

Challenges to Food Security and Pathways for Strengthening Agricultural Knowledge

Organization and Participation

The University of Sussex, the Council for At-risk Academics (Cara) and Syrian Academic Expertise (SAE) organized two collaborative workshops in September 2021 as part of the Agricultural Voices Syria (AVS) podcast project. These took place in Sarmada, Idlib Province and at the University of Aleppo in the Liberated Territory in A'zaz, Aleppo Province.

The workshops were run by Dr Shaher Abdullateef and Dr Isra'a Almashhur with the assistance of Eng. Anas Abu Tarboosh and Eng. Sulayman Jekhidim. The workshops were attended by representatives from the most important organizations active in agriculture and food security, including local authorities, local councils, and representatives from civil society, such as engineers, veterinarians, and private-sector specialists.

Participants in the workshops

Location	Local Authorities	Local Councils	Organizations	Universities	Private-Sector	Total
Sarmada (Idlib)	2	3	11	0	4	20
A'zaz (Aleppo)	2	3	12	4	2	23
Total	4	6	23	4	6	43

Methodology and Discussion Points

The workshops were designed around Participatory Focused Dialogue. Before each workshop, a list of questions related to the main areas of focus was drawn up and distributed to participants in order to give them sufficient time to prepare their involvement during the workshop so as to ensure a clear, knowledgeable, and practical discussion.

The workshops' main areas of focus were:

- The main challenges facing food security today.
- Prioritizing food security and sustainable development.
- Pathways for ensuring agricultural good practices and skill-building.
- Introducing the Syrian Agricultural Voices podcast project and collaborative pathways for developing it and expanding awareness about it.

Introduction

The agricultural sector is one of the most important and dynamic sectors in the Syrian economy. In 2010, agriculture made up 18% of the Syrian GDP and most of the population living in the countryside depend on agriculture as their primary source of income (UN Food

and Agricultural Organisation, 2019). More than ten years of conflict, which began in 2011, have had an impact on all sectors of the economy, including the agricultural sector, and have caused a decrease in agricultural production across the country, especially in northern Syria. According to the latest UN statistics, more than 12 million people in Syria are suffering from a lack of food security and 1.3 million face grave food insecurity (World Food Programme, 2021). Despite these profound challenges, agriculture still supports the lives of millions of Syrians, especially those living in the north.

Over the past ten years against the backdrop of the conflict, humanitarian and development organizations have focused on urgent and short-term interventions in order to alleviate crises and provide the basic needs of people at risk. Their main priority was food support, skill-building, and some short-term agricultural projects. These interventions were vital and important, but they failed to produce medium-term and long-term impacts, and this highlights the importance of now transitioning from emergency humanitarian intervention to projects that promote sustainable development and the urgent tasks of creating employment opportunities and addressing external threats, most importantly climate change, in order to encourage social healing. The transition from addressing urgent needs to creating sustainable development is a challenge that requires decision-makers, organizations, and agricultural operators to work together cooperatively.

Food Security and Food Sovereignty

There are many ways of defining food security. The World Food Programme defines it as: “food Security is when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs for an active and healthy life.” This definition focuses on the multi-dimensional aspects of food security, including availability, access, biological utilization, and stability.

Food sovereignty is defined as: “the right of people to healthy and culturally appropriate food produced through ecologically sound and sustainable methods and their right to define their own food and agriculture systems. It places the producers, distributors, and consumers of food at the heart of the mechanisms and policies of food production, not the demands of the market and corporations.” Food sovereignty prioritizes local and national markets over global ones, and it empowers agricultural families to produce, distribute, and consume food in an environmentally, socially, and economically sustainable way.

These definitions and the ongoing conflict highlight the importance of focusing on developing local skills in order to promote food production by drawing on existing cultural knowledge and natural resources. This is a better way of giving rural families the ability to fulfill their food needs according to an understanding of food sovereignty than by simply providing food, which is sometimes sourced from foreign markets, according to an understanding of food security.

We compare these two concepts in order to draw attention to the importance of building the food production skills of agricultural workers and rural families in order to put this at the center of the decisions taken by policy makers and carried out by organizations and local authorities, to ensure a more sustainable future for agriculture.

