

# **SEED SYSTEM SECURITY ASSESSMENT**

## **NW SYRIA**

**September 2015**

## Acronyms

ACSAD	Arab Center for the Studies of Arid Zones and Drylands
ACB	Agricultural Credit Bank
CRS	Catholic Relief Services
DoASC	Directorate of Agricultural and Scientific Research
DSD	Direct Seed Distribution
GCSAR	General Commission for Scientific and Agricultural Research
HH	Household
ICARDA	The International Center for Agricultural Research in the Dry Areas
ISIS	Islamic State of Iraq and al-Sham
FAO	Food and Agriculture Organization (also UN-FAO)
G	grams
GCSAR	General Commission for Scientific and Agricultural Research
GoS	Government of Syria
GOSM	General Organization for Seed Multiplication
Kg	Kilogram
MoAAR	Ministry of Agriculture and Agrarian reform
MT	Metric Tons
NARS	National Agricultural Research System
NGO	Non-governmental organization
NW	northwest
OECD	Organization for Economic Co-operation and Development
OPV	Open Pollinated Variety
QRCS	Qatar Red Crescent Society
SC	Save the Children
SMD	Seed Multiplication Department
SSSA	Seed System Security Assessment
SYP	Syrian pounds (currency)
USD	United States dollars (currency)

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## EXECUTIVE SUMMARY

This report presents the results of a Seed System Security Assessment (SSSA) conducted in NW Syria in September 2015. The assessment looked at the structure and functioning of seed systems that farmers use and investigated the availability, accessibility, and quality of seed on offer. The SSSA compared the current seed system to that which existed in 2010 prior to start of the armed conflict. The SSSA also reviewed in detail seed system operations for the prior two seasons, summer 2015 and winter 2014-15 season, as well as any upcoming needs for the 2015-16 winter season.

The overall purpose of this SSSA was to help farmers and humanitarian actors better plan for activities that could support seed system function and, hence, agricultural production in the short and medium term. Relief efforts focusing on agriculture in NW Syria can serve the dual purpose of supporting livelihoods of smallholder farmers and contributing to wider food security and nutrition across the region.

The assessment unfolded in five geographical areas of NW Syria: north of Aleppo; west of Aleppo; south of Aleppo and east of Idlib; west of Idlib; and south of Idlib and north of Hama. These areas were selected due to their importance in agricultural production both regionally and nationally, and because partner NGOs had an established presence, ongoing agricultural activities, and relatively secure and consistent access to farming communities. Together, seven national and international non-governmental organizations (NGOs) conducted the SSSA.

Note that this fieldwork was completed late September 2015, just days before the airborne campaigns started in NW Syria. The humanitarian situation on the ground has changed significantly in the intervening months. While many of the field findings still hold (as they are linked to chronic stress and ongoing needs), others might require updated verification.

Select SSSA results are reported below, in two sections: a) Acute Seed Security Findings, and b) Chronic Seed Security Findings and Emerging Opportunities. Recommendations follow.

### **Acute Seed Security Findings**

Multiple and diverse indicators suggest that the seed security of NW Syria farmers in the short-term was quite stable and even positive at the time of the assessment.

#### **From the farmer point of view, 2014-16**

1. For the 2014-15 main winter growing season and summer 2015, 80% of farmers sowed the same or more than usual with sowing rates overall increasing by 15.34% and 7.62% respectively for the two seasons (sowing rates bring a proxy for land area cultivated).
2. Harvests for both 2014-15 seasons, winter and summer, were also rated by farmers as 'good' (60% of cases) or 'average' (30%) across their full range of priority crops.

*Hence areas sown were stable or growing and with promising harvests.*

3. Farmers largely relied on the informal sector for the lion's share of their seed and planting materials with about 56% coming from traders (local markets) and 24% coming from home-saved seed for the winter and summer seasons. Seed contributions from formal sector sources were negligible overall, with two exceptions. During the winter season, about 11% of the seed for wheat was sourced from the SMD and 9% of Irish Potatoes was sourced from contract growers.
4. The sowing plans for the upcoming 2015-16 winter season project that farmers will largely continue to use the same seed sources (so not relying on the government or humanitarian aid) and will continue on the positive trend to expand seed use by, 24.6 %.
5. Farmers' reasons for sowing of a given crop were straightforward. For both seasons, the major driver for planting more is tied to positive market opportunities. Secondary reasons involved getting access to more land and labor and good weather.

*As incentives for expanding seed use and extending land area are especially linked to the emergence of better-developed output markets, care should be given for any aid/development response not to undermine these.*

6. These overall positive trends should not obscure that some farmers are sowing less of a given crop (about 20% of cases) and there are key reasons for their doing so, which suggest signs of vulnerability.
  - Farmers for the winter season sowed less generally for three reasons. By far, the most important constraint was cost and quality of complementary inputs, such as pesticides and fertilizer. Seed cost itself was an issue for some. The third major constraint was non-functioning markets: they sowed less of a particular crop (often wheat) as output markets were not functioning.
  - Farmers for the summer season (focus on irrigated vegetables) sowed less mainly because of the price and quality of inputs. Full stop.

*Note that there were virtually no constraints cited around the availability of seed. Seed was available. ('No seed' was not tied to farmers sowing less).*

7. Calculations were made on the costs for farmers obtaining the seed they actually sowed or would sow: \$364 for winter season 2014-15 and \$153 for upcoming winter 2015-16. Such costs of seed seemed not to cause concern, it is rather the high costs of accompanying inputs (fuel, fertilizer and pesticides) that farmers highlight as important financial constraints.

### **On the supply side, 2010-2012**

8. While government formal sector sources have tumbled, agro-dealers themselves indicated no shortage of their normal supplies. Traders suggested supplies were easily available for major crops. Traders also reported sales as increasing between last and upcoming winter seasons (by 39 to 117% depending on crop.).

### **Community summary:**

9. Overall, communities (N=17) themselves emphasized 90-100% seed secure across crops. This includes field crops and seed for kitchen gardens.

## **Chronic Seed Security Findings + Emerging Opportunities**

The review of medium-term trends in seed security in NW Syria showed most of all that communities were continuing to farm and at full speed at the time of the assessment. That said, there have been a number of important shifts as well as substantial adaptations to an evolving situation.

1. Crop diversification. The wide range of crops is notable as is the rapidly changing crop portfolio. Traditional revenue earners such as cotton and sugar beets barely figured in the current crop repertoire. In contrast, NW Syrian farmers are focusing on crops for income, especially moving to cumin, coriander, and black seed. Because these crops are considered medicinal, they can still be easily exported (especially to Iraq). Their seed is also cheap and need few inputs.
2. Seed sourcing changes. For some crops, there have been dramatic changes in the way seed is sourced, even in this short time frame. A good example is for wheat, which was formerly subsidized by the GoS. For other crops, however, the seed sources have remained stable since the start of the crisis period, especially for the legumes. If one were to summarize seed channel stability and dynamism, across crops, 2010 versus 2015, the overall trends might be as follows:
  - For previous government (GoS) supported crops, key sources have been lost (GOSM, Ag banks/farmer associations, ICARDA);
  - Some new sources have emerged for key crops (e.g. wheat), like the Seed Multiplication Department (SMD)--but these do not operate at the same scale.
  - For many crops, the seed sources remain the same, then and now, although the order of importance may have changed. Certainly use of trader seed seems to have sharply risen.
  - Agro-pharmacies can still supply a range of vegetable seed (although perhaps not as before).
  - Contract growers still exist- shifting from GOSM to SMD oversight and sometimes going independent. The varieties are often the same but the quality management regimes have declined.

*For most farmers, this mix of stability and change means that they can still get the varieties and seed they want and need. The exception might be for those farmers who are looking for certified seed only—but such farmers tend to produce for highly regulated output markets and such markets (wheat, cotton, sugar beet) have largely collapsed, at least within NW Syria.*

3. New varieties. New varieties are not being bred or formally diffused at this time anywhere in Syria. However, it seems that materials new to farmers are reaching communities. These varieties may not be 'modern' or 'improved' but they are innovations for the farming family. In NW Syria, about 30% of families have obtained a new variety since the start of the crisis, mainly of Irish potato and wheat, and from traders or agro-input dealers.
4. Substantial input use. The large majority of farmers (*4/5 of the sample*) are still using fertilizers and pesticides at some levels. That said, the fieldwork did not focus quantities used, effectiveness of targeting or methods of crop application. Those not using such inorganic inputs indicate that they are just too expensive and/or farmers cannot get the credit needed to purchase them. Manure and compost is being used to a lesser extent. In addition to reasons of cost, a good number of farmers indicate that these organic inputs are just not available.
5. Seed storage puzzle. Only about 40% of farmers use any chemicals in storage with normal losses reported as fairly modest: 10-15%. Among those not using chemicals, it is notable that 1/3 of farmers in the full sample store nothing at all. Without understanding the rationale behind this non-storage, it is difficult to assess if storage issues present problems or not.

All in all, this is a very dynamic farming situation, with many changes. There are no broad signals that 'farming has broken down.' It is evolving—and continuing to be geared to market opportunities.

## **RECOMMENDATIONS**

The opportunity for the SSSA team to conduct assessments in five geographic regions provided field teams a useful perspective on seed security across regions of NW Syria.

Below is a set of recommendations that are applicable across all assessment sites, as of September 30, 2015. Recommendations for the short-term (1-2 seasons) are followed by recommendations for the medium term (3-4 seasons) and then by those 'longer' term actions that anticipate periods of stabilization.

As emphasized in the introduction, much has changed in NW Syria since the completion of the fieldwork, end of September 2015. Specific action points will need to be tailored to this fluid situation.

### **SEED SECURITY: ACTIONS NEED IN THE SHORT-TERM (EMERGENCY, 1-2 seasons)**

**Overview context.** *Seed availability*, that is, lack of seed per se was not identified as a problem in any of the sites. In fact, the overall trend for farmers to increase their sowing rates for the winter 2016 is supporting testament to this positive situation. *Seed access*, that is, having the means to exchange or buy seed, was identified as a problem for a subset of the population as was the money to buy other inputs, such as fertilizer, herbicides, pesticides. *Seed quality*, that is not having the right variety or having good quality seed, was also not identified as a problem by farmers. Seed quality was rather identified as a concern by some NGOs (and former researchers) who sense that farmers should be sowing certified seed, especially of wheat, as this practice was GoS strictly guided for many years.

In addition, the SSSA results showed that both farmers and traders were expanding market enterprise across a number of value chains and that trading routes were functioning to move an important number of major grain and seed commodities, even across contested geographic zones.

As overall recommendations of the seed/agricultural system *status quo*, the report puts forward two general recommendations.

***Recommendation 1: Initiatives should avoid undermining the seed channels that are functioning well.***

More specifically, tailored to the different seed security constraints encountered, the following action points are recommended.

Action 1.1. **Humanitarian organizations should avoid/limit direct seed distribution so as not to harm the functioning local markets.** That said, in cases of the 'most vulnerable', or besieged populations, direct seed distribution (DSD) should be weighed carefully as a possible valid response.

Action 1.2. **To address possible access issues, humanitarian organizations should consider use of vouchers and cash that could be used to support the functioning of local traders and agro-pharmacists.** Such a system would also let farmers choose what crops, varieties and quality seed they want to sow.

***Recommendation 2: Initiatives should avoid actions which directly undermine current major output markets***

Action 2.1 **Humanitarian organizations should aim to avoid importation of grain flour and other crops demonstrated to be available in NW Syria. Aid groups should strive to procure locally (even for items such as aid food baskets).**



## SEED SECURITY: ACTIONS NEEDED IN THE MEDIUM-TERM (3-4 seasons)

**Overview context:** Within NW Syria, the basic agriculture outreach services formally supported by the central government have completely broken down. The number and range of services not functioning is formidable (*see Table 3.5 for SSSA team summary*). There is a need to prioritize which gaps should be addressed first, and how to address in the absence of a central coordinating body. The two central recommendation areas listed below represent needs that can potentially be addressed in the medium term. The focus suggests a role for humanitarian organizations in facilitating important **'institutional service support'** which extends beyond their more routine humanitarian focus on aiding direct beneficiaries.

### ***Recommendation 3: Enhance extension services for 'all' aspects of agricultural production***

Action 3.1      **Aid organizations should give focus to providing agricultural advice and training materials** on themes such as disaster risk reduction and conflict and how to manage risk in a variable context. (*This would be a substitution function for the former government agricultural services*).

Action 3.2      **Aid organizations should intervene to raise the quality and encourage consistency in the agricultural input supply chain -----for fertilizers, pesticides, herbicides, etc.** Exact actions need to be weighed carefully. (*The aim is to provide some standards and traceability in agricultural inputs being put on offer in routine commercial channels. Again, this is a substitute function in the absence of an official regulation body.*)

### ***Recommendation 4: Program activities to build and strengthen the existing informal seed system.***

Action 4.1      **Aid organizations should support farmers to produce and save high quality seed.** Given that NW Syrian farmers seem to be drawing more on their own seed stocks, farmer skills in field selection, harvest techniques, and storage procedures need to be enhanced.

Action 4.2      **Aid organizations should work with traders and agro-dealers to recognize and test for higher quality seed** (including seed from contract growers or that which might be sold which might be moved on local markets).

Action 4.3      As a developmental response (not linked to emergency), aid organizations are considering certified seed introductions. **Certified seed introductions should be considered a) only where there are clear farmer pay-back systems in place to reduce subsidy and b) if value-chains are functioning which can absorb the resulting high quality end product.**

## SEED SECURITY: LOOKING FORWARD TO ACTIONS NEEDED IN A STABILIZED SECURITY SITUATION

**Overview context:** Within NW Syria, fundamental plant breeding research and development (R+D) and basic, early stage seed sector services have fundamentally been halted, with some infrastructure destroyed or collapsed. It is not clear what type of organization(s) or processes might be spurred to fill in these critical voids. Services which need to be re-established include: (but are not limited to)

- Formal sector plant breeding research, development and variety release;
- Formal seed sector multiplication (breeder, foundation and certified seed)
- Plant Quarantine (domestic and cross border) regulatory bodies and laboratory facilities.

As a final overarching recommendation, it is suggested that such longer-term needs not be overlooked. The future viability of Syrian agriculture will partially depend on the existence such formal organizations, processes and official regulations.

***Recommendation 5: Develop processes and actor coalitions to re-establish formal breeding R+D and formal seed service capacity and plant quarantine facilities that can serve NW Syria.***

This assessment of the seed security of NW Syrian farmers has been completed so as to guide practical action in the short, medium and longer-term. The challenges are many--- but humanitarian organizations should also seize on the positive opportunities. NW Syrian communities are continuing to farm. They deserve to be supported in dynamic ways.

# I. INTRODUCTION

## Rationale for Report

A Seed System Security Assessment (SSSA) was conducted in NW Syria in September 2015. The assessment looked at the structure and functioning of seed systems that farmers use and investigated the availability, accessibility, and quality of seed on offer. The SSSA compared the current seed system to that which existed in 2010 prior to start of the armed conflict. The SSSA also reviewed in detail seed system operations for the prior two seasons, summer 2015 and winter 2014-15 season, as well as any upcoming needs for the 2015-16 winter season.

