on commercial nurseries operated by private sector entrepreneurs and producers associations. To create the conditions for the expansion of production, consideration should be given to introducing an Integrated Pest Management plan, as an alternative or supplement to aerial spraying. Integrated Pest Management (IPM) aims to control the main date palm pests and diseases while respecting local eco-systems. Such capacity-building might be developed in partnership with existing local expertise located in Iragi universities and research centres.

Given Iraq's former position as a leading exporter of dates, opportunities may exist in the shorter term for making linkages between local farmers and export markets. Suitable varieties of table dates and dates for industrial processing would need to be selected, to suit the tastes and demands of export markets. Specific attention should also be paid to hygiene requirements which may be different to those in Iraq, or require specific certifications (such as EurepGap for the European market). Such an initiative would require developing a complete market study with buyers in Europe, the USA and elsewhere, for industrial and table dates, as well as identifying an Iraqi processing plant in compliance with EU and USA requirements for exports.

There may also be possibilities for promoting date syrup consumption through the development of niche products, such as snack-sized single portions for consumption out of the household or in the hospitality sector, alternative usage as a sweetner in the lollipop and confectionary industry, creating new flavors such as chocolate or fruit-flavored syrups, and developing more attractive packaging and branding. This might help stimulate demand for dates in much the same way as peanut butter does for peanuts in the US or Nutella does for hazelnuts in Europe.

The current highly unstructured date market favors dealers and agents rather than farmers, with low prices for dates at farm gates often reflecting some desperation on the part of the sellers. DRC strategy might support processors or traders willing to adopt "fair trade" contracting with farmers, implement a better information system, and promote forward contracts between farmers and processors or exporters.

# **8. TOMATO VALUE CHAIN ANALYSIS**

#### 8.1. Context: Tomatoes in Diyala

Tomatoes are native to South America but have been cultivated in the Middle East since the end of the 18th Century, where it is now a major food crop. Numerous varieties of tomatoes are widely grown across Iraq and are harvested at different times of the year in different parts of the country due to variations in soil and climatic conditions. In Diyala, tomatoes are normally produced in the summer. Water and high temperatures are sometimes a challenge for tomato farmers in Iraq, as the plants require ample fresh water, usually from irrigation systems, and do not tolerate high-salinity or temperatures above 36 degrees Celsius for long periods. Tomato harvesting in Iraq is conducted by hand, with the fruit typically stacked in baskets or packaged for market in cartons. The most popular processed product is tomato paste, which is used in a wide variety of dishes. Ketchup and tomato-based sauces are also popular.

Producers/Farmers	Location: Al Bayat Gender: Male Age: 49 Experience in sector: 10 – 15 years Type of business: private business Farm land: Large, with 2 – 3 acres dedicated to tomatoes Number of workers: 4 -5 people, all family Reported production: 2.5 – 3 tonnes Reported income: not provided
Gender: Male Age: 60 Experience in sector: 15 – 20 years Type of business: family business Farm land: 6 hectares, 2 hectares for tomatoes Number of workers: the family, plus 4 or 5 seasonal labourers Reported production: 5 -6 tonnes Reported income: "it is weak because of imported products"	Gender: Male Age: 20 Experience in sector: 5 years Type of business: private business Farm land: 5 dunams Number of workers: 20 Reported production: 12 tonnes Reported income: IQD 7 million
Traders	Location: Al Bayat Gender: Male Age: 35 Experience in sector: 7 years Type of business: private company Location: Reshadi Gender: Male
Age: 43 Experience in sector: not provided Type of business: private company.	Age: 33 Experience in sector: not provided Type of business: family business

Processors	Location: Sindhi Gender: Male Age: 50 Experience in sector: 14 years Type of business: private comp	bany
Government Experts	Location: Alwan Ghazal, Diyala Gender: Male Age: 36 Role: Agronomist Organisation: Horticulture Division, Directorate of Agriculture, Diyala	Location: Baqubah Gender: Female Age: 35 Role: Agronomist Organisation: Horticulture Division, Directorate of Agriculture, Diyala

#### 8.2. Tomato Producers

SREO interviewed three tomato farmers in the villages of Al Bayat, Barawana and Zeham. Some of the farmers stated that they also grow other crops on their land, including eggplant, cucumbers and date palms. The largest crop produced was 12 tonnes of tomatoes per year and the smallest 2.5 – 3 tonnes per year.