The Infrastructure for Food Security in Northern Syria

In order to develop sustainable agriculture and ensure food security in northern Syria, an infrastructure must be developed. Before any plans or strategy can be put in place, we must first evaluate the current situation and identify what is the basis that can be built on in order to design interventions to promote food security. This question was addressed to the workshop participants and a discussion followed during which they identified a number of elements to build upon.

Geography: The agricultural areas in northern Syria are climatically and geographically diverse. Rainfall varies across the region from 200 mm to 600 mm per year, soil varies from heavy clay to light sand, and the temperature is varied throughout the growing season. This diversity allows for a range of crops, including fruit-bearing trees, vegetables, wheat, and animal feed.

Human Resources: Although the conflict has created very difficult conditions, has caused thousands of agricultural experts to emigrate and hundreds of thousands of farmers to leave their land, and has interrupted agricultural education and training, a large number of experts continue to perform their work and they have learned a lot from their interactions with local and international organizations. Many agricultural engineers have also gained important skills from the training these organizations have provided, and technology has provided new channels of communication between experts inside Syria and those outside. Therefore, there are many human resources in the country who can be relied upon to design and lead sustainable development projects in the near future.

Agricultural land: There is ample land that can be farmed or is already being used at the moment, despite some land no longer being accessible, either because of security reasons or out-migration or the expansion of settlement camps. This is a fundamental cornerstone of food security, but it is also a challenge because it is a fixed quantity. For this reason, we have to think about vertical expansion and increasing agricultural productivity.

Livestock: Livestock is another cornerstone of food security because it provides animal products and balance out people's diets. Although livestock has fallen to 60% of what it was before the conflict (no precise figures are available), it remains highly diverse and includes sheep, goats, cows, and poultry. In addition, the expertise needed to husband livestock and develop this resource is available. Livestock in northern Syria is adaptable and can be expanded quickly when conditions, such as the availability of animal feed, veterinary medicine, and food production, permit.

Diverse agricultures and knowledge exchange: The conflict has forced some farmers and livestock producers to re-locate to new areas in northern Syria and this has led to new crops and new practices of livestock production being utilized that were previously unknown to residents in these areas. The re-located farmers brought their experience with them, and some were able to rent agricultural land where they could apply their knowledge, thereby introducing new agricultural practices to the communities that received them. At the same time, some of the re-located farmers learned new agricultural practices from the communities that received them. This has created a culture of knowledge exchange with the goal of improving agricultural practices, mostly through the introduction of new crops, such as plants for medicines and perfumes, up-to-date irrigation, and the production of animal feed and livestock husbandry, etc. Participants felt that this diversification and knowledge exchange have helped to improve agricultural productivity in terms of quantity as well as biodiversity.

Financial resources: A considerable amount of money is spent on humanitarian crisis intervention and the participants felt that this could provide basic support for sustainable development if it was invested and managed responsibly.

The Main Challenges Facing Agricultural and Livestock Production

The ongoing conflict of more than ten years has led to a number of challenges related to forced migration and instability. These include:

No oversight over imported pesticides and fertilizers: The absence of oversight over imported pesticides and fertilizers poses risks to the soil and the environment with potential long-term impacts. Toxic pesticides are dangerous to human health, and it is very difficult to treat the soil to remove their residue. Many of the imported pesticides and fertilizers are of very low quality, which leads to higher overall costs, lost time, and in some cases lost crops. As a result, farmers bear significant losses at the end of a growing season, and this renders it unprofitable. The reasons for this lack of oversight include the absence of lab tests and expertise, reduced government capacity, and import-export policies. Participants, especially those working in the private sector, believe that the importation of low-quality inputs has also had a negative impact on their ability to market higher-quality inputs because of the stark price differential. This draws our attention to the importance of teaching farmers about the risks of using low-quality agricultural inputs despite their tempting price.

Distribution limitations: Agricultural products are currently only marketed locally because of inadequate export policies and the lack of programs to support the export of locally produced goods. There are a variety of reasons for the poor distribution of products internationally and these include: the absence of bodies and labs to certify a product's origin and also its adherence to international standards, a lack of awareness, especially among farmers, about the demands of international markets, and a lack of competitive products, such as organic or medical crops.