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The assessment unfolded in five geographical areas of NW Syria: north of Aleppo; west of Aleppo; south of Aleppo and east of Idlib; west of Idlib; and south of Idlib and north of Hama. These areas were selected due to their importance in agricultural production both regionally and nationally, and because partner NGOs had an established presence, ongoing agricultural activities, and relatively secure and consistent access to farming communities. Together, seven national and international non-governmental organizations (NGOs) conducted the SSSA.

Since the start of hostilities in March 2011, protracted and escalating violence in Syria has resulted in widespread civilian casualties, destruction of infrastructure, and the collapse of essential services and markets. At this timing of writing, an estimated 19% of the population, 4,185,302 individuals, have fled Syria and 30%, 6,563,462 individuals, have been internally displaced. Relief efforts in Syria continue to focus on meeting urgent needs, while humanitarian actors are simultaneously transitioning to recovery-oriented interventions such as market-based vouchers, repair to infrastructure, and support to livelihoods.

There were multiple reasons for conducting as SSSA in NW Syria in September 2015:

1. Even in the midst of this ongoing conflict, agriculture remains a primary livelihood in NW Syria. Farmers continue to engage in agricultural production, while adapting strategies to respond to insecurity, breakdown of infrastructure, and rapidly changing markets.
2. Relief efforts to date have focused on immediate challenges and short-term interventions. In terms of seed, delivering of direct seed aid (aka, Direct Seed Distribution, DSD) has been assumed to be a needed intervention— in the absence of a real examination of seed security issues.
3. In the context of this protracted emergency, humanitarian actors might usefully plan beyond short-term assistance and reflect on ‘best bet’ medium and long-term

support to agricultural livelihoods and production. This SSSA has been geared to projecting supporting for the next 3-5 seasons.

4. The situation in Syria is highly dynamic. It is critical decisions for humanitarian actions be made based on sound evidence-based assessments rather than assumptions or outdated and evolving information.
5. This endeavor aimed to build specific assessment capacity. Seed security assessment tools are linked to food security assessments, but are also quite distinct. The *Seed System Security Assessment (SSSA)* in NW Syria was designed to give honed technical insight and to train professionals in fast-evolving seed security assessment and intervention design methods (see [SeedSystem.org](http://SeedSystem.org) for more detail on approach and methods).

**Finally, it is important to note that the humanitarian situation has changed significantly since this fieldwork was completed and the report written.**

## **Aims and Structure of Report**

The report presents the results of the SSSA in NW Syria during September 2015. It presents the findings on seed security across all five geographic areas.

In terms of report structure, Chapter II introduces the SSSA methodology and reviews the actual methods used in the September 2015 assessment, including the rationale for the choice of sites. Chapter III provides a snapshot of the stress context, including salient shifts since the conflict erupted.

Chapter IV hones in on seed issues, and gives a brief background to the Syrian formal input sector (plant breeding, seed and fertilizer) and also informal seed sector, including information on seed/grain trader contributions. The discussion moves from a nationwide focus to a more NW Syria perspective.

Chapter V presents the main field findings, divided between seed security issues in the short-term, 2014-16 seasons, and those in the medium and longer-term (encompassing both chronic stresses and emerging opportunities.)

Chapter VI presents the recommendations across sites, followed by references.

## II. BACKGROUND: SEED SYSTEM SECURITY ASSESSMENT

This chapter presents the necessary background to interpret this SSSA. It introduces the concept of seed security and the different types of seed response approaches that might be matched to diverse seed security problems (and opportunities) encountered on the ground (see Sperling, 2008). Methods used in the September 2015 assessment are then presented.

### The Concept of Seed Security

Farm families are seed secure when they have access to seed (and other planting material) of adequate quantity, acceptable quality, and in time for planting. Seed security is best framed within the broader context of food and livelihood security. Helping farmers to obtain the planting materials they need enables them to produce for their own consumption and sale.

Achieving seed security is quite different from attaining food security, despite their obvious links. One can have enough seed to sow a plot but lack sufficient food to eat, for example during the 'hungry season' prior to harvest. Conversely, a household can have adequate food but lack access to appropriate seed for planting to help render plots productive. Despite these important differences between food security and seed security, determinations of seed security are normally based, implicitly or explicitly, on food security assessments. This results from a lack of appreciation and understanding of seed security issues.

### *The Dimensions of Seed Security: a Framework*

The concept of seed security embodies several fundamental aspects. Differentiating among these is crucial for promoting those features that foster seed security as well as for anticipating the ways in which such security might be threatened. Table 2.1 outlines the fundamental elements of seed security: seed has to be available, farmers need to have the means to access it, and the seed quality must be sufficient to promote good production.

**Table 2.1: Seed security framework, basic elements**

Parameter	Seed Security
<i>Availability</i>	Sufficient quantity of seed of adapted crops is within reasonable proximity and in time for critical sowing periods.
<i>Access</i>	People have adequate income or other resources to purchase or barter for appropriate seeds.
<i>Quality</i>	Seed is of acceptable quality: <ul style="list-style-type: none"><li>• 'healthy' (physical, physiological and sanitary quality)</li><li>• adapted and farmer-acceptable varieties</li></ul>

Source: Remington *et al.* 2002.

**Availability** is defined narrowly as whether a sufficient quantity of seed of target crops is present within reasonable proximity (spatial availability) and in time for critical sowing periods (temporal availability). It is essentially a geographically based parameter, and so is independent of the socioeconomic status of farmers.

Seed **access** is a parameter specific to farmers or communities. It largely depends upon the assets of the farmer or household in question: whether they have the cash (financial capital) or social networks (social capital) to purchase or barter for seed.

Seed **quality** includes two broad aspects: seed quality *per se*, and variety quality. *Seed quality* consists of physical, physiological and sanitary attributes (such as germination rate and the absence or presence of disease, stones, sand, broken seed or weeds). *Variety quality* consists of genetic attributes, such as plant type, duration of growth cycle, seed color and shape, and palatability.

In situations of stress, it is rare to have constraints in all three seed security features at the same time. The challenge is to identify the real problem and then target actions to alleviate that problem.

### ***Acute and Chronic Seed Insecurity***

Analysis of seed security requires consideration of the duration of the stress: whether it is 'acute' or 'chronic' (recognizing that the divisions are not absolute).

Acute seed insecurity is brought on by distinct, short-lived events that often affect a broad range of the population. It may be spurred by failure to plant, loss of a harvest, or high pest infestation of seed in storage. While in normal times households may have various degrees of seed security, all may be affected by an acute event, such as a flood.

Chronic seed insecurity is independent of an acute stress or disaster, although it may be exacerbated by it. It may be found among groups who have been marginalized in different ways: economically (for example, due to poor, inadequate land or insufficient labor); ecologically (for example, in areas of repeated drought and degraded land); or politically (in insecure areas, or on land with uncertain tenure arrangements). Chronically seed insecure populations may have ongoing difficulties in acquiring off-farm seed due to lack of funds; or they may routinely use low-quality seed and unwanted varieties. The result is households with built-in vulnerabilities.

Acute and chronic seed insecurity often exist together in emergency contexts. Indeed, in cases where emergencies recur – in drought-prone areas, for example – acute problems are nearly always superimposed on chronic problems rooted in poverty.

### ***More Refined Analyses Leading to More Targeted Responses***

Table 2.2 gives examples of how identification of a specific seed security constraint should lead to a targeted response, as we are aiming in this Northern Syria assessment. So, for example, if 'seed availability' is assessed as the problem in the short term, seed-based interventions, such as seed importation may be appropriate. (Seed availability problems rarely persist over the long term.) In contrast, a diagnosis of a problem of 'seed access' might wisely trigger a holistic analysis of livelihood strategies. In the acute phase, providing farmers with cash or vouchers to get their desired seed might be effective. However, an identification of access problems on a chronic basis should lead practitioners to look well beyond seed and seed security constraints. The inability to access certain necessary goods on a repeated basis is usually equated with problems of basic poverty. Initiatives to help farmers generate income and strengthen their livelihoods would be essential. Seed quality problems, whether they relate to concerns with the varieties or with seed health *per se*, are rarely short-term. Responses usually require significant development programs, linked to plant breeding or seed quality initiatives, depending on the specific constraint identified.

**Table 2.2: Types of seed security problems and broadly appropriate responses**

Parameter	Acute	Chronic
Unavailability of seed	Direct distribution of seed	(Happens rarely or never)
Farmers lack access to available seed	Vouchers and cash (sometimes with seed fairs)	Income generation activity Agro-enterprise development
Poor seed quality <ul style="list-style-type: none"> <li>▪ poor varieties</li> <li>▪ unhealthy seed</li> </ul>	<u>Limited</u> introductions of new varieties	Introduce new varieties and give technical support  Variety selection / breeding  Development of seed enterprises linked to new varieties and other quality enhancements

## Seed System Security Assessment

A SSSA reviews the functioning of the seed systems farmers use both formal and informal. It asks whether seed of adequate quality is available and whether farmers can access it. The SSSA also promotes strategic thinking about the relief, recovery or development vision needed. For instance, during a period of stress, should efforts aim to restore the seed system to its former state, or should they aim to strengthen it? Should efforts focus on crops for food, income or both? Should interventions be linked to crops tied with the most vulnerable (e.g., women)? (see Sperling, 2008 for a description of the SSSA method or <http://seedssystem.org/assessment-tools/>).

## Methods Used

The themes and methods used in the Northern Syria SSSA are sketched out in Table 2.3. They include a range of qualitative and quantitative methods and draw on multiple stakeholder insights. Of special note is that the sample sizes were relatively big for a quick assessment: 399 individual farmer interviews, 17 focus group discussions (including women’s focus groups), and 39 agro-pharmacist and traders visits and discussions.

Methods used in a standard SSSA had to be tailored to the Northern Syria context in several ways:

- Women and men could not be interviewed together (in deference to local custom), so community focus groups (only men) were supplemented by women’s only focus group discussions (FGDs);
- Due to security risks (overhead bombings), interview groups clustered together aimed not to exceed 20 to 30 people;

- Due to security risks (overhead bombings), market days in most assessment site locales were not being held. Hence traders were interviewed individually and in off-market sites.

**Table 2.3: Investigative methods used in the Northern Syria SSSA, September 2015**

Type of Investigation	Commentary
Background information	Commissioning of specific documents: <ul style="list-style-type: none"> <li>• formal sector breeding</li> <li>• formal seed sector seed supply trends</li> <li>• Decentralized (contract farmer) seed production</li> </ul>
Key informant interviews	Crop specialists Humanitarian implementers
Focus group discussions --- Community-based <b>N=12</b> --- Women's groups <b>N=5</b>	Community + women- only focus groups <ul style="list-style-type: none"> <li>• Agricultural and variety use +trends</li> <li>• seed source strategies, by crop</li> <li>• community seed security assessment</li> <li>• women's crop/seed constraints/opportunities</li> </ul>
Farmer interviews <b>N=399</b>	Agricultural trends – acute/chronic stresses seed source patterns/input use
Agro-pharmacists + Traders <b>N= 39</b>	<ul style="list-style-type: none"> <li>• crops + input supplies available on market</li> <li>• pricing patterns/ sourcing areas</li> <li>• seed/grain flows</li> <li>• supply/demand trends</li> </ul>

### **Household sample**

Part of the methodology used in the SSSA did involve conducting quantitative interviews at the household level. The difficult security context prevented teams from selecting households randomly. The teams approached local councils in each area and requested interviews with a representative sampling of farming households across socio-economic groups.

Of note is that the sample embraced farms of varied cultivated land sizes. However, it did not include many households that designated themselves as 'female-headed' (although women's focus groups suggested this ranges from 25%-75% of HH, depending on the community). Nor did the random sampling generally capture households classifying themselves as 'internally displaced'. Households did have individual members who had emigrated (especially young men), but rarely was an entirely new 'refugee' or internally displaced household found in the areas sampled.



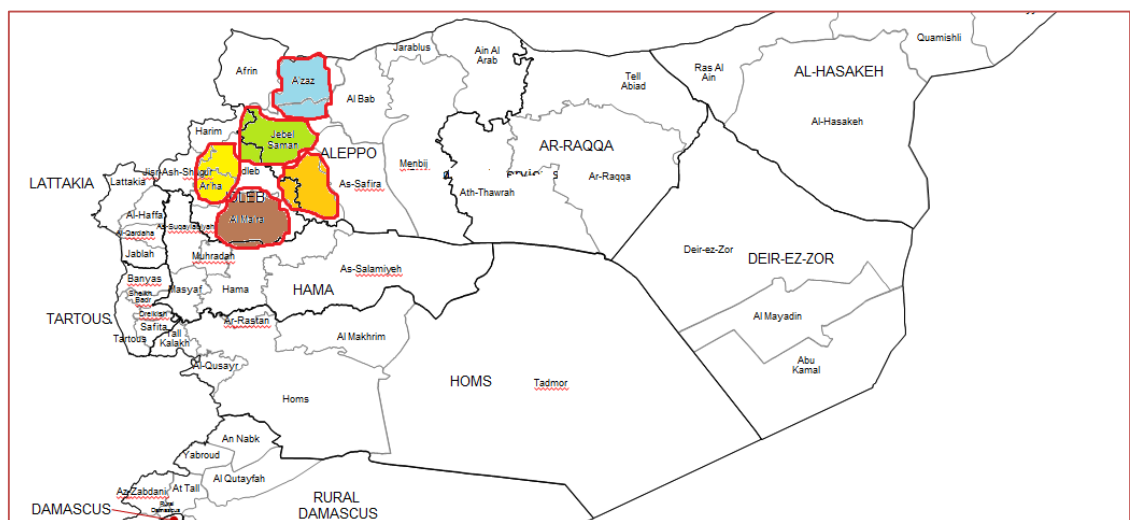
**Table 2.4: NW Syria (HH) sample characteristics, SSSA 2015 (N =399)**

Feature	Description	% Sample
Type of HH	Adult headed	<b>89.6</b>
	Grandparent headed	<b>10.4</b>
Sex of HH head	Male	<b>93.2</b>
	Female	<b>6.8</b>
Area cultivated	<= 1 ha	<b>19.3</b>
	>1.0.- 2 ha	<b>26.7</b>
	>2.0- 5 ha	<b>26.5</b>
	> 5 ha	<b>27.5</b>

### Site Choice

Sites were chosen so as to link the assessment to action, and hence closely followed partner priorities. Additionally, sites were chosen to encompass a range of regional agro-ecologies as well as to adhere to safety concerns. Note that the general region has been an area of important agricultural production in NW Syria. In terms of seed security opportunities, it is also distinctive for two reasons: Aleppo city hosted The international Center for Agricultural Research in the Dry Areas (ICARDA; [www.icarda.org](http://www.icarda.org)) a key research center especially for the germplasm (variety) development of the seminal crops wheat, barley, lentil, chickpea and forage legumes); and the regions north and west of Aleppo hosted several important formal sector seed multiplication centers. Figure 2.1 indicates the general location of sites. More information on the sites assessed appears in Chapter III.