ΤΟΜΑΤΟ											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
PLANTING		GROW	HARVES	т							

#### Figure 7, Seasonal Calendar for Tomato Production in Diyala

The tomatoes are sold fresh and not processed, to wholesalers and to the local vendors and markets in Muqtadiyah. The crop is transported in plastic or cardboard boxes, using the farmer's own private vehicle – often a car or pick-up truck. Farmers reported having no storage areas, and tomatoes need to be sold immediately after harvesting, typically being transported to buyers on a daily basis.

Farmers reported downward pressure on prices due to foreign imports, notably from Turkey and Iran, and were aware that prices for Iraqi tomatoes fall when a large quantity of imports enters the market. One farmer suggested it was difficult to compete with imports because Turkish and Iranian farms are large companies and benefit from subsidies from their respective governments. There were 66,000 tons of tomatoes produced locally last year, with 98,000 tons being imported from neighboring Iran and Turkey. According to government statistics, Iraq imported tomatoes from Turkey valued at \$98.5 million in 2014, \$82.8 million in 2015 and \$88 million in 2016. However, both Baghdad and Erbil have backed initiatives to boost and protect domestic food production since the Iraqi food market was flooded with Turkish and Iranian produce. This includes a ban on Turkish tomato imports to Federal Iraq in May 2017 and a similar ban in the KRI in August 2019, after videos circulated on social media showing farmers throwing away tomato products which they could not sell in the markets. A 12 kilogram package of tomatoes was worth only \$0.80 at the time. More recently, in May 2020, the Ministry of Agriculture (MoA) responded to COVID-19 by imposing a ban on the import of 23 agricultural goods, including tomatoes, due to sufficient domestic production. Tomato production in Iraq is largely dominated by the provinces of Nafah and Kerbala, which between them are largely meeting domestic demand for the product.

Producers also identified demand as a key issue. If processing factories were present, they suggested, then demand for tomatoes would increase, helping to drive up prices and stimulate production. Other farmers believed that increasing production and supply of Iraqi tomatoes at competitive quality and price would displace imports and so support could be directed at increasing production. There is also a seasonal dip in prices around the time of peak production, normally in summer, as the supply of fresh tomatoes increases. As such, farmers indicated that prices are highly variable, ranging from IQD 250 to IQD 1,000, depending on the level of importation and the level of domestic production at any particular time.

Equipment was predominantly rented and farmers reported using spades or shovels, axes, tractors, crop spraying equipment, pickup trucks and mowers/trimmers for cutting grass. They also expressed a wish to have access to better machinery, although they were not specific about which machinery is required. Farmers also reported difficulties obtaining synthetic fertilizers and pesticides, due to the cost, and several seemed to believe the government should support with this. This may be due to historical reliance on the Ministry of Agriculture's State Company for Agricultural Supplies (SCAS), which prior to the crisis purchased and distributed many farm inputs. Farmers also reported that there are no associations for them to join, and little informal collaboration or sharing of equipment between producers. However, they felt that the existence of such associations would be beneficial to them. This suggests that offering soft loans for purchase of farm inputs, working to create autonomous farmers associations who might be able to purchase and share the costs of equipment and farm inputs, and/or working with local equipment hire and farm input companies to enhance their offer, could provide benefits to farmers.

In terms of employment, each of the farmers primarily employed members of his own family, with some recruiting local seasonal workers as required. One reported that women had played a more active role in cultivation in the past, but as the sector has declinedfewer women work in agriculture and have looked for opportunities in other sectors. Farmers also reported challenges due to insecurity and displacement, stating that many people had abandoned their land. Few young people are entering the sector, due to the lack of jobs and good incomes. As one farmer suggested, "the elderly are the ones who are still holding on to agriculture, but if the import of products stops and local products are supported, the young people will return to work in agriculture". Farmers indicated that new entrants into the sector need to learn about using tools and machinery, fertilizers and pesticides. Most farmers learn the skills required from their families and through experience working on the farms. They indicated they would be particularly keen for capacity building and training on the use of drip irrigation systems and greenhouses, as well as to grow new varieties, such as climbing tomato breeds.