Quality of inputs and their rising cost: There is a lack of local production of inputs and a near-total dependence on imported goods because the manufacturing infrastructure has been destroyed and there is no quality control.

Rising fuel costs: The fuel costs associated with irrigation are one of the most significant impediments to the vertical expansion of agricultural production. Some irrigation-intensive projects have been halted in favor of crops that tolerate deficit irrigation.

Limited and poor water management: Agricultural irrigation in northern Syria relies primarily on wells pumped from aquifers and to a limited extent on rivers, like the Orontes, Afrin, and Euphrates Rivers. These water sources are affected by poor resource management and the absence of strategic irrigation projects like irrigation channels and river pumping, which were destroyed during years of war. The reliance on aquifers itself represents a challenge for farmers because of rising fuel costs and poor management of resources in traditional irrigation practices will lead to a fall in the aquifer level that will leave many wells dry.

Donor policies and the types of projects that organizations pursue, most of which leave no impact after the project is terminated. The projects currently underway are focused on fulfilling people's immediate, short-term needs and not on sustainable, long-term goals.

Lack of agricultural planning coordination between the national Government, local councils, and organizations: This difficulty prevents regional coordination in northern Syria, and it means that there is no comprehensive agricultural plan, which may sometimes lead to disparities in how agricultural support is distributed to farmers. In some areas, more than 100% of costs are covered, but in other areas this support may cover less than 20% of costs. In addition, we find the same projects being repeated in the same areas without producing beneficial effects. This is because there is no local or governmental body coordinating the activities of humanitarian organizations and because the Government is generally inexistent.

Absent or no-longer functioning local agricultural cooperatives: Before 2011, local cooperatives played an important role, providing agricultural insurance and facilitating farmers' access to agricultural services, loans, and other production inputs. Because agricultural cooperatives are not currently operating, it is not possible to pursue development projects across agricultural clusters and aid is only being distributed to individuals through small grants.

Absence of funding to support farmers: The long-running conflict has depleted farmers' savings and their ability to invest. This has led farmers to convert their farms to traditional deficit irrigation agriculture, which is less costly. Government banks, which used to provide farmers with credit so they could purchase their inputs in the growing season and repay their debts after the harvest, are no longer effective because the Government has withdrawn from the region, funding is not available, and the security situation is unpredictable.

Drought: Drought and reduced rainfall in the 2021 season have had a significant impact on agricultural production. Unofficial estimates have the wheat harvest falling by more than 50%. There has also been a reduction in the production of animal feed and barley. Livestock has also been severely affected with estimates showing a population reduction of more than 40% since last year (precise figures are not available). The area of naturally occurring pastureland and post-harvest pastureland for livestock has fallen by more than 40%.

Reduction in wheat production as farmers switch from wheat to other crops: This is due to a number of factors, including the rising cost of wheat production, especially fuel-related costs, and drought. As a result, farmers who once grew wheat can earn more for the substituted crops, such as cumin and nigella seeds, which both cost less to grow and sell for higher prices than wheat.

Lack of agricultural extension, evidence-based solutions, and scientific research: Despite some agricultural knowledge-sharing and skill-building campaigns, agricultural extension is still unable to serve the needs of farmers, especially with regard to practical training via model farms, agricultural extension centers, and academic research.

Priorities for Enhancing Food Security

- Moving towards sustainable development projects and projects that create employment opportunities and new sources of income for farmers and agricultural sector workers.
- Increasing agricultural productivity per unit as well as arable land, which on a per-capita basis is quite low. As a result of displacement, the population of Syria, which was 20 million before 2011, has fallen by more than 4 million in the years since. This has caused a reduction in natural resources, including water resources, forests, and pastureland, and farmland has also been affected by unregulated building and refugee settlements.
- Establishing an agricultural fund to provide loans to farmers and set up a system of partial funding support for production inputs, rather than handouts. The focus should be on farmers with medium and large holdings and on facilitating loan access for farmers to purchase new tools and equipment.
- Preserving crop variety in order to fulfill local market demands and implementing an agricultural policy that supports an informed program for exports, which will not negatively impact the ability of people living in the area to fulfill their own needs, especially for wheat and animal feed.
- Planning for infrastructure development to support the transformation to updated irrigation practices (drip irrigation), water re-use, and rainwater and grey water capture.
- Funding small-scale investments in the livestock industry to support new dairy and food production.