**Figure 2.1. Geographic location of Northern SSSA zones, September 2015**



North of Aleppo  
West Idlib, South

West of Aleppo,

South Aleppo/East Idlib  
Idlib/north Hama

### III. OVERVIEW OF AGRICULTURE + THE STRESS CONTEXT

The Seed System Security Assessment in NW Syria was carried out in a volatile, rapidly-changing environment. Over the last five years, continually shifting political, economic and social dynamics have resulted in unstable livelihoods, collapse of structures and systems, and ultimately transformation of all aspects of life, including agriculture in NW Syria.

Since the start of hostilities in March 2011, protracted and escalating violence in Syria has created a dire humanitarian situation. According to UN OCHA, over 250,000 people in Syria have been killed; over one million injured; 4.2 million people have fled the country; and 6.5 million are internally displaced (OCHA, as of Sept 2015, <http://www.unocha.org/syria>).

In addition to the loss of human life, airstrikes and barrel bombs have destroyed infrastructure throughout NW Syria. Irrigation systems have been damaged. Damaged or insecure roads restrict mobility and cut off access to markets. In some cases, airstrikes have directly targeted markets making it unsafe for people to congregate in large groups. Nevertheless, while some markets have dissolved other are emerging and adapting to the context.

In this chapter we give a brief overview of agricultural basics before the crisis and then selectively focus on some of the trends that have been shaping production and output markets since 2011. For the agricultural basics, we selectively focus on the national scale or northwest region, depending on where information is available. Note that GoS production statistics do not exist for our specific area of assessment, Syria northwest. At the time of the SSSA, this area was not under Syrian government control. Rather, it was in the zone under control of various opposition groups.

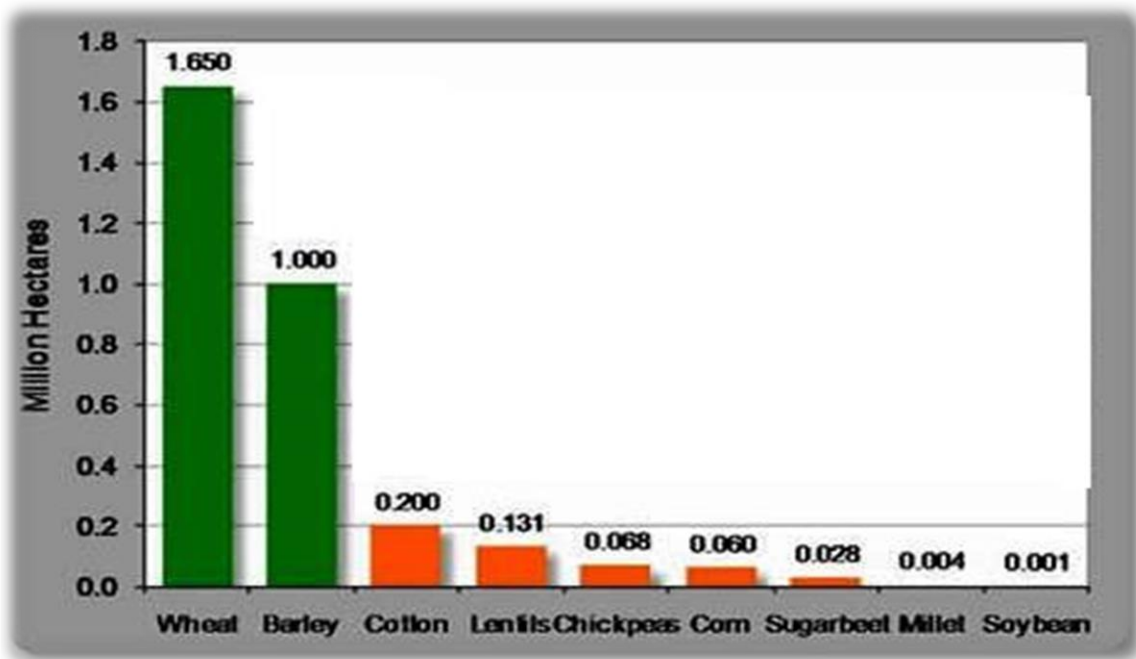
## Agricultural Overview

### *National Summary*

The Syrian Arab Republic, population 22.5 million, covers a land area of 18.5 million hectares (ha) of which 5.9 million ha are arable. Before 2011, agriculture contributed 18% to the Gross Domestic Product (GDP) and provided employment for 17% of the country's labor force. Rural areas are home to 46% of the population, of which about 80% are sustained by agriculture-related activities (FAOSTAT, 2015):

The principle crop grown in Syria is wheat, which covers 43% of the cropped area and is grown in both rainfed and irrigated areas. Both bread and durum types are grown and almost all is used for human consumption. Barley, covering 38% of the cropped area, is the second most important crop and is primarily grown for animal feed under rainfed conditions. Both crops (accounting together for 4/5 of the cropland) have been highly supported by the government through subsidies on seed, fertilizer, pesticides and guaranteed purchase. Cotton, sugar beet and maize were previously (pre-2011) encouraged by the GoS through subsidies and the provision of certified seed. All three are grown on irrigated land and farms of >10 ha are legally obliged to devote at least 2% of their land to these crops. Legumes are primarily grown on rainfed land with no government support for inputs. Potatoes, the other major cash crop, is grown solely on irrigated land and again seed was produced by the government (FAOSTAT 2015).

Figure 3.1. Principal Crops grown in Syria- nationwide. (Official estimates c. 2011)



Source: FAO/WFP 2015

There are two main cropping seasons in Syria: the winter season from November until June is primarily rainfed and dominates production, with the cereals and legumes being the primary crops. A number of crops are sown early in the spring when the principle rains are lessening and temperatures rising, primarily cotton and potato under irrigation; and cumin, black seed and coriander under rainfed conditions. Summer cropping, following harvest of the winter crop, is entirely irrigated and devoted to various vegetables, cotton and maize. Figure 3.1 sketches this crop calendar for what used to be the major crops grown nationally.

Figure 3. : Crop calendar for principal crops

Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Cereals</b>												
Wheat												
Barley												
Maize												
<b>Legumes</b>												
Lentil												
Chickpea												
Faba bean												
<b>Cash crops</b>												
Cotton												
Sugar beet												
Cumin												
Black seed												
Coriander												
Potato (imported)												
Potato (local)												

Source: FAO/WFP; other sources

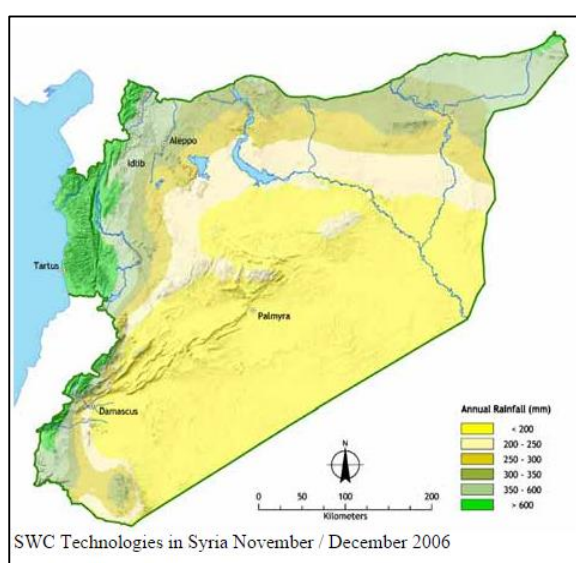
## Agro-ecological zones and the areas of assessment

The land mass of Syria is divided into five agro-ecological zones (AEZ), which are primarily characterized by rainfall. Figure 3.3 a+b shows the principle zones and crops grown nationwide.

Much of the national cropped land lies within the limits of this 2015 SSSA: in the Aleppo, Idlib and North Hama Governorates. This area of the northwest has been characterized as one of the breadbaskets of agriculture in Syria.

The Governorates of Al Hasakah, Al Raqqah and Deir ez-Zor are the remaining principle cropping regions, where the cereals, wheat and barley, pre-dominate. At the time of writing, these zones remain largely in ISIS areas.

Figure 3.3 a+b. Principal agro-ecological zones in assessment area



source: Corradi/ICARDA, 2006

Zone	Rainfall (mm)	Main crops
Zone 1	400-600	Wheat, legumes, summer crops
Zone 2	300-400	Barley, wheat, legumes, summer crops
Zone 3	200-300	Barley, legumes
Zone 4	100-200	Barley (marginal), pasture
Zone 5	<100	Steppe (rangelands) and deserts

## Principal Characteristics of Assessment Areas

A summary of the principle characteristics of the assessment areas is given in Table 3.1. The sites fell into zones 2 and 3 with rainfall spanning <200 mm/year to 400 mm/year. Small areas of land are irrigated using bore wells and pumps. The climate is Mediterranean-type with cold, wet winters, when rainfed crops can be planted, and hot, dry summers when irrigation is required for all crops.

Note that the assessment took place in five geographic areas. It was timed between the summer and winter seasons and took place shortly prior to the winter planting 2015-16 (when farmers crop and seed sourcing strategies were well in place for the upcoming sowing).

**Table 3.1: Current situation in the five assessment areas**

	North Aleppo	West Aleppo	South Aleppo/ East Idlib	West Idlib	South Idlib/ North Hama
<b>Agro-ecology</b>					
<b>Zone</b>	Zone 2	Zone 3	Zone 3	Zone 2	Zone 3
<b>Rainfall</b>	200 – 400 mm	<200 mm	<200 mm	200 – 400 mm	<200 mm
<b>Topography</b>		Rocky			Rocky
<b>Irrigated/ rainfed</b>	Rainfed with small pockets irrigated	Rainfed with small pockets irrigated	Rainfed with small pockets irrigated	Rainfed with small pockets irrigated	Rainfed with small pockets irrigated
<b>Principal crops (2015)</b>	Irrig. wheat Rainfed wheat Barley Lentil Chickpea Faba bean Potato (irrig.)	Irrig. Wheat (very little) Rainfed wheat (little) Barley Lentil Chickpea Potato (irrig.)	Irrig. Wheat (very little) Rainfed wheat (little) Barley Lentil Chickpea Potato (irrig.)	Irrig. wheat Rainfed wheat Barley Lentil Chickpea Faba bean Potato (irrig.)	Irrig. Wheat (very little) Rainfed wheat (little) Barley Lentil Chickpea Potato (irrig.)
	<b>NB Cash crops such as cumin, coriander and black seed are being increasingly grown in place of previous government-purchased crops; e.g. Cotton, sugar beet</b>				
<b>Infrastructure</b>					
<b>Roads</b>	Good/ medium	Good/ medium	Good/ medium	Good/ medium	Good/ medium
<b>Communications</b>	No 'phone coverage'	No 'phone coverage'	No 'phone coverage'	No 'phone coverage'	No 'phone coverage'
<b>Security risks</b>					
<b>General</b>	Stable except for airstrikes	Stable except for airstrikes	Stable except for airstrikes	Stable except for airstrikes	Stable except for airstrikes
<b>Specific</b>	Some ISIS, especially on border				Some GoS activity

## Government of Syria Strategy

### Overview Strategy

The Government of Syria (GoS) regards agriculture as strategic to the economy and national policy places much emphasis on its development and ability to:

- Provide food security for the country;
- Create employment for the rural population;
- Provide raw materials for agro-industry; and
- Earn hard currency from exports.

The GoS works for these aims to be achieved through the following key policy areas:

- Ensuring better access to agricultural resources (land, irrigation etc.);
- Providing adequate investment in agricultural research and development of technologies;
- Providing adequate transfer of technology and extension services: 11,000 extension officers at village level in 1080 extension units;
- Prioritization of seven key crops: wheat, barley, lentils, chickpeas, cotton, sugar beet and tobacco; and
- Public sector responsibility for input supply and services particularly of improved seeds.

Notable achievements of the GoS policy (pre-2011) have been:

- To increase the area under irrigation; from 21% of the cultivated area in 1993 to 30% in 2010 (FAOSTAT, 2015);
- To increase production during the period 1990 to 2011 of priority crops by 86% for wheat (2,070,000 to 3,858,331 tons); 60% for cottonseed (273,500 to 436,584 t) and 428% for sugar beet (273,500 to 436,584 t). There was a small drop, 11% (846,000 to 666,764 t), in barley production due to a 53% reduction in the area cultivated (FAOSTAT, 2015);
- To release 50 new crop varieties of which 25 were wheat and eight barley; and
- To attain self-sufficiency in wheat production by the mid-1990s (FAO, 2003).

## ***GoS Financial policies and subsidies***

Government support for agricultural activities has been financed through the Agricultural Cooperative Bank (ACB), which provides short, medium and long-term loans to public, cooperative and private individuals. Short-term loans have been provided “in kind” as seed or fertilizers and as cash to finance field operations. Interest rates have varied according to the size of the loan and between cooperatives and individuals. Medium term loans, maximum duration five years, have been granted for the construction of irrigation facilities, land reclamation etc.; and long term loans, maximum 10 years, are granted for land development, storage buildings and the establishment of orchards (NAPC, 2008).

Prior to 2011 the government encouraged the production of seven priority crops through the provision of subsidized inputs, guaranteed markets, low-cost credit. The subsidies were only provided to licensed farmers who were usually households with irrigated land.

In terms of the northwest assessment area, approximately 25 - 30% of households in Idlib and Aleppo Governorates are thought to have benefitted from subsidies. Remaining farmers purchased agricultural inputs at commercial prices (PIN, 2015).

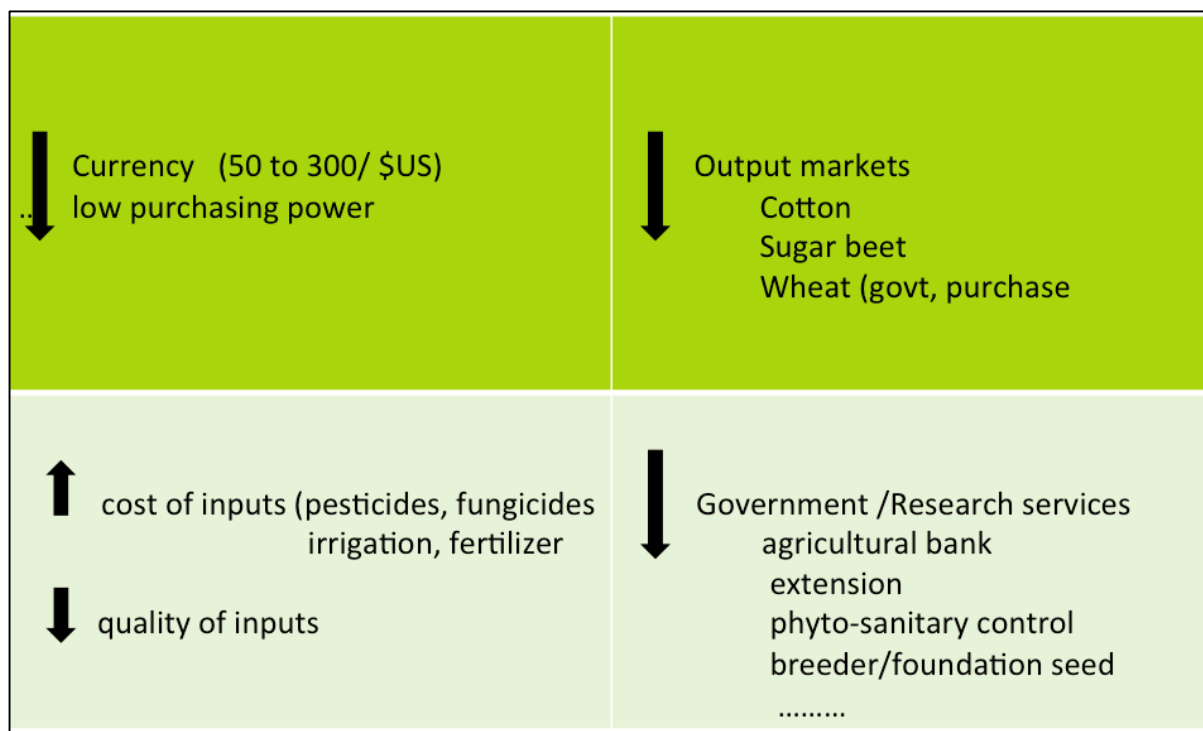
In short, prior to the crisis, the government had been very involved in guiding the production of agriculture nationwide. It provided a wide range of services and very much controlled some of the key agricultural output markets.