Environmental factors also appeared to be quite high among the concerns of tomato farmers. One farmer indicated that the hotter weather and more frequent dust storms in recent years had been unfavorable to production and water levels had been low in the Diyala river. This experience is supported by scientific studies, which show that Iraq has been experiencing more extreme weather in recent decades due to climate change, including droughts and periods of extreme rainfall, and that water levels in the Diyala river have been variable, with problems of water scarcity and contamination, partly attributed to the presence of several dams built upstream in Iraq and Iran<sup>30</sup>. Farmers often draw water for irrigation from wells, or from the river through small unlined canals, which can result in the water having a high level of salts, minerals and particulate matter. Such factors particularly affect tomatoes, as the plants require ample fresh water, and do not tolerate high temperatures and salinity well. One farmer suggested that "90% of our problems are related to water" and hoped to obtain support to line his irrigation canals with concrete, to improve water flow and reduce the amount of mud and particulates being carried to his crops. Farmers also reported challenges due to insects and pests and difficulties affording pesticides.

<sup>30</sup> Impacts of Climate Change on Water Resources in Diyala River Basin, Iraq, 2016. <u>https://www.diva-portal.org/smash/get/diva2:1033772/FULLTEXT01.pdf</u>

#### 8.3. Tomato processors

Tomato processors are largely absent in Diyala. SREO identified one former processor in Sindhi, who provided an interview. His business had previously included processing tomatoes to produce tomato paste, ketchup and sauces, but this activity ceased in 2010 to focus on producing molasses instead. As a result, the business had shrunk from employing over 60 people, to just 16 employees currently.

The processor ceased working with tomatoes due to the large quantity of imported tomato products, particularly from Iran, that are available on the market and the high costs of production. The processor implied that some of these imports may be illegal and are tolerated "for political reasons", to the detriment of Iraqi producers. He also indicated that the supply of Iraqi tomatoes was inadequate for processing, as producing tomato paste and sauces requires large quantities of fresh fruits of specific varieties, which were not readily available. The respondent highlighted that some varieties are better suited to processing for paste and sauces, and others are best suited to eating fresh. Although he was not specific, processors generally prefer varieties that are high in soluble solids, which provide flavor and sweetness in the final product, and are lower in water content, which must be removed through evaporation during processing.

Previously, the processor purchased around 100 – 125 tonnes of tomatoes per day, from four of five agents, with many of the tomatoes coming a large farm near to Al-Khalis, North-West of Baqubah. Primary costs were fuel and electricity for operating machinery, as well as the costs of labor and fresh tomatoes. His products were distributed to all areas of Iraq, through agents and wholesalers who collected them from the factory. The processor indicated that demand for tomato paste and similar products is good. Therefore, to stimulate growth of Iraqi processed tomato products, it would only be necessary to reduce imports of foreign products and to increase production and supply of the appropriate tomato varieties for processing.

#### 8.4. Tomato traders

SREO conducted KIIs with three tomato traders in Al Bayat, Reshadi and Zeham. The traders sell their products to vendors, wholesalers and markets in Baqubah and Muqtadiyah, transporting the fruits in plastic bags and boxes using their own vehicles. Two traders reported supplying tomatoes to paste processors. They indicated trading volumes of between 10 and 53 tonnes per year, with incomes varying widely depending on the current price of tomatoes. They reported profits ranging from 10% to 30%. All of the traders agreed that tomatoes are a vital crop in the area and reported that 50% - 80% of their business comes from trading tomatoes, with the remainder from other agricultural products. They all sold fresh raw tomatoes only, although some of the traders had aspirations to enter into tomato farming or processing if they could obtain the necessary capital to invest.

The traders suggested that overall there is a shortage of domestic supply, due to the lack of support to farmers. Peak supply occurs during summer, from April to July, after which the weather is too hot to support production. Tomatoes are taken to market from the farms immediately, without storage, as there are no refrigeration facilities and tomatoes spoil quickly. One trader had refrigerators in the past, but these were destroyed by militants in 2014 during the crisis. He indicated that refrigeration can extend the storage period for tomatoes to around one month, although power outages can cause losses.

Traders are also aware of effect of imports on business, which can lead to prices as low as IQD 250 per kilogram at times of high supply. Traders believed local tomatoes were of better quality than the imports, and were preferred by consumers. They highlighted that tomatoes are a relatively delicate crop, and so imported tomatoes can have a shorter shelf-life due to time in transit and are more vulnerable to incurring damage during handling and transport.