- Enhancing the role of agricultural extension and training new graduates in agricultural engineering to develop their practical and scientific skills. Building centers for climate and disease monitoring.
- Establishing a committee to coordinate the activities of local authorities, NGOs, and decision-makers.
- Establishing a uniform database and drawing on the information gathered by different NGOs in order to produce agricultural statistics.

Challenges Facing the Development of Agricultural Extension

- The poor quality of university education (especially as regards practical training) received by new graduates in agricultural engineering and veterinary medicine.
- The emigration of skilled farmers and experts in agricultural extension and the destruction of research centers. This has led to the halting of agricultural extension activity (previously led by the Government) and therefore there have not been any proposals to solve the problems faced by farmers and livestock producers. The only agricultural extension activity that is currently taking place is being provided by private agricultural services centers.
- The absence of general agricultural information and agricultural information centers, which used to organize conferences and workshops on applied agricultural interventions through their model fields and field visits to undertake experiments alongside farmers in order to demonstrate the validity of their methods to increase the quality and quantity of agricultural production.

Priorities for Developing Agricultural Extension Programs and Infrastructure

- Creating practical trainings for students in agricultural engineering and veterinary medicine through links to existing NGO projects.
- Training agricultural engineers and veterinarians currently working in the field of agricultural extension in techniques and practices to increase their knowledge and enable them to persuade farmers of the efficacy of agricultural extension.
- Establishing agricultural research centers and model fields to undertake field experiments and train farmers who prefer to learn alongside other farmers through experiential learning.
- Creating audio-visual resources, like videos about agricultural extension and podcasts, and organizing conferences and collaborative workshops.
- Building climate monitoring stations to provide early warnings for agricultural operators.
- Developing the podcast program by producing episodes (max. length of 15 minutes) about specific topics that farmers need to know about like how to use a given pesticide or fertilizer or how to treat a given illness. Creating videos and brochures that explain a given planting technique, which can be distributed as needed. Setting up a hotline

that is available one day per week so that farmers can speak to agricultural experts. Recruiting more agricultural experts for the platform.

Urgent Recommendations

- Implementing strict rules to control the importation of agricultural inputs, especially pesticides and fertilizers, and increasing lab capacity and expertise.
- Supporting local industry to produce necessary inputs, such as fertilizers, animal feed, equipment, irrigation tubes, local seeds, etc.
- Moving towards updated irrigation practices, like drip irrigation, by supporting farmers with inexpensive loans, and prioritize solar as a power source for irrigation. This will increase sustainability and the conservation of natural resources.
- Implementing better management of water resources and providing support for strategic irrigation projects.
- Strengthening collaboration and cooperation among bodies in the agricultural sector and creating a local platform to coordinate development projects under the supervision of local authorities bearing in mind that the UN platform does this vital role for humanitarian organizations through the Food Security and Livelihoods cluster.
- Establishing agricultural cooperatives and expanding their role in sustainable development projects by organizing farmers in these cooperatives under the supervision of local councils and authorities. This will enable them to undertake development projects at the level of villages and towns, thereby allowing them to introduce technology and techniques to promote sustainable growth and the conservation of natural resources.
- Supporting farmers to grow strategic crops, like wheat, and to focus on strengthening the value chain of these crops to ensure that they are grown and marketed in such a way that guarantees an income for farmers as this will encourage them to continue producing them.
- Supporting livestock producers with concentrated animal feed and promoting the production of animal feed crops and concentrated animal feed locally by encouraging local private sector industry. Ending the reliance on animal feed imported from neighboring countries. Encouraging the production of animal feed crops and the introduction of new crops like soya beans and Egyptian clover.
- Developing agricultural extension initiatives and connecting these to practical trainings by establishing models. Supporting research projects, especially those focused on improving traditional agricultural practices and introducing new ones, as well as establishing specialized laboratories to analyze soils, fertilizers, and pesticides.