## **NW Syria: Major Stresses Affecting Agriculture post-2011**

There have been dramatic changes in the agricultural landscape post-2011. Here the focus is only on the NW Syria zone of assessment, currently predominantly under the control of opposition groups. In a short four years four types of stresses are particularly signaled below: 1) the devaluation of the Syrian pound; 2) linked to this, the rising cost of inputs along with a lowering of their quality, 3) the collapse of key output markets; and 4) the breakdown of a large range of government support services.

Note that all these changes have been dramatic and unfolded near simultaneously.

**Figure 3.4. Snapshot summary of stresses affecting agriculture post-2011 in NW Syria**

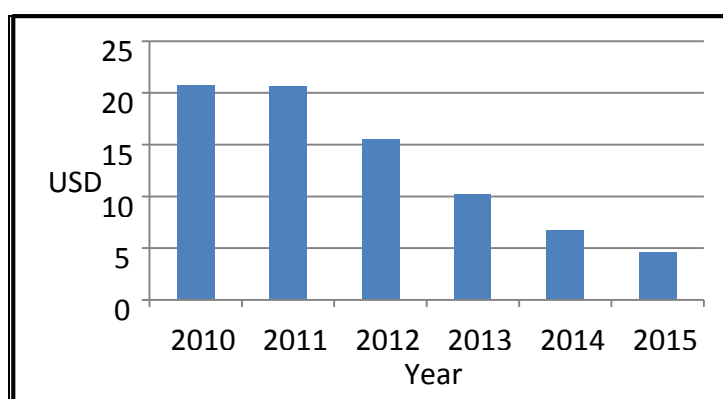


### ***Devaluation of Syrian Pound***

A crucial factor affecting the market economy has been the devaluation of the Syrian Pound (SYP) that has been devalued by 83% since 2011 (Figure 3.5). Commonly described from the consumer point of view, in a short four years, the SYP has gone from 50 to 300 for the equivalent of 1USD.

Traders now purchase most input supplies using foreign exchange. For example, they purchase fertilizer from the Russia, Ukraine, Turkey and Lebanon in USD or Turkish Lira , and then sell their product at the USD/ SYP exchange rate of the day-- resulting in regular price increases in Syrian Pound terms. In contrast, farmers continue to be paid for their produce in Syrian pounds and, they are not compensated for the increased input costs due to currency changes.

**Figure 3.5. Value of Syrian pound against the \$US**



Source: Oanda historic rates

## ***Rising Cost of Inputs along with Lowering of their Quality***

### **Rising Costs**

The drop in value of the SYP, coupled with the loss of government subsidies in the assessment area has resulted in a market economy in which input prices have risen sharply and input purchases and output prices are no longer guaranteed.

Prior to the crisis, fuel was heavily subsidized by the GoS. Since the crisis, this subsidy has disappeared and prices have increased further due to lowered Syrian oil production that also creates constant shortages. The implications run throughout the economy, but particularly hit agriculture as farmers are reliant on fuel for irrigation and transport. Examples of price changes over the last four years are provided in Table 3.2 (PINS 2015).

Together the loss of government subsidy, devaluation of the Syrian Pound and fuel scarcity has reduced farmer access to inputs. In addition many traders are reluctant to stock large quantities of product for fear of theft or damage by fighting. It is important also to emphasize that fuel prices and availability, in particular, are linked to the war economy and ‘control’ areas, as well as lowered production.

**Table 3.2: Indicative price changes of key agricultural inputs 2011 to 2015**

<b>Agricultural input</b>	<b>Unit</b>	<b>Subsidized price</b>	<b>Free market price</b>	<b>% Difference</b>	<b>Note</b>
<b>Diesel</b>	1 litre	20 SYP	20 SYP	0%	* all fuel prices were regulated by the Government
<b>Chemical fertilizer</b>	50 kg	400 SYP	500 SYP	25%	
<b>Potato seeds</b>	1 kg	20 SYP	100 SYP	400%	* subsidized potatoes were from Syria whereas free market potatoes were imported, mostly from Belgium and Netherlands
<b>Wheat seeds</b>	1 kg	15 SYP	18 SYP	20%	
<b>Olive trees</b>	1 tree	50 SYP	100 SYP	100%	
<b>Cotton seeds</b>	1 kg	40 SYP	60 SYP	50%	

Source: PINS 2015

### **Lowering quality**

Inputs also, of course, have a quality dimension and, in addition to price spikes and scarcity, farmers particularly complain about the declining quality of inputs. Prior to the crisis, key inputs were regularly imported by the government and strong quality control mechanisms ensured some transparency and consistency in standards. Post crisis, the GoS is no longer importing, at least not for the NW areas, government fertilizer production has been halted, and control mechanisms resemble something of a ‘free for all.’ Table 3.3 summarizes some of the major input sourcing changes. Lack of regulation is particularly concerning as select inputs are being brought in from a spread of countries—China, Ukraine, Russia, Turkey. Farmers are not always sure if they product they now have in hand is correctly labeled, or if it has been cut or watered down--- and if it will actually work.



**Table 3.3: Changes in sourcing of pesticides and fertilizer 2011 to 2015, in NW Syria**

<i>Input</i>	<i>Source before Crisis</i>	<i>Source 2015</i>	<i>Comments</i>
<i>Pesticides</i>	<p>Imported by companies working with GoS</p> <p>Mostly European, e.g. Bayer, Syngenta, BASF</p> <p>Or local, respected companies, such as Debbaneh</p> <p>Agro best</p> <p>Al Tanmieh</p> <p>Al Meqdadi</p> <p>Egnaa</p>	<p>Traders import freely from China +Turkey</p> <p>(no control)</p> <p>Also, there are some pesticides traded that remained from previous certified and controlled pesticides suppliers-- but these generally have old manufacturing dates</p>	<p><i>Since the crisis, the farmer himself has been making his decision about the kind of pesticide which he wants to use. This might be based on his trust in any particular company or the agro- dealers, or according to his last experiment and experience, and sometimes depending on another successful farmer's advice.</i></p>
<i>Fertilizer</i>	<p>Produced internally- (Holms) gov't manufacture and control for the mineral fertilizers</p> <p>Imported from different countries by the GoS or big trading companies. These included some mineral fertilizers and soluble and foliar fertilizers.</p>	<p>Traders bring from Ukraine+ Russia</p> <p>(some from Jordan , Saudi Arabia)</p> <p>No control</p> <p>From turkey and china, Europe (Indirectly)... across some importing companies.</p>	<p><i>After the crisis the most important problem for the farmer is not the availability of these inputs, but the access and the high USD cost.</i></p>

### ***Collapse of key output markets***

The collapse of key output markets has also occurred for three major commodities. Processing plants for cotton (ginning factory) and sugar beet (sugar factory) no longer function, and farmers in the northwest area have virtually stopped producing these two crops all together. In parallel, wheat production has declined as GoS purchase of harvest is no longer guaranteed. Note that prior to the conflict, the GoS purchased nearly the entire wheat harvest and subsequently managed the process of transforming wheat into consumable goods.

Currently, some private companies in the Northwest buy the harvest, mill the wheat, and sell flour to bakeries. However, milling is expensive due to the costs of fuel, thus increasing the cost of flour. Combined, the increased price of flour, absence of pre-conflict subsidies for wheat products, and decreased farmer income make the cost of bread – a staple in Syrian diet – very hard for households to afford.

These market collapses deprive farmers of their major cash-crop outlets and has resulted in some changes in cropping patters. Table 3.4 gives the GoS national estimates on major crop declines. These are hard to verify in the absence of GoS monitoring in the Northwest. (Figures are projected estimates).

**Table 3.4: Changes in production trends, 2011 – 2014: GoS estimates, nationally**

Production trend	2011	2014	Change
Area planted (ha)	4,793,576	2,998,475	<b>-37%</b>
Wheat acreage (ha)	1,599,108	1,200,000	<b>-25%</b>
Wheat production (t)	3,083,082	1,970,000	<b>-36%</b>
Barley acreage (ha)	1,526,609	1,100,000	<b>-28%</b>
Barley production (t)	679,810	340,000	<b>-50%</b>
Cotton acreage (ha)	172,414	62,339	<b>-64%</b>
Seed cotton Prod <sup>n</sup> (t)	472,485	150,000	<b>-68%</b>
Sugar beet acreage (ha)	27,502	1,598	<b>-94%</b>
Sugar beet prod <sup>n</sup> (t)	1,493,031	67,000	<b>-96%</b>

Source: GSCAR, 2014

The flipside of key commodity market decline is that farmers in the Northwest have quickly shifted to other crops, especially cumin, coriander and black seed. These crops need few inputs and the seed is easy to obtain. The three crops are also considered as medicinal ones which means that they can be freely exported.

This trend of crop substitution is further explored in Chapter VI. Box 5 explores the economic returns of planting wheat in 2015—versus the more lucrative black seed.

### ***Breakdown of Government, Research and a Range of Services***

Finally, the loss of key services has been particularly widespread. Many services were managed by the GoS and all such GoS services have broken down—at least in the NW Syria area. Table 3.5 summarizes a large range of services and how they operated in the northwest before 2011 and currently, in 2015. Several changes are of particular note.

- The total breakdown of the research system, with all work having ceased, has resulted in no new varieties being released from within the assessment area and no conservation and multiplication of breeder's seed;
- The official government seed multiplication service has ceased to operate: thus no certified seed of any variety is currently available;
- There is no longer a quarantine service to ensure seed health, nor a standards authority to ensure the purity of imports such as fertilizer, pesticides etc.
- Extension services no longer exist; nor do farmer-orientated, specialized services, such as credit through the Agricultural Cooperative Bank;
- Irrigation maintenance and pest control services for field crops are now nil;
- Households are having to adjust rapidly to a very unfamiliar free-market environment.

Several significant international institutions have relocated to other countries, adding to the loss of government institutions. Notable amongst these is the International Center for Agricultural Research in Dryland Areas (ICARDA), which has been a major source of new varieties and technical expertise. The loss of these centers, especially ICARDA (formerly based in Aleppo), has resulted in a nucleus of highly-skilled expertise which was constantly interacting with the local communities. On the plus side, many of the former ICARDA national staff are still resident in the assessment area and can serve as a reservoir of knowledge.

**Table 3.5: CHANGES IN SERVICE SECTOR in NW Syria. 2011- 2015 ('before and after')**

<b>SERVICE</b>	<b>Government before in assessment zone</b>	<b>Government After in service zone</b>	<b>Where currently available in assessment zone, Northwest</b>
Agricultural BANKS	credit	-- no bank	None, not even traders (few traders using USD)
Soil testing services/analyses	Paid lab services but low prices	-- nothing	None, no soil lab anymore. Labs exist in Idleb city but no materials
Storage for wheat	Gov. silos	nothing	There are some silos in the zone but not used because of airstrikes, also the secure areas change (soft border among different armed groups). Note that the General Seed Association piles outside, sometimes in bags
Seed quarantine facilities (airport, border gates)	Gov. centers	None	Nothing
Quality test for imported inputs (seed, fertilizer, pesticide...etc.)	MAAR	none	None
Quality test for in country seed	GOSM did for its own seed	SMD seed quality tests for the seed it produces or gets from farmers	Traders sometimes do germination tests
Rat attack	MoAAR (extension offices)	SMD distributed rodenticide for free to any farmer 2015	Rodenticide Available at Ag-Pharm
Plant disease outbreak		SMD controlled the yellow rust	Pesticide Available at Ag-Pharm
Irrigation system availability and maintenance	Project of converting to drip irrigated system – 10 year credit to contracted farmers -Dig and build irrigation channels east of Aleppo -Maintenance to irrigation channels	Nothing	<ul style="list-style-type: none"> <li>• Drip Irrigation system Available at Ag-Pharm and some factories (high price)</li> <li>• NGO distributed drip irrigation network in project</li> </ul>
Ag extension advice	Big gov't service before even in small villages (but controlling more than sharing info)	None	Before and now, main source of tech info from agro-pharmacists
Supply of new varieties	From GCSAR and ICARDA and ACSAD	nothing	nothing

## ***Stress Summary- Farming Communities point of view vs. SSSA Team***

Box 1 synthesizes this list of formidable constraints as reported by farming communities through a series of focus group interviews (12 different communities). The crisis-induced constraints are felt widely and touch farmers in specific, palpable ways. The 2014-15 agricultural season was reported by northwest farmers as a very good one (see also Chapter VI, Table 5.5). But farmers are stressed on many fronts.

### **Box 1. What the Syrian farmer is facing- Agricultural Constraints Sept 2015- the Community view**

Last winter season 2014-15 was a very good one.... But.....

1. No one buying harvest (i.e. drop in wheat output markets.)
2. Drop in wheat prices at harvest
3. High cost of agricultural inputs (bags, most inputs.)
4. Low quality of inputs (no longer quality controlled internally)
  - a. "insecticides/pesticides not effective" (from "Turkey, China")
5. Non-availability of inputs- like fertilizer
6. High cost of fuels (affecting irrigation, transport, all electricity)
7. Absence of Agricultural loans
8. High cost of harvest equipment- (mechanical harvester/bags)
9. High cost of labor for weeding by hand
10. Currency exchange- have to buy inputs at USD equivalent – but sell in SYP
11. No agricultural extension
12. No storage room in home—and breakdown of centralized government storage
13. Lack of certified seed- for select crops (some irrigated wheat/potato)
14. Security instability- which affects transport and movement

Box 2, as a complement and contrast, gives the SSSA's team summary of constraints and opportunities in the northwest—which was also these professionals' home region. Most of the stresses are similar, with this second set additionally giving regional overviews—and suggesting some possible positive developments.