The traders are not members of any trade associations and had not received any support from government or other organizations. They also noted that loans and finance are difficult to obtain, with stringent application procedures and high interest rates. Traders also highlighted some of the problems that farmers face in producing tomatoes, including insecurity, low prices, and challenges with water and irrigation.

#### 8.5. Government experts - tomatoes

SREO interviewed two tomato experts. The experts indicated that tomato is a vital crop in Iraq, of comparable importance to wheat. As well as being consumed fresh, tomatoes are also used to make tomato paste and ketchup. The experts reported that prices for tomatoes have decreased recently, as it is a commonly cultivate crop in Diyala and there are no factories for processing in the area. Most consumers are households buying on local markets. Summer is the main season for producing tomatoes in Diyala, although they are grown in plastic greenhouses in winter too. Because of the abundance of fresh tomatoes in summer, the price can drop from its normal range of IQD 1,000 to 1,500 per kilogram, to as little as IQD 250 per kilogram, which experts believe is not a sustainable price for the farmer. Using greenhouses to grow crops outside of the main summer season can help farmers to meet demand all year round and to take advantage of higher prices outside of the summer season. However, greenhouses are expensive to build and maintain and many local farmers lack the financial resources to do so.

Experts indicated that women play a key role in the tomato value chain, providing labor for plant maintenance and harvesting. According to one expert, promoting and developing homemade tomato paste, sauces and ketchup made by local women might be one way to increase demand for tomatoes and help generate income for women.

With Diyala's tomato production characterized by small-scale farmers, the experts identified access to capital and the costs of farm inputs, fertilizers, irrigation and tillage labor as key constraints for production. Provision of soft loans, capacity-building and training to farmers and processors were identified as key methods of supporting the tomato value chain, as well as provision of fertilizers, pesticides, seeds and other farm inputs. Improvements to tomato cultivation might include greenhouses and drip irrigation, although these require access to capital to purchase and specific skills to construct and use correctly. One expert believed establishing a 'model project' with a farm and factory on the same land might be beneficial.

Diyala has plantations in Baqubah, and there are others in Baghdad, which provide seedlings to farmers at affordable prices, and remove some of the challenges of cultivating tomatoes from seed. Farmers appear to be using a mixture of foreign seeds bought from input suppliers, which they regard as being of good quality; seedlings obtained from nurseries; and in some cases, locally produced seeds which farmers indicated are inferior in quality. This suggests that for some farmers at least, obtaining good quality seeds or seedlings is a challenge. Mapping the availability, affordability and quality of tomato seeds in the area might be beneficial to identify where improvements in the supply chain can be made. The areas of Bani Sa'ad and West Baqubah are better known for tomato cultivation than Muqtadiyah. Experts also indicated that research centers can provide useful information regarding tomato cultivation.

Experts also indicated that there are no associations, cooperatives or groups of producers representing and supporting farmers. One expert described it as "one of our dreams to have an association to protect farmers and support them and speak for them. Such associations are common in all the countries of the world, except Iraq".

The dominant actors in the value chain were traders according to the experts, who are able to control prices because farmers lack the necessary labor and transportation to be able to bring their own products to market directly. Competition from imported tomatoes, particularly from Iran, Jordan and Turkey, depresses the prices of Iraqi tomatoes and acts as a disincentive to production. One expert believed that if there were more processors producing tomato paste and related products, then demand would be higher and prices would be better, even with imports coming into the country. Experts believed that projects aimed at processing tomatoes in Diyala would bring benefits, by increasing demand for tomatoes, thus increasing the income of farmers, stimulating production, and increasing prices.

Environmental impacts from tomato cultivation were identified as being only related to pesticide use. Some farmers recycle plant remains to make compost, but only a minority, suggested an opportunity to expand the practice. Experts mentioned the need for pesticides to control for pests, insects and fungal infestations, as well as fertilizers which provide urea and potassium.

#### 8.6. Tomato Consumers

Consumer preferences were captured through a question set appended to the KAP survey. Local fresh tomatoes were by far the most popular product, with 95% of respondents buying them, compared to less than 11% buying imported fresh tomatoes. The second most popular tomato product was tomato paste, with 29% (25/85) of respondents indicating they purchased this item. 92% (n=78/85) of surveyed households thought that local products were of good quality and participants suggested providing support to farmers, either through financial support to increase production, reducing imports, and improving storage conditions.