**Box 2. What the Syrian farmer is facing- Agricultural Constraints Sept 2015- the SSSA team summary**

- Breakdown of GOSM and no guaranteed output markets
- Exchange rate big change from 50 to 300 to dollar
- Cash crops (cotton, sugar beet) no factories; cotton sold to turkey, sugar beets not produced
- Price of agricultural inputs increased
- No supply of new varieties – research system breaks down
- High price of fuel and quality has declined, now produced in Syria informally no gov't control
- Breakdown of seed and grain storage facilities
- Quality of agriculture inputs declined, esp. vegetable seeds changed from Europe / USA now Turkey and China
- Quality of fertilizer and pesticides declined because used to be Syrian factory no longer Syrian production rather now imported e.g. Turkey; government used to control
- In general imported products whether seeds or fertilizer no longer quality controlled, no controls
- Output markets especially in northern Syria very limited
- Coriander and cumin and black seeds expanding and replacing wheat
- Bombing overhead affect labor availability
- IDPs can be city based and many have no experience with agriculture
- Breakdown of agriculture extension and lack of professional agronomists and veterinarians
- Research centers like ICARDA non functional
- Illegal digging of wells was controlled before
- Irrigation systems lessened because irrigation parts missing and electricity erratic
- High cost of transportation for transporting field and processed products
- Change in gender balance available for farming labor because exodus of male
- Low access of land for IDPs, use of home gardens, can rent land if have money
- Insect quarantine control stopped, breakdown of quarantine facilities, see case of Colorado beetle

**Positive developments**

- Farmer can cultivate what they want
- Increased initiatives about farming by farmers
  - example: irrigation – solar pumps
  - farmers producing organic compost
- Farmers more interested in taking care of crops / better crop management for vegetables because can get a better price
- Reduction of using fertilizers and pesticides

## **Rise of Aid in Agriculture**

Against this background of complex stresses, international humanitarian aid has been abundant for life-saving responses (water, food, shelter). Agriculture-linked aid seems to have started more recently, in the 2013- 14 period in both government-controlled and opposition areas.

Much of the focus has been on making seed available. Exact figures are scattered: The Qatar Red Crescent Society seems to have started November 2014, for the 2014-2014 winter season supported 108 farmers in IDP areas with wheat seed for the 2014/15 winter season. For the 2015/ 16 season QRCS has expanded and will be distributing 358.1 MT of wheat seeds (<http://www.qatar-tribune.com/viewnews.aspx?d=20150524&cat=nation4&pge=2>). According to official records, The UN FAO distributed 6,000 MT of wheat and barley seed in 2014/15 and for 2015/16, plans to distribute 20,000 tons (9,000 of which was secured at the time of report writing), all to be distributed in government held areas. For the NW zone, several NGOs are distributing seed for the 2015/16 season, with one providing 200 kg/ha of 5 varieties—to cover 4000 hectares (for a total of 800 MT) and another having procured 900 MT—in both cases from via traders who are gathering seed from farmers who formerly contracted with GOSM.

So while emergency seed aid is new—it seems to be going to scale quickly.

## **Summary of salient points: THE CONTEXT (agriculture linked)**

There have been dramatic changes in the agricultural landscape post-2011. Here the focus has been only on the NW Syria zone of assessment, currently predominantly under the control of opposition groups. In a short four years four types of stresses are signaled:

1. The devaluation of the Syrian pound from 50 to 300 to 1USD (since June 2011). While farmers continued to be paid in SYP, they in turn are tied to the (unfavorable) currency exchange to buy food, inputs, services.
2. Linked to #1, the rising cost of inputs along with a lowering of their quality. Supplies of pesticides, herbicides and fertilizer currency have no official quality control processes or product guarantees.
3. The collapse of key output markets, particularly government controlled wheat, cotton and sugar beet. Ginneries and refineries no longer operate. Infrastructure has deteriorated. Outputs markets essential for farming household income have stopped functioning all together.
4. The breakdown of a large range of Government /Research support services: agricultural banks; extension; phyto-sanitary control; breeder/foundation seed production....

Note that all these changes have been dramatic and unfolded near simultaneously.

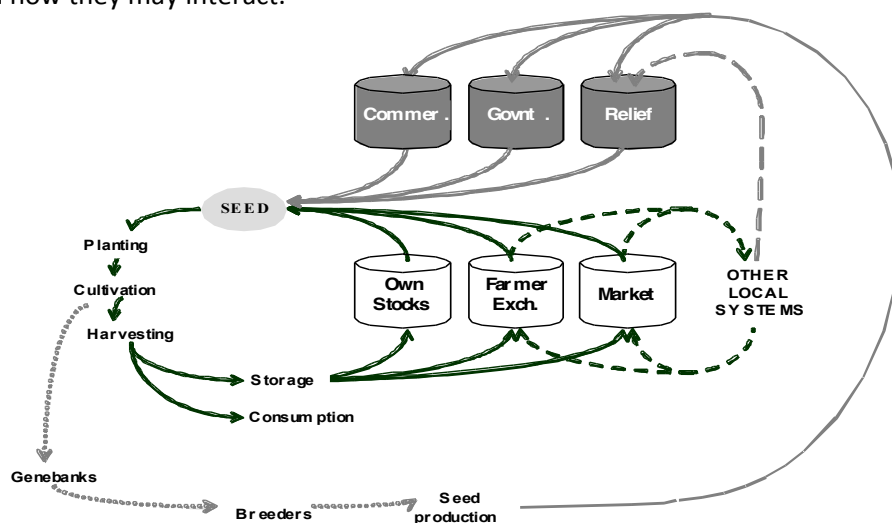
## IV. SEED SYSTEMS IN NW SYRIA: BRIEF OVERVIEW

Farmers use multiple channels for procuring their seed. These channels fall within formal and informal seed systems (with the latter sometimes labeled as local, traditional or farmer seed systems).

The formal seed system involves a chain of activities leading to certified seed of named (often modern) varieties. The chain usually starts with plant breeding, and promotes materials towards formal variety release. Formal regulations aim to maintain varietal identity and purity, as well as to guarantee physical, physiological and sanitary quality. Seed marketing takes place through officially recognized seed outlets, either commercially or by way of national agricultural research systems (Louwaars, 1994). Formal sector seed is also frequently distributed by relief agencies.

The informal system embraces most of the ways farmers themselves produce, disseminate and procure seed: directly from their own harvest; through gifts and barter among friends, neighbors and relatives; and through local grain markets or traders. Farmers' seed is generally selected from the harvests or grain stocks, rather than produced separately and local technical knowledge, standards, and social structures guide informal seed system performance (McGuire, 2001).

What is important to highlight is that farmers themselves obtain their seed through both formal and informal channels, and both merit serious attention. In NW Syria, for example, the same small farmers may procure modern wheat varieties through formal seed systems (GOSM or SMD) and agro-dealers while many of the legumes come from their own harvests or traders, that is, the informal system. Most of the seed Syrian farmers normally use comes from informal channels. However, the crisis has reinforced this trend and extended it: as of 2015, the informal seed systems provide 90- 95% of the seed NW Syrian farmers sow. Figure 4.1 shows schematically the formal and informal seed systems (and their component channels) and how they may interact.



**Figure 4.1. Channels through which Farmers Procure Seed.** These are depicted by the cylinders: Own seed stocks, exchange with other farmers, and purchase through local grain markets constitute 'informal' channels, while commercial agro-pharmacists, government or research outlets, relief supplies constitute formal channels. Adapted from Almekinders and Louwaars (1999).

The next sections emphasize a few key points on varieties and seed system structures serving NW Syria. The formal breeding and formal seed sector are first reviewed and then focus shifts to more intermediary actors like contracted farmers and then the informal seed systems, including large traders.

## Formal Plant Breeding for Syria: the Agricultural Research System

Agricultural research and development began in the 1940s by the Ministry of Agriculture and Agrarian Reform (MoAAR). In 1964, the Directorate of Agricultural and Scientific Research (DoASC) was established with the setting-up of eight research stations in the key agro-ecological zones and with an emphasis on varietal improvement to which was allocated 60% of the budget. In 2002 agricultural research was reorganized and the General Commission for Scientific and Agricultural Research (GCSAR) established as the sole institute for agricultural research for field crops in the country. Over the past 30 years GCSAR has developed strong ties with the Arab Centre for the Study of Arab Regions and Drylands, (ACSARD) established in Damascus in 1968, and with The International Center for Agricultural Research in the Dry Areas (ICARDA) founded in 1977 in Aleppo and which has provided much support and germplasm to GCSAR.

Since the 1980's the principle focus of the GCSAR has been to;-

- Develop and release better adapted and high yielding improved crop varieties
- Develop technological packages suitable for the improved crop varieties
- Maintain Breeders' Seed of the improved crop varieties

The focus of the breeding program was primarily wheat and barley with the aim of supporting the national priorities of food security and sustainable livestock production. Breeding takes place at the principal agricultural research stations with evaluation and testing of improved varieties in a multi-location trials across the country. Selection was for the both abiotic (drought, heat, cold tolerance) and biotic (diseases and pests) stress tolerance coupled with research on associated agronomic practices. There is no independent organization responsible for managing variety releases. A summary of releases over the past four decades is given in Table 4.1. The full list of varieties releases has been appended to this chapter.

**Table 4.1: Principal crops released, 1980 to 2014 by the Syrian National Research Program- GCSAR**

Crop	1980s	1990s	2000s	2010s	Total
<b>Bread wheat</b>	4	2	6	2	14
<b>Durum wheat</b>	3	2	6		11
<b>Barley</b>	1	2	5		8
<b>Chickpea</b>	2	1	2		5
<b>Lentils</b>	1	4			5
<b>Faba bean</b>		1		2	3
<b>Total</b>	11	12	19		44

Source: GCSAR, 2014



Most of the wheat area in Syria is now planted with modern varieties, particularly the Cham series. In contrast, landraces of barley (i.e. not modern varieties) are still preferred and predominate. In zone 1 improved varieties account for 27% of the barley acreage but in zones 2 and 3 improved varieties account for <3% of the acreage.

Important to note that is that is no plant breeding program currently going on anywhere in NW Syria. Further, even in government controlled areas, there does appear to have been two bread wheat varieties released in 2014 (see Annex to this Chapter, IV).

Also critical is that years of investments in breeding have temporarily disappeared, in very short periods since the crisis. Box 3 shares the example of potato breeding which reach a height in 2012 and has since collapsed. Both the breeding and the subsequent seed production capacity have suffered damage.

### **Box 3. The rise and (temporary) fall and rise of Syrian potato breeding and seed production**

Potato is an important cash crop in Syria and much of the seed (planting tubers) has been routinely imported: an estimated 15,000-20,000 tons (T) yearly has come from The Netherlands, Germany and Denmark.

The Syrian government launched a potato project in 2000 so as to develop national capacity to produce such seed. By 2012, GOSM had 700 net houses with 2000 MT of super elite potatoes produced. There were plans for considerable expansion, for 1000 net houses in 2014-15 and aiming to and halting of all imports by 2016.

However, potato breeding has now stopped completely. Potato elite seed production has also stopped completely. Research infrastructure, such as glass houses has largely been destroyed.

*(Update: There is some initial support for potato seed production rehabilitation as of 2013, in the northwest—from a European donor).*



--- **destroyed glass houses** formerly used for to develop potato nurseries...

## The Formal Seed Sector: Government Office of Seed Multiplication

There is no explicit seed regulatory framework for the formal seed sector; but general guidelines are provided by the MoAAR and supported by the National Seed Act, which has regulations for variety release, plant variety protection and seed certification. The formal seed sector falls under the responsibility of a parastatal agency, the General Organization for Seed Multiplication (GOSM). Seed imports and exports are regulated by the Plant Quarantine Office under MoAAR.

The formal seed sector was created following the establishment of the DSAR. It is highly centralized and subsidized by the government. GOSM was established under Law No. 190 of 1970 and became fully operational in 1975. In addition to seed multiplication *per se*, GOSM is responsible for planning, seed marketing, seed quality control, tissue culture and data collection. GOSM is responsible for the supply of seed of the major crops noted above plus planting material of sweet potato, date palm and banana.

The principle responsibilities of GOSM are to:

- Organize seed multiplication through contracts with private farmers, farmer's cooperatives or state farms;
- Establish seed processing and storage facilities at strategic seed production sites. GOSM had 12 storage units, total capacity 300,000 t, prior to the war, but only four remain operative, halving total storage capacity. In addition, GOSM had three cold storage units of which only those in Homs and Damascus are operating. In the assessment area there were two storage sites and 10 sales outlets (See Fig 8 below);
- Market and distribute seed through the Agricultural Cooperative Bank (ACB) or directly to farmers. Pre crisis, GOSM had 63 outlets for cash sales and the ACB 114 outlets for credit sales.
- Provide training on seed production and advisory service to farmers through demonstrations.

Note that several important seed multiplication centers of the GOSM were located in NW Syria, around Aleppo, prior to the crisis. As of 2015, these centers no longer function.

**Figure 4.2. GOSM Seed storage and sales outlets in assessment region.**



Source: SSSA field teams

## Overall GOSM seed scheme

The approach to seed production scheme of GOSM follows closely that of the OECD: Breeder seed, produced by CGSAR, > Pre-basic seed, produced on GOSM stations, > Basic, Certified 1 and Certified 2, produced on GOSM farms or by contract farmers, which may be state farms, cooperatives or individual farmers. Sugar beet seed is imported and distributed by GOSM and elite potato seed is imported for the February planting and multiplied to produce Class A seed on contract for the following September planting.

The share of the acreage sown to certified seed for each crop in 2011 is shown in Table 4.2. It can be seen that for the government's priority crops of wheat and cotton, seed was available for over 50% of the cropped area; or total replacement every second year. Barley, where farmers strongly prefer the local varieties is the major exception: only 10% of seed was projected to come from this formal seed system.

**Table 4.2: Seed supply situation through GOSM, 2011**

Crop	% total seed requirement	N° of varieties in multiplication
Bread wheat	50%	10
Durum wheat	50%	7
Barley	10%	10
Cotton	100%	5
Maize	30%	4
Chickpea	10%	4
Lentil	2%	3
Faba bean	8%	1

Source: GOSM 2015

Farmer in NW Syria prior to the crisis had several ways of accessing seed from GOSM:

1. *They could have been GOSM seed multipliers themselves*—so they contracted with GOSM to multiply and instead of returning the full produced to GOSM kept some for themselves;
2. *They could purchase certified seed from GOSM directly or via the Agricultural Development Bank as part of a credit arrangement;*
3. *They could buy directly from GOSM contracted farmers who engaged in some unofficial side selling.*

In the northwest, none of the means now currently exist (in 2015) as GOSM no longer operates in the region. That said, some of the former contracted farmers have continued multiplying (see section '*Former GOSM contracted farmers*'). Though the seed is not officially certified (as the original material is not from GOSM and the field operations have not been state monitored), the seed is still often of elite varieties and of fairly high quality (as some special field management procedures have been respected.)

## Seed Multiplication Department

In 2011, a newly formed Seed Multiplication Department - modeled on the former GOSM – was established as a formal seed system. In 2011, the system functioned fairly well as there were monitoring field visits and some laboratory testing. In subsequent years, with the deteriorating security situation and damage to infrastructure, such quality control has not been possible. Multiplication in Idlib Governorate has now completely ceased.

Even at in the initial stages of the SMD, however, breeder’s seed from research stations was not available for the initial source supply. Hence, the SMD was forced to purchase quality (certified) seed from GOSM’s former contract farmers who continued to serve as multipliers --- and these sources of ‘unofficial’ certified seed are continuing be multiplied. Wheat and barley are the only crops being multiplied. Since the SMD has no facilities of its own, all multiplication is through agreements with contract farmers. In 2015, SMD had 482 ha of seed under multiplication and expected a harvest of 2,656 tons. The SMD has six varieties of bread wheat, three varieties of durum wheat plus two breeding lines, and two varieties of barley under multiplication. Security continues to be an ongoing constraint, as does funding with resources to purchase all the contracted seed.

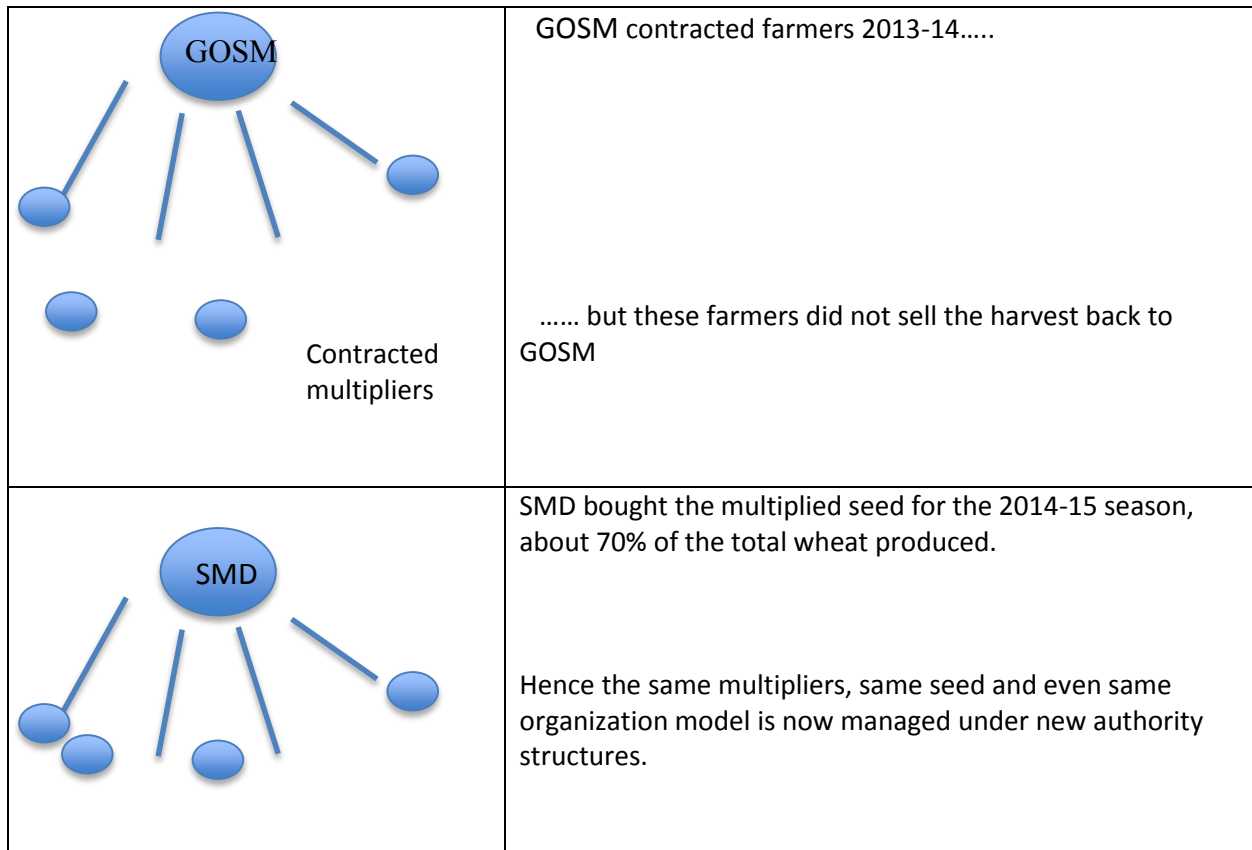
Box 4 summarizes some of the similarities and differences between former GOSM functioning and current SMD functioning. The latter works at a different scale, with differing quality. Particularly central is that the SMD has not been a position to buy much of the seed it has contracted. One anecdote (given firsthand by an SMD manager) suggested that the organization contracted 1000 MT tons of wheat in a given site and was only able to purchase 50MT. Figure.4.3 also shows how the seed multiplication transition- from a GOSM controlled enterprise to an SMD one evolved rather quickly in a matter of a few years.

<b>Box 4. Comparing GOSM and SMD functioning</b>	
<p><b>GOSM: Before crisis</b></p> <p><i>Focus: Wheat and potato and sugar beet and chickpea and lentils</i></p> <ul style="list-style-type: none"> <li>• Gave farmers seeds at subsidy</li> <li>• Gave farmers fertilizer at subsidy</li> <li>• Gave pesticides (fungicide and insecticide) at subsidy</li> <li>• No vegetable seed</li> <li>• Fuel (diesel) was “cheap” – needed for irrigated pumps (government subsidized, not GOSM)</li> <li>• GOSM bought total harvest from contracted farmers at fixed price and paid 10% above market price</li> </ul>	<p><b>SMD</b></p> <p><i>Focus: Wheat and potato and vegetable seed</i></p> <ul style="list-style-type: none"> <li>• Give farmers seed at market price, but with very small subsidy for wheat</li> <li>• Fertilizer “given” at market price</li> <li>• Pesticides given at market prices               <ul style="list-style-type: none"> <li>○ Note: some insecticide given at free 2014-2015 and some rodenticide</li> </ul> </li> <li>• Summer vegetable seeds given at market prices</li> <li>• Fuel 2015 very expensive</li> <li>• Anecdote 2015: Contracted farmers 2014 at Hama and south Idlib: <b>Farmers harvest 1000 metric tons of wheat. SMD could afford only to purchase 50 metric tons at 10% bonus.</b></li> </ul>



photo: the current state (2014-15) of select SMD wheat pile stores

**Figure 4.3. Contracted seed multipliers transitioning from GOSM to SMD authority regimes 2013 onwards. NW Syria**



For completeness of recording Chapter IV Annex II summarizes what SMD has actually been able to produce in its four-year history.

### ***Former contracted seed growers***

Contracted farmers have always been important for Syrian seed supply, including those formerly working for the GOSM and those currently linked to SMD (see figure 4.3). Many still continue to operate—even with the breakdown of formal seed production structures. Contracted farmers currently may be selling remaining certified seed from the GOSM. Alternatively, they may be multiplying new seed of modern varieties or that formerly promoted by GOSM and research stations. The seed is not formally certified, as certification agencies no longer function. However, multipliers tend to adhere to some techniques of ‘good seed multiplication’ and these growers—as well as the traders who buy from them --continue to be sought out as reliable sources of seed. Such seed is now selling directly to customers—whether to farmers or to NGOs.

This phenomenon of ‘former contract growers’ is special one in NW Syria. Unlike many other regions of world, NW Syria (or even Syria more generally,) has never really has non-governmental (NGO)-supported community-based seed multiplication groups (Bishaw, 2004). It is these contract growers, who get initial seed from government suppliers, multiply it and then side-sell who offer the closest form of what might be seen as decentralized intermediary seed sources.

An inventory of these intermediary multipliers (so not ‘formal’ but not totally ‘informal seed sector’) was made during the SSSA. It appears as Chapter IV, Annex III. Important is that these groups still operate or are even flourishing, at an important scale. They tend to multiply the major crops of bread wheat, durum wheat and barley. Among other functions, it is these ‘former certified farmers and traders’ who are supplying the large amounts now being given as seed aid for the upcoming 2015-2016 winter season.

### ***Agro-pharmacists***

Finally, in terms of higher quality planting materials and inputs, the role of Agro-pharmacists should be mentioned. These vendors have long been important not just for supplies but for providing critical technical information to farmers. Some interviewed indicated that agro-pharmacists are even more accessible and have been more trusted than the official government extension system.

#### Agro-shops routinely supply:

- Seeds: certified (including vegetable packets) and local (for instance capisum seed)
- Inputs: fertilizers, pesticides, herbicides
- Animal related products—especially dips and vaccines
- Select equipment: sprayers, drip irrigation equipment

While the distinction between these specialized stores and more general agricultural traders seem clear in theory, in practice the line is blurred. Both might deal in certified and local seed; both sell equipment.

During the SSSA, both agro-pharmacists and general traders were interviewed at length. For both sets, commerce is continuing and expanding (especially to fill the gap left by failing government institutions and supply systems). (see Chapter V, section on markets, Tables 5.8 and 5.9). Trade in ‘opportunity

crops' such as lentil, chickpea and faba bean is expanding, as is trade in the medicinal ones for export: black seed, cumin and coriander.

This does not mean that agro-shops and general traders do not have challenges. Prices are continually in added flux due to working in multiple currencies simultaneously. Also credit arrangements are becoming increasingly complicated as more and more farmer customers seek help.

We now move from the more formal to the more informal sections of NW Syria seed systems. Informal systems are, by far, the backbone of the current economy.

## **Informal Seed Systems in northern Syria**

The informal system in Syria includes farmers own saved stocks, seed from their social networks (relatives, friends and neighbors), and seed from traders who in one way or another are involved in seed exchange and/or trade. (Bishaw, 2004).

The informal system is currently the major seed procurement system across all crops in NW Syria, firstly from traders (55-60% of seed) and secondly from own stocks (20-25% of seed across crops). Before the crisis also, the informal system was the major source for all crops except for wheat and cotton whereby, formerly, contracted farmers were directly tied to GOSM or to the cotton industry value chains. In terms of the informal system the biggest change in this crisis period has been in proportions of seed obtained: the share of seed being obtained from traders seems to be rising. This is a result of two possible trends: the former seed sector breakdown means that farmers are buying now from informal sector sources such as traders – even for fairly good quality seed. Second, the proportions of seed being saved may be changing. In Figure 5.6, (Chapter V), 1/3 of farmers indicated that they are not storing stocks at all—which includes not storing seed. However, that 2/3 are storing may suggest an increase in seed saving. The possible changes in storage patterns merit further attention.

What do farmers see as the advantages of using the informal system and particularly saving their own seed? Farmers indicate: It is good seed for many crops (non-hybrids), it is available on time and it is obtained at no extra cost – if from their own stocks (Bishaw et al. 2011:336). As farmers spoke during one community interview – September 12, 2015. “With our own stocks, we have the seed in hand, *right now*. There is no risk”.

## ***Growing importance of informal system- crisis period***

The importance of traders in putting on offer most of the seed NW Syrian farmers grow merits further elaboration. Not all stocks traders put on offer can be sown as seed, but there is a large subset which is ‘potential seed’ (Sperling and McGuire 2010) which means that it is adapted, meets farmers’ preferences and is managed to have some quality. Traders interviewed during the SSSA often use a number of potential-seed management processes:

Traders may:

- Use storage products against pests
- Remove inert material, like weeds and stones

- Sieve to clean grains
- Have a special place for sterilization
- Have a special place to unify weights and fill bags

## **Seed Flows**

To assess the function of the informal seed supply (and particularly if seed is available!), one needs to have insight not only into immediately current supplies (Chapter V, tables 5.8 and 5.9.) but also into how the seed/grain flows are operating. One needs to map the zones which can supply potential seed and to assess if such routes are still operating. As figure 4.4 indicates, seed/grain flows are not only 'local', but are also part of a much wider market system with links to other regions. Here we look at seed flows and compare the 2011 patterns with the current ones.

**Overview:** Prior to 2011, the government produced certified seed of the seven priority crops at their GOSM stations located in the main agricultural regions. Despite the high production volumes, it is estimated that only approx. 24% of the seed requirement for wheat was available and considerably less for the other main crops of the north-western governorates. Most of the balance was made up by traders who sourced government certified seed and non-certified seed from other farmers from both within and outside North-West Syria. The number of traders is few and they are primarily located in Al Bab and A'Zaz. They are also the main dealers in harvested produce. Thus seed and grain dealings are inextricably linked with active trading routes throughout the country. Trading continues in much the same manner as it did before 2011.

**Wheat and barley:** Prior to 2011 the primary sources of wheat and barley were from Governorate (agriculture loans), GOSM and traders, within the assessment area; but after the crisis in 2015, the primary sources were from the traders, SMD "Seed Multiplication Department" who get the seed local from the farmers in the assessment area, also from Eastern Syria which is the cereal production area from eastern Syria (Al Hasakeh, Deir-ez-Zor, or A-Raqqa), and from Iraq or Eastern Turkey (See map\*\*\*). Almost all of this seed passed through traders based in Al Bab district in Aleppo governorate before being shipped to other parts of Aleppo (Azaz) and Idlib (Sarmada and Saraqeb) Governorates. As-Saffira, S.W. Aleppo, and Al-Atareb west Aleppo which is well-suited to wheat cultivation and close to ICARDA, was also a local source of wheat seed.

So the traditional sources of seed and internal flows after the crisis still predominate despite the trade routes to the North East of the country being controlled by Islamic State. Since a good deal of the seed is sourced in government-controlled areas where GOSM still operates and farmers expressed no issues in obtaining cereal varieties of their choice, it is reasonable to assume that varietal choice is not a major issue. Increased importations of barley seed from the Ukraine have been reported, but the variety is unknown.

The same group of traders based in Al Bab continue to dominate the seed trade. In exchange for allowing the passage of seed to the North West, the Islamic State requires that seed of leguminous crops and various consumer items from Turkey be imported into its area of influence, since Turkey has closed its borders with the Islamic state regions.

**Legumes:** Prior to 2011 all legume seed, lentil, chickpea and faba bean, was sourced locally, primarily through traders. A'zaz District in Aleppo Governorate is particularly suited to legume production and was a primary source of legume seed for much of North West Syria. Legume seed, and grain, was also traded



to the Governorates to the east and south, again with Al Bab acting as a hub. Seed flows in 2015 have not changed significantly from those prior to 2011.

**Vegetables:** Prior to 2011 most vegetable seed was imported and regulated by government authorities. Today, vegetable seed continues to be imported, but through traders and with no regulatory controls. Seed of all crops is still available although not always the former varieties.