### 8.7. Tomato Value Chain Conclusions and Recommendations

Local farmers would benefit from soft loans to allow them to invest in replacing damaged or lost equipment and machinery, farm inputs, or making improvements to their farms. The tomato value chain in Diyala sees very little cooperation, whether horizontally or vertically, and there is no formal mechanism for promoting the interests of the sector. The sector could benefit a lot from cooperation between farmers and along the value chain between sellers, buyers and service providers. There seem to be many shared problems which could be overcome by helping the producers be better organised. This could for example be via a business association that takes responsibility for quality certification of inputs, certification of producers, market access and advocacy for support from government when needed. Creating or reinvigorating farmers and producers associations would also allow improved sharing of knowledge, market information and cooperation regarding equipment, distribution and marketing.

There is little tomato processing in Diyala, and there may be a gap in the market which local smallscale tomato paste producers could fill. There may also be demand for related products, such as tomato sauces and sun-dried tomatoes. Creating women's groups for date and pomegranate syrup producers and providing training to allow them to expand their range of products to include tomato paste, might create more demand for local tomatoes as well as improving the livelihoods of these women.

Training and capacity building on topics such as irrigation, crop and pest management, quality control and marketing would also be beneficial, perhaps using existing local expertise located in Iraqi universities.



#### Figure 8: Mapping of Main Actors in Tomato Value Chain (Note: Weak or absent linkages are denoted by a red cross)

Farmers also face difficulties due to extremes of climate, drought and water scarcity. Supporting farmers to increase their resilience in the face of these challenges, through investments in water extraction, drip irrigation, greenhouses and training on water management topics may also be beneficial to tomato producers. The option of introducing new varieties of tomato and new production methods, such as organic farming, to meet market demand and market trends, should be explored. Demonstration plots could be launched to test new species and refine methods that introduce farmers in practical ways, with a view to increasing their awareness and confidence to engage in new ideas.

The tomato harvest is seasonal, leading to a supply glut in small windows of time while demand supersedes supply at most other times of the year. One solution could be to promote the wider usage of greenhouses to lengthen the season, which would also protect and improve the quality of the fruit. Hence, there is a need for awareness raising and training in the use of greenhouse technologies, possibly including production of low-cost greenhouses, and better packaging and transportation to reduce post-harvest losses.

# 9. CONCLUSIONS

A market-based approach to programming in the dairy, pomegranate, date and tomato value chains in Diyala should consider the extent to which interventions can use, support and develop local markets.

- **Using** local markets might mean, for example, purchasing farm inputs for provision to farmers from local suppliers, where they are available.
- **Supporting** local markets focuses on reestablishing broken supply chains and essential services and helping relevant actors to recover from crisis. In Diyala, such an approach might focus, for example, on supporting farmers to replace damaged and lost equipment through soft loans.
- **Developing** local markets would mean taking a long-term view and aiming to expand the range of products available or fostering the growth of new or existing enterprises. For example, such an intervention might seek to establish local groups of women producers to consolidate and expand existing small-scale production of pomegranate and date syrup, and perhaps introducing homemade tomato paste to their product range.

The recommendations in this report focus primarily on supporting local markets, with one or two suggestions for using and developing them too. They are organized under the headings of 'supply side', 'demand side', 'policies, norms and rules', and 'services and infrastructure'.

### Supply-Side

Supply in all four of the identified agricultural value chains (dairy, pomegranate, date and tomato) in Diyala is characterized by many smallholder farmers operating small-scale family farms. Generally, these farmers act independently and, while in the past farmers associations did exist, there is currently little collaboration between them. Farmers in all of the value chains had suffered losses of equipment, damage to their land and facilities, and a downturn in production and income, as a result of the crisis. They all indicated a need for support to allow them to recover their businesses.

Significant knowledge of traditional farming methods exists in the area. While such knowledge can be improved, updated and built upon, through targeted capacity-building programs and collaboration with local experts situated in universities and research centers, lack of knowledge is not the primary problem. Instead, farmers all spoke of the difficulties associated with obtaining loans, grants or credit of any kind, with stringent application requirements, the need for guarantors, and high interest rates making commercial banks inaccessible for most. Likewise, there is a lack of government grants and loans, and no micro-credit organizations working in the area. As such, providing soft loans or small grants to farmers is likely to be a highly beneficial component in any future intervention in the identified value chains.