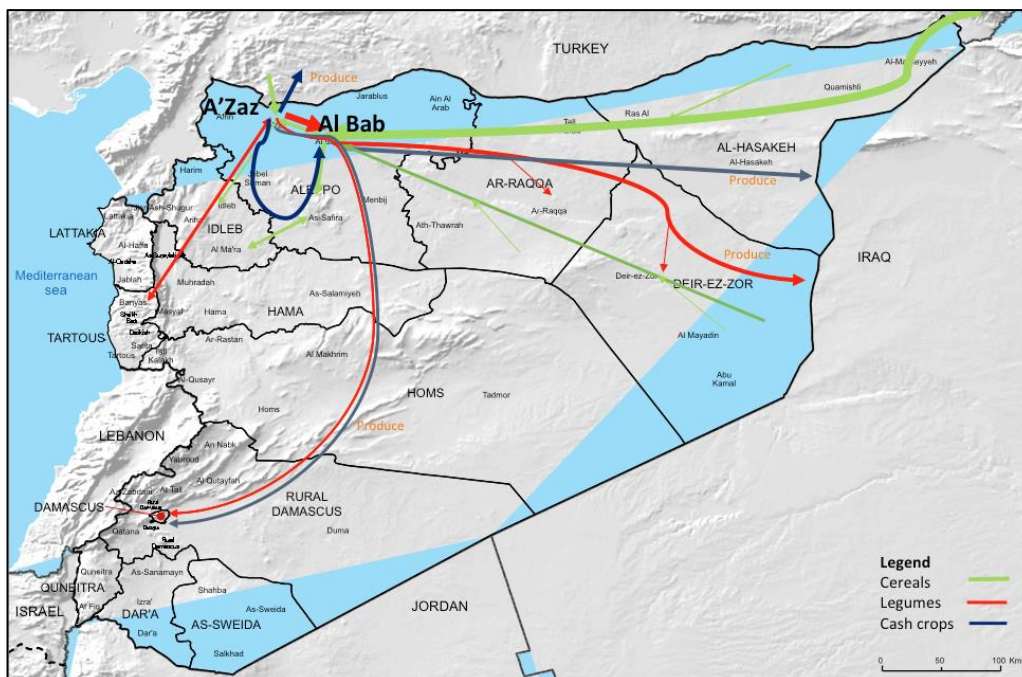
**Potatoes:** Prior to 2011 the government imported foundation potato seed from Europe, primarily the Netherlands and Germany and multiplied it once on government farms (February to June) for planting by farmers as a commercial crop in November. Traders have now taken over the importation role with the same varieties but often sourced from Belgium. Some questions were raised about seed quality and it may be that traders are importing certified seed instead of foundation seed (or seed of other quality).

**Cash crop flows:** Traders who control the seed flows also play a major role in the distribution of the crops produced; notably legumes and blackseed, cumin, coriander. Much of trade from Idlib and West Aleppo Governorates passes through A'zaz or Bab Al Hawa gate in Idlib before being exported north to Turkey or to the east through Al Bab. And also from Al Ma'ra district in Idlib governorate to the Regime control area.

### Conclusions

- Prior to 2011 there were established and functioning seed flows involving the Government, traders and local dealers. These flows continue to function although with small changes in the *modus operandi*.
- Varietal choice has not been significantly affected.
- Traders in Al Bab have almost total control of the trade in seed and agricultural products moving to and from ISIS and government controlled areas.

Figure 4.4. Major seed and grain flows, NW Syria, 2015



## Women, Female headed households and Seed Security

Finally, we briefly look at the issue of seed security from a women's perspective. The SSSA team did not conduct a full gender assessment, focusing on men's and women's issues, nor did it explore female-linked concerns in depth. Notes below emerge from six women's focus groups and are meant to signal select issues for further elaboration. Organized women's groups apparently do not exist in NW Syria (as reported by all those interviewed). Discussions gathered together 15-25 community women open to sharing insights.

### Female-headed households

Female-headed households comprise a notable portion of the population in NW Syria. Estimates by the focus groups vary among communities ranging between 25-75% of the total household population. In reported areas with higher concentrations of female-headed households, women say that the men have left Syria to find work abroad or have been killed in conflict. In such communities, there may be special "widowed warrior's stipends".

### Income generating options

Options for income-generating activities for women vary markedly among communities and even over short distances. In some villages, women can work, in others not all, and in still others, a subset, elderly women are selectively allowed to help in the fields.

Where women can engage in paid activity, they tend to work as daily wage laborers in agriculture (e.g. weeding) or caring for small animals like sheep and chickens. They might also generate income through activities traditionally considered part of their sphere such as processing foods like milk, cheese, yogurt and dry meat, selling vegetables from their gardens, and sewing.

Income earned by women is controlled in varied ways—again village specific or even household specific—some may be controlled by the woman herself, or by her husband or sons.

### Women's overall agricultural and crop tasks

In general, management of fields and field crops such as wheat, barley, and legumes falls within men's domain. Women are responsible for maintaining kitchen gardens. So, in theory, there are clearly different areas of prime agricultural influence.

In practice, who holds decision-making power regarding crops differs between communities and households. Sometimes, men make all decisions about fields and gardens, though women often control kitchen gardens and select which crops to cultivate. One community noted that "when crops make a lot of money they become men's crops." In some households, men consult with women about fields, and decision-making about field and garden crops is "collaborative." One woman from a community with a high concentration of female-headed households noted, "When men are absent, women can do everything."

In the broad view, women play important roles in field crop production, including:

- Field work: Weeding, harvesting, and irrigation in select regions of NY Syria
- Seed multiplication/storage: Cleaning, preparing and sieving seed for storage
- Transformation: Cleaning, sieving, classifying, processing and preparing wheat for cooking, including for bulger, *freekah*, and flour.

In terms of seed *per se*, women note a change since the fall in GoS institutions: they now spend more time cleaning seed and more time storing seed.

Across NW Syria, women are unable to access markets making them dependent on men for this function. This is especially concerning for female-headed households who may not have reliable access.

### Women's crop and seed security

"Women's crops" are vegetables grown in kitchen gardens and are mostly used for household consumption, though sometimes women sell them to earn income. In NW Syria, primary crops include *molokhiah* (Jew's mallow), tomatoes, eggplant, onion, squash, garlic, peas, parsley, and mint.

Women in all communities said they were seed secure for their kitchen garden crops. Specifically, women mentioned:

- Molokhiah 100%
- Onion 100%
- Vegetables 100%

Across all crops noted, men's and women's, (so including barley, wheat...) women suggested their full households were 95 to 100% seed secure.

In brief, the focus group discussion revealed few/no seed- security linked problems. Similar to men, women's greatest priorities are water and fuel. (i.e. not seed at all!)

## **Summary of salient points: SEED SYSTEMS OVERVIEW- NW SYRIA**

### ***Formal/ intermediate sector***

1. Plant breeding. Across principal crops, some 44 varieties were released across from Syria 1980s-present. Currently, there is no breeding program in NW Syria and it likely that plant breeding has halted across the country. Nationally, the last releases were in 2014, when 2 varieties of Faba bean and 2 varieties of bread wheat were released.
2. Formal seed production. The government seed production structures were quite dominant pre-crisis across Syria, providing over 50% of the seed of all priority crops (with the exception of barley whereby 10% of the seed requirement was formally produced). Currently there is no government seed

production in NW Syria and much of the accompanying technical infrastructure (e.g. pathology labs) is in disrepair. There are no GOSM supplies of breeder, foundation or certified seed.

3. Alternative formal seed production structures. For the early stages of seed, foundation, an alternative organization, the Seed Multiplication Department- SMD- emerged in 2011. Its capacity was limited to start and has declined through time, especially as it lacks funds to even buy back what its contracted seed growers multiplied. With a focus on wheat and barley, the SMD initially produced about 1500 to 3000 MT of certified annually.
4. Decentralized seed sources. Farmers still have select access to higher quality seed, through several sources. Agro pharmacists continue to stock horticultural packs (even hybrids). A network of former GOSM/SMD contracted farmers also continues to multiply preferred (including modern varieties) of bread and durum wheat, barley, chickpea and lentil. These stocks are not certified (certification processes no longer function and initial foundation stocks are not available). However, former contracted growers presumably continue to use good varieties and 'good seed production practices'. It is from these former contracted growers that some NGOs have been starting to source seed aid.

### ***Informal Seed Sector***

5. Informal seed sector, overview. The informal system is currently the major seed procurement system across all crops in NW Syria, firstly from traders (55-60% of seed) and secondly from own stocks (20-25% of seed across crops). Before the crisis also, the informal system was the major source for all crops except for wheat and cotton whereby, formerly, contracted farmers were directly tied to GOSM or to the cotton industry value chains. In terms of the informal system the biggest change in this crisis period has been in proportions of seed obtained: the share of seed being obtained from traders seems to be rising. The former seed sector breakdown means that farmers are buying now from informal sector sources such as traders – even for fairly good quality seed.
6. Traders. Traders are particularly a source of consequence for obtaining grain that farmers can plant (called 'potential seed' as varieties are adapted and preferred and seed is of solid quality). Traders working on impressive national and regional scales can still negotiate a range of conflict zones. Traders in Al Bab seem to have almost total control of the trade in seed and agricultural products moving to ISIS and government controlled areas.

Given that the informal seed sector, and especially large traders/markets are such important forces in NW Syria, opportunities for strengthening and professionalizing them further should be pursued. This might include explicit actions: to introduce new varieties, raise seed quality and promote even more specialized seed trade.

7. Women, Female headed HH and Seed Security. No particular seed-linked issues were cited by female-headed households or women generally. Focus groups indicated they are 100% seed secure for their kitchen gardens and 95-100% secure for all field crops. Due to breakdown of GoS seed services, women indicate now are more involved in seed cleaning and that more seed is stored in the home.

Chapter IV Annex I. Crop cultivars released in Syria 1966-2014

Species	Variety	Breeder/Maintainer	Year of Release
Barley	Arabi Abiad	DASR	1981
	Arabi Aswad	DASR	1981
	Badia	DASR/ICARDA	1985
	Furat 1	DASR/ICARDA	1987
	Furat 2	DASR/ICARDA	1991
	ACSAD 176	ACSAD	1994
	Arabi Abiad (Arta)	DASR/ICARDA	1994
	Furat 3 (Furat 4484)	DASR	2000
	Furat 4 (Furat 3717)	DASR/ICARDA	2000
	Furat 5	DASR/ICARDA	2000
	Furat 7 (Furat 5337)	GCSAR/ICARDA	2001
	Furat 6 (Furat 5406)	GCSAR/ICARDA	2004
Bread Wheat	Cham 4	ICARDA	1986
	Bohouth 4	DASR	1987
	Bohouth 6	DASR	1991
	Cham 6	ICARDA	1991
	Cham 8 (Memof-22)	DASR/ICARDA	2000
	Douma 11670	DASR	2002
	Douma 2 (ACSAD 885)	DASR	2004
	Cham 10 (Kauz/Kauz)	DASR	2004
	Bohouth 8	GCSAR?	2007
	Bohouth 10	GCSAR	2014
Douma 6	GCSAR	2014	
Durum Wheat	ACSAD 65	ACSAD	1987
	Bohouth 1	DASR	1980
	Bohouth 5	DASR	1987
	Hourani (Local)	DASR	NA
	Jouri 69	DASR	1966
	Cham 1	DASR/ICARDA	1984
	Cham 3	DASR/ICARDA	1987
	Cham 5	DASR/ICARDA	1989

	Bohouth 7	DASR/ICARDA	2000
	Furat 5 (30603)	DASR/ICARDA	2000
	Douma 1105	DASR/ICARDA	2002
	Bohouth 11 (Douma 18861)	DASR/ICARDA	2002
	Bohouth 9 (Douma 20014)	GCSAR/ICARDA	2004
	Cham 7 (Douma 29019)	GCSAR/ICARDA	2004
	Cham 9 (Douma 41009)	GCSAR/ICARDA	2010
	Douma 3 (ACSAD 1229)	GCSAR/ACSAD	2010
<b>Maize</b>	Ghouta 1	DASR	1989
	Ghouta 82	DASR	1979
	El Basel 1	DASR	2000
	El Basel 2	DASR	2000
<b>Chickpea</b>	Baladi (Local)	GOSM	NA
	Ghab 1 (ILC 482)	DASR/ICARDA	1987
	Ghab 2 (ILC 3279)	DASR/ICARDA	1987
	Ghab 3 (FLIP 82-150C)	DASR/ICARDA	1991
	Ghab 4 (FLIP 93-93C)	GCSAR/ICARDA	2002
	Ghab 5 (FLIP 88-85C)	GCSAR/ICARDA	2002
<b>Faba bean</b>	Kubrosi	DASR	1981
	Hama 1 (Sel. Aquadulce)	DASR	1991
	Hama 2	GCSAR	2014
	Hama 3	GCSAR	2014
<b>Lentil</b>	Baladi Ahmar (Local)	DASR	NA
	Idlib 1	DASR/ICARDA	1987
	Idlib 2	DASR/ICARDA	2000
	Idlib-3 (ILL 6994)	DASR/ICARDA	2002
	Idlib-4 (ILL 7201)	DASR/ICARDA	2002
<b>Pea</b>	Boushra	GOSM	1991
	Bousra	GOSM	1991
<b>Soybean</b>	Asgrow	DASR	1987
<b>Peanut</b>	Asi	DASR	1990
	Sahel	DASR	1985

Source: GCSAR Chapter IV Annex II. Seed Multiplication Department, production 2011- 2014

**The multiplication amounts from 2011 till April 2013**

crop	variety	stage	new	Total sterilized	Branch Selling	Total	Raw seeds amount	
Soft wheat	Sham 4	Improved	160450	160450	160450	160450	60680	
	Sham 6	Improved	1873300	1873300	1873300	1873300	1534620	
	Sham 8	Improved	614500	614500	614500	614500	0	
	Douma 2	Nucleus	0	0	0	0	0	0
		Basis	9900	9900	9900	9900	9900	2600
		Registered	81450	81450	71500	71500	19980	
		Certified	261950	261950	261950	261950	41120	
		Improved	38950	38950	38950	38950	2567350	
	Variety total			392250	392250	382300	382300	2631050
	Golan 2	Nucleus		0	0	0	0	0
		Basis	7500	7500	7500	7500	7500	2730
		Registered	75850	75850	75850	75850	0	
		Certified	98450	98450	96250	96250	0	
		Improved	9150	9150	9150	9150	0	
	Variety total			190950	190950	188750	188750	220700
	Douma 4	improved	10450	10450	10450	10450	0	

Soft total			3241900	3241900	3229750	3229750	4447050	
Hard wheat	Douma 1	Basis	7600	7600	7600	7600		
		Registered	46600	46600	46600	46600		
		Certified	333950	333950	333950	333950		
		Improved	2241500	2241500	5371250	5371250	8029590	
	Variety total			2629650	2629650	3959400	3959400	8029590
	Sham 7	Basis	1000	1000	1000	1000		
		Registered	2200	2200	2200	2200		

		Certified	153050	153050	153050	153050	27310
		Improved	99000	99000	579000	579000	5261840
	Variety total		275050	275050	755050	755050	5298150
	Research 11	Nucleus		0	500	500	
		Basis	3500	3500	3500	3500	
		Registered	11800	11800	11800	11800	10230
		Certified	84100	84100	84100	84100	
		Improved	750000	750000	742250	742250	1003150
	Variety total		849400	849400	842150	842150	1013380
	Aksad 65	Improved	3500	3500	3500	3500	1220660
	Research 9	improved					492190
Hard total			3757600	3757600	5560100	5560100	16044970
Wheat total			9666500	9666500	8789850	8789850	20492020

**The barley selling till 2013 in SMD Idleb**

crop	variety	stage	new	Delivered from branches	Total sterilized	Branches selling	
Barley	Euphrates 2	Nucleus			0	0	
		Basis	15900	0	15900	15900	
		Registered	24000		24000	24000	
		Certified	1092100		1092100	1092100	
		Improved	1826140	2108500	3934640	3860040	
	Variety total		2985140	2108500	5066640	4992040	
	Euphrates 6	Nucleus				0	0
		Basis	2800	0	2800	2800	
		Registered	800		800	800	
		Certified	1850		1850	1850	
		Improved	130280		130280	130280	



	Variety total	135730	0	135730	135730
	Barley total	3093870	2108500	5202370	5127770

In 2014 due to the security issues the multiplication wheat couldn't reach SMD, therefore the farmers delivered the seeds to the seeds institution in the interim government in Saraqeb. Farmers failed to deliver their yield to SMD to get the financial reward. The interim government tried to support their production and protect their varieties and stages as follows.