#### **Demand-side**

Demand for local dairy, pomegranate, date and tomato products is quite strong. 95% (n=81/85) of the households surveyed bought local tomatoes, 59% (n=50/85) bought local milk, 49% (n=42/85) bought local pomegranates and 41% (n=35/85) bought local fresh dates. There was a general perception that local Iraqi products are of good quality, and when the price, quality and availability are good, they are generally preferred to imported products.

Routes from farm to market, either directly to local consumers or through established relationships with traders, wholesalers and vendors, also appear to be quite strong and functioning. Most traders indicated that the problems in the value chains are generally related to pressure from foreign imports, and a lack of supply from local farmers. This suggests that interventions in any of the four value chains should focus on improving supply, by working primarily with farmers.

#### **Policies, Norms and Rules**

Resolving many of the challenges facing agriculture in Diyala requires government action, notably to tackle security threats from militias in the area, and to reduce the economic impacts of cheap foreign imports. By reducing imports, demand for Iraqi products will rise, stimulating the market. Improving security in Diyala will allow farmers to make investments in their lands and businesses with greater confidence.

Farmers in the area have also traditionally relied on the state for support, for instance in the form of government-run storage and distribution facilities, or in the form of subsidies. Many of the farmers indicated a need for government support. However, in the absence of such support, it might be preferable to adopt an approach which seeks to build the autonomy of farmers to act for themselves. One way to do this might be to create or support farmers associations, to help farmers improve their bargaining power with traders, improve their standing and representation with government agencies, exchange knowledge on production techniques and market information, form new contacts, and potentially to improve social cohesion.

Public policies for the development of agricultural value chains are not in place. Typical supporting institutions, including the government, private sector associations, and NGOs are not able to provide enough support, hence the need for DRC to work alongside Chambers of Commerce, the Ministry of Agriculture, the Ministry of Industry, and other entities and create partnerships with greater impact in supporting the relevant value chains.

#### **Services and Infrastructure**

A key challenge faced by farmers is environmental degradation and water scarcity. Soil degradation, brought about by nutrient loss, erosion, drought, desertification and deforestation, has been a long-term challenge for agriculture across Iraq. Iraq has also been experiencing more extreme weather in recent decades due to climate change, including droughts and periods of extreme rainfall. Moreover, water levels in the Diyala river have been variable, with problems of water scarcity and contamination, partly attributed to changes in rainfall and the presence of several dams built upstream in Iraq and Iran<sup>31</sup>. These issues affect each value chain differently. For example, dates might be more susceptible to losses of micro-nutrients in the soil, while tomatoes are highly sensitive to water scarcity, high temperatures and the presence of salts.

A sustainable approach must pay close attention to the restoration and enrichment of soil quality in the long term. Organic fertilizers such as compost and manure, applying mulch or ground cover plants, and taking measures to combat erosion, nutrient and water loss, will be beneficial. Synthetic fertilizers may also be beneficial, if applied sparingly and with due consideration to the nutrient requirements of the plants and the composition of the local soils. Advice and training from experts in this area could bring long-term benefits.

<sup>31</sup> Impacts of Climate Change on Water Resources in Diyala River Basin, Iraq, 2016. <u>https://www.diva-portal.org/smash/get/diva2:1033772/FULLTEXT01.pdf</u>

Farmers, particularly those cultivating tomatoes, also requested support to obtain greenhouses and drip irrigation systems, together with training in their use. Such methods might help enhance the farmers' resilience to a changing climate, as well as extending the growing season and allowing farmers to take advantage of higher tomato prices outside of the normal summer harvest period.

### **10. SUMMARY OF RECOMMENDATIONS**

Build the capacity of local farmers to stimulate production by:

- Establishing farmers associations, to foster exchange of knowledge and sharing of ideas and equipment
- Mobilizing farmers around a collective organizational project and train them to implement associative management tools (organic structure, statutes, internal regulations, institutional strategic plan).
- Controlling the technical itineraries for crop production with the incorporation of standard practices while offering support services for productive diversification (loans, equipment).
- Encouraging farmers' associations to meet similar quality standards and mechanisms of certification for their products.
- Supporting farmers with the management of organized collection or the packaging and transformation of the products (creation of added value, quality control, diversification of the offer).
- Offer training on relevant topics, such as farm management, pest control, organic and synthetic fertilizer use, and irrigation.
- Use of proper varieties that are appropriate for the area and are marketable locally and internationally. These must also be clearly identifiable as produced for the fresh or processing markets.
- Use modern agricultural technologies required by GlobalGAP and accepted by importing countries.
- Train farmers on application of modern agricultural techniques covering the range from planting, to proper harvesting and/or processing, GAP etc. in order to maintain high quality production that meets the national and international specifications.
- Conduct training and awareness campaigns about quality certificates (GAP/HACCP/ISO) and advantages of having these, such as meeting requirements of international buyers.
- Ensure continuous consultation and coordination with the buyers, importers, and the parties involved in order to stay informed about the pre-set conditions, specifications, and standards that precede the preparation processes for marketing locally and for export marketing. Make pilots on new production methods (e.g. organic tomatoes, sundried tomatoes), demonstrated and documented for practical training and research.
- Introduce greenhouse technology to increase yield and prolong season.
- Offering grants or soft loans for replacement of lost, damaged or stolen tools, equipment, etc.
- Contribute to the emergence of a market information system for major agriculture commodities reachable by all farmers at the village level. This will increase market transparency and help producers make the right decisions in crop production, reduce risk, and increase profit margins. The establishment of market information systems will support vulnerable farmers in their linkages to markets and traders. Moreover, market price monitoring at different levels will help producers to adapt their prices and practices to meet emerging market opportunities.

Build capacity of local women as small-scale household processors by:

- Forming groups or associations for women processors of agricultural products, particularly producers of pomegranate juice and syrup, date syrup and vinegar
- Offering grants or soft loans for upgrading or buying new processing equipment, such as food processors, cookers, utensils, cooking pots, storage containers, and labels.
- Offering training on basics of business, marketing and entrepreneurship including modules on book-keeping, customer relations, product pricing, risk management, calculating profits and losses, quality control and food hygiene. Further coordination with ILO should be considered since they have already developed similar curriculum for the Middle East.
- Offering training in small-scale production of tomato paste to allow women to diversify the range of products they can offer and stimulate demand for local tomatoes.

Advocate on behalf of local farming communities, to encourage government efforts to:

- Improve security in agricultural areas
- Restrict foreign imports and tackle smuggling
- Take action on environmental degradation and water scarcity.
- Awareness of need for investment in picking, grading, packaging, cold storage, and equipment needed to ensure proper handling of products and preserving its quality during its stay in the storage.
- Support the chambers of commerce and industry to include agriculture and strengthen their capacity to assist small agrobusinesses.
- Encourage establishment of cooperative and/or forums to enhance coordination and collective work of existing institutes and individuals, and to provide services i.e. packaging, cooling, and marketing services to member farmers.
- Improve access to business development services, assist relevant finance institutions and funds in making it easy for farmers to access loans.
- Include the agricultural unions and cooperatives in governmental related decision-making processes.
- Elaborate quality standards for dairy, pomegranate, date and tomato products (with high added value) at village and district levels by working with all stakeholders to set specifications for quality as well as upgrading methods for processing and quality control.

Build resilience and sustainability of local farmers by:

- Providing financial support and training to tomato farmers to install greenhouses and drip irrigation systems
- Encouraging and training farmers to adopt techniques such as organic fertilizers (either with or without synthetic fertilizers) to restore and maintain soil quality.
- Ensure controlled use of pesticides and fertilizers permitted internationally.
- Establish nurseries that sell plants for farmers at a reasonable price as a business development service, preferably private sector-led or through a business association, farmers association or a cooperative.
- Develop networks of seed producers to disseminate better quality seeds thus improving overall quality of crops produced in the area and its selling price. Seed certification will make available to local farmers high quality seeds while propagating materials of notified kind and varieties to ensure genetic identity and purity in the target area.
- Introduce water conserving growing methods (e.g. drip irrigation).
- Support of renewable energy systems to farm in order to mitigate high prices for pumping water and irrigation.
- Acquire certificates and licenses that attest to the conformity of the products and the production practices to the requirements.

# ANNEXES

Annex 1 – ToRs

### Annex 2 – Inception Report