Variety and stage		Net weight of raw
Douma 1	Basis	66378
	Registered	161680
	Improved	49262
Total Douma 1		27730
Sham 7	Nucleus	12543
	Basis	64960
	Registered	62547
Total Sham 7		140050
Research 11	Basis	68645
	Nucleus	11860
	Registered	16536
Total research 11		97041
Hard total		514411
golan 2	registered	69481
Douma 2	Basis	21711
	Registered	237322
Total douma 2		259033
Total soft		238514
General total		842925

Source: SMD internal document

**Chapter IV Annex III. 'Good Seed' in Northwest- Produced mainly by former contract growers. (outside certified channels) measures are in kgs.**

	Nov 2007-June 2008					
	durum	bread	barley	chickpea	lentil	
	25000	25000				
	25000	20000	15000	7000	8000	
	800000	300000				
	80000	7000				
	17000	20000				
		105000				
Total	947000	477000	15000	7000	8000	1454000
	Nov 2008-June 2009					
	30000	25000	35000	10000	10000	
	25000	250000				
	30000	17000				
	800000	16000				
	65000	30000				
	15000	95000				
	180000					
Total	1145000	433000	35000	10000	10000	1633000
	Nov 2009-Jne 2010					
	25000	20000				
	50000	40000	50000	10000	15000	
	1200000	450000				
	20000	70000				
	20000	81000				
	18000					
	200000					
Total	1533000	661000	50000	10000	15000	2269000
	Nov 2013-June 2014					
	15000	16000	20000	7000	5000	
	50000	10000				
	12000	10000				
	10000	31000				
	60000					
	25000					
Total	172000	67000	20000	7000	5000	271000

Source. SSSA preparation Fieldwork March-June 2015

## V. FIELD FINDINGS: ACROSS SITES

The fieldwork for the SSSA took place in September 2015 as farmers were assessing their seed stocks and planning for the imminent winter planting season.

The assessment considered two major themes. It analyzed the short-term, acute seed security situation, focusing on three consecutive seasons: winter 2014-15 (extending November 2014-April 2015), summer 2015 (February-May 2015) and the upcoming winter 2015-16 (sowing November and harvest -April 2016). Seed procurement strategies, quantities sown, crop profiles were all analyzed.

As the second thrust, the SSSA considered medium-term trends, including possible chronic seed security problems and emerging opportunities. Issues considered included crop diversification, seed sourcing strategies, access to new varieties, and use of other inputs.

### **Acute Seed Security Findings, 2014 and 2015**

Issues of seed security were first scrutinized for the short term: how and where did farmers obtain seed for the main 2015-15 winter season and then the main 2015 summer season. Did farmers plant a 'normal' quantity of planting material? Seed system stability and resilience are best assessed by looking at multiple seasons in a row.

#### ***Seed sources + quantities planted, 2014-15, winter + summer seasons***

Table 5.1 and Figure 5.1 show the sources and quantities of seed actually planted by farmers for the main winter 2014-15 season. Information is given in both table and graph form so as to make highly visible the relative use of sources and the scale of seed use from each. Several features are of note.

**Overall, over 90% of the seed farmers sowed came from local channels, including from farmers' own stocks, the local market, or through social networks.** This suggests the importance of informal seed systems as the core seed sources. **Traders were especially important as a source of seed, 56% of the total sown, with stocks a second important source, 24% of seed sown.**

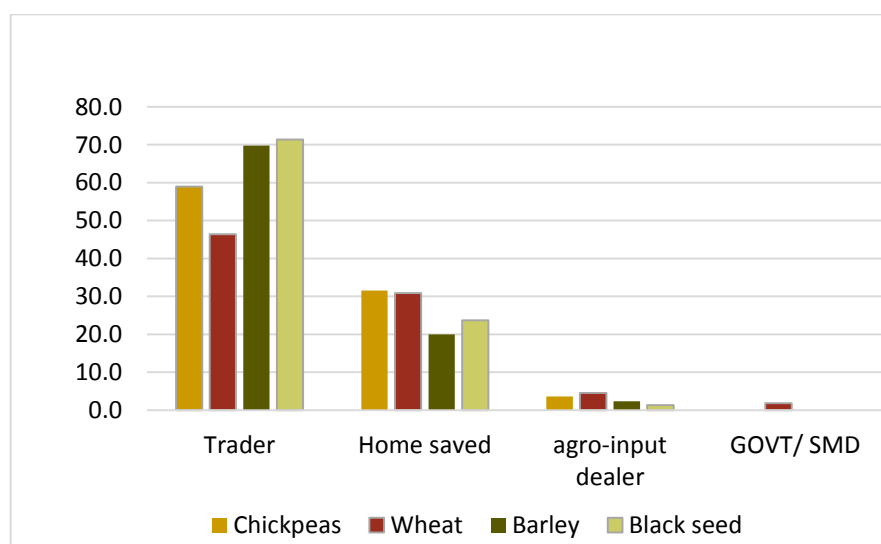
In terms of government-like channels, the SMD was important only for wheat and 10% of seed sown. Farmers in the northwest have moved to procuring from local, non-governmental systems.

Agro-pharmacists continue to supply important portions of the horticultural seed.

Table 5.1: Seed (%) planted and sources farmers used, Winter 2014-15 across sites: NW Syria.

Crop	Total kg sowed	% of total						
		Home saved	Social network	private trader	agro-input dealer	GoS / GOSM	contract seed growers	SMD
Irish potato	93000.0	2.2	5.4	76.7	6.1	0.0	9.1	0.5
Common beans	320.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Chickpeas	6860.0	31.6	5.8	59.0	3.6	0.0	0.0	0.0
Tomato	1.8	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Cabbage	1600.8	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Onion	900.0	0.0	22.2	5.0	60.6	0.0	0.0	0.0
Pea	1418.0	7.1	0.0	41.5	30.3	0.0	0.0	0.0
Lentil	5842.0	16.4	5.6	76.7	1.3	0.0	0.0	0.0
Wheat	166595.5	33.8	3.4	41.7	4.4	2.0	0.0	11.4
Barley	79985.2	23.0	7.3	65.6	2.0	0.0	2.1	0.0
Cumin	2220.0	15.5	0.0	80.4	4.1	0.0	0.0	0.0
Black seed	6318.5	24.0	1.4	71.0	1.3	0.0	3.2	0.0
Anise	420.0	29.8	2.4	42.1	22.6	0.0	0.0	0.0
Coriander	2095.0	24.6	2.9	72.6	0.0	0.0	0.0	0.0
Garlic	11.0	81.8	0.0	18.2	0.0	0.0	0.0	0.0
Faba Bean	23680.0	46.3	12.8	38.0	3.0	0.0	0.0	0.0
Cauliflower	1.2	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Lettuce	2.4	0.0	62.5	0.0	37.5	0.0	0.0	0.0
Thyme	50.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
<b>TOTAL-all crops</b>	<b>391321</b>	<b>23.9</b>	<b>5.3</b>	<b>56.2</b>	<b>4.7</b>	<b>0.8</b>	<b>2.7</b>	<b>5.0</b>

Figure 5.1. Farmers' (N+399) seed sources, 2014-15 major crops Winter season



The same trends were note for the Summer 2015 season. Traders and home-saved stocks predominated as sources. (Table 5.2).

**Table 5.2: Seed (%) planted and sources farmers used, Summer-2015 Season across sites: NW Syria.**

Crop	Total kg sowed	Sources						
		Home saved	Social network	Private trader	agro-input dealer	GoS / GOSM	contract seed growers	SMD
Maize	1106.0	58.8	3.6	6.1	31.6	0.0	0.0	0.0
Irish potato	701304.0	23.6	10.3	57.1	3.5	0.6	0.7	2.1
Groundnut	3670.0	8.2	0.0	71.7	20.2	0.0	0.0	0.0
Common beans	524.0	2.3	0.0	27.3	60.3	0.0	0.0	0.0
Cowpea	151.3	19.8	66.1	4.0	8.1	0.0	0.0	0.0
Tomato	24.6	2.6	0.1	51.3	35.5	0.0	0.0	0.0
Cabbage	4.0	0.0	0.0	50.0	50.0	0.0	0.0	0.0
Onion	1164.5	10.9	4.1	45.9	39.1	0.0	0.0	0.0
Okra	154.1	57.0	10.8	30.8	1.5	0.0	0.0	0.0
Aubergine	23.2	16.8	0.0	30.8	33.6	0.0	0.0	0.0
Green veg	30.5	0.0	0.0	72.1	27.9	0.0	0.0	0.0
Watermelon	1390.5	0.0	0.0	0.5	5.4	0.0	0.0	0.0
Wheat	610.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Barley	300.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Cumin	180.0	0.0	22.2	77.8	0.0	0.0	0.0	0.0
Black seed	145.0	6.9	0.0	27.6	65.5	0.0	0.0	0.0
Anise	42.0	21.4	0.0	78.6	0.0	0.0	0.0	0.0
Garlic	12.5	20.0	0.0	80.0	0.0	0.0	0.0	0.0
Cucumber	50.4	0.0	0.1	23.1	76.1	0.0	0.0	0.0
Faba Bean	1373.0	35.0	0.0	6.6	43.9	0.0	14.6	0.0
Pepper	11.2	18.7	0.0	51.4	30.0	0.0	0.0	0.0
Squash	685.7	62.4	0.0	1.8	35.8	0.0	0.0	0.0
Cauliflower	0.7	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Lettuce	3.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Beet	2.5	0.0	0.0	0.0	100.0	0.0	0.0	0.0
Canary								
Melon	21.2	2.4	0.0	47.2	50.5	0.0	0.0	0.0
Turnip	2.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0
<b>TOTAL-all crops</b>	<b>712985.9</b>	<b>23.6</b>	<b>10.1</b>	<b>56.8</b>	<b>3.8</b>	<b>0.6</b>	<b>0.7</b>	<b>2.1</b>

## Are farmers seed-stressed 2014-15

### Sowing quantities

To understand better possible vulnerability, farmers compared the 2014-15 quantities of seed they sowed, by crop, with what they would normally sow at the same time each year. Basically, the question was this: Were the 2014-15 patterns 'normal' or 'different' from what farmers usually do?

Farmers reported that they, overall, had increased the quantities sown, across crops by some 15% for the winter season and almost 8% for the summer. These stable or positive trends were widely observed as ¾ of farmers showed they sowed the 'same' or 'more' than usual (Tables 5.3 and 5.4).

**Table 5.3: Farmers' sowing amounts for 2014-15 winter season - more, less, or same?**

Crop	# HHs	% of HHs			average % change
		MORE	SAME	LESS	
Irish potato	24	20.8	54.2	25.0	-5.33
Chickpeas	25	28.0	56.0	16.0	67.80
Lentil	33	9.1	75.8	15.2	2.36
Wheat	274	14.2	58.0	27.4	-4.10
Barley	133	21.8	65.4	12.8	19.03
Cumin	38	36.8	50.0	10.5	19.77
Black seed	89	52.8	33.7	13.5	42.45
Anise	15	46.7	40.0	13.3	53.41
Coriander	20	80.0	15.0	5.0	136.73
Faba Bean	56	8.9	60.7	30.4	-9.33
<b>TOTAL-all crops</b>	<b>751</b>	<b>25.6</b>	<b>54.1</b>	<b>20.2</b>	<b>+ 13.03</b>

**Table 5.4: Farmers' sowing amounts for 2015 summer season - more, less, or same?**

Crop	# HHs	% of HHs			average % change
		MORE	SAME	LESS	
Maize	19	10.5	42.1	47.4	-18.29
Irish potato	98	29.6	29.6	40.8	20.12
Common beans	37	27.0	37.8	35.1	13.08
Tomato	73	19.2	57.5	23.3	8.34
Onion	21	42.9	47.6	9.5	19.24
Okra	29	20.7	58.6	20.7	1.74
Aubergine	64	15.6	60.9	23.4	0.32
Watermelon	35	42.9	28.6	28.6	18.94
Cucumber	80	15.0	53.8	31.3	-13.64
Pepper	42	11.9	73.8	14.3	-8.06
Squash	47	14.9	51.1	34.0	-4.37
Canary Melon	12	33.3	33.3	33.3	-14.63
<b>TOTAL-all crops</b>	<b>614</b>	<b>24.9</b>	<b>47.7</b>	<b>29.3</b>	<b>+ 8.46</b>

## Harvests

Sowing amounts portray only part of the picture. The crop yield and general harvests were reported by farmer also average (normal) or good in over 90% of cases and across crops. So, even in terms of yields, 2014-15 seasons were promising ones.

Table 5.5: Farmers' assessments of their own harvests: 2014-2105 seasons, NW Syria.

### Harvest 2015-summer

Crop N=639	%		
	Good	Average	Poor
Maize	43.5%	34.8%	21.7%
Irish potato	65.7%	30.4%	3.9%
Groundnut	53.8%	38.5%	7.7%
Common beans	63.2%	23.7%	13.2%
Cowpea	66.7%	22.2%	11.1%
Tomato	60.6%	29.6%	9.9%
Onion	59.1%	40.9%	0.0%
Okra	65.6%	28.1%	6.3%
Aubergine	46.2%	38.5%	15.4%
Watermelon	91.9%	8.1%	0.0%
Cucumber	52.4%	39.0%	8.5%
Pepper	47.6%	23.8%	28.6%
Squash	51.9%	40.4%	7.7%
Canary Melon	83.3%	16.7%	0.0%
<b>TOTAL-all crops</b>	<b>60.1%</b>	<b>30.4%</b>	<b>9.5%</b>

### Harvest 2014 winter

Crop N=775	%		
	Good	Average	Poor
Irish potato	73.1%	26.9%	0.0%
Chickpeas	66.7%	20.8%	12.5%
Onion	66.7%	33.3%	0.0%
Pea	73.3%	20.0%	6.7%
Lentil	47.1%	29.4%	<b>23.5%</b>
Wheat	62.0%	32.9%	5.1%
Barley	61.9%	31.3%	6.7%
Cumin	48.6%	25.7%	<b>25.7%</b>
Black seed	59.3%	22.1%	18.6%
Anise	66.7%	33.3%	0.0%
Coriander	57.9%	36.8%	5.3%
Garlic	75.0%	25.0%	0.0%
Faba Bean	42.9%	44.4%	12.7%
<b>TOTAL-all crops</b>	<b>59.7%</b>	<b>31.1%</b>	<b>9.2%</b>

### ***Seed sources and quantities to be planted 2015-16 main season***

Farmers in northwest were asked the same questions on actual seed sources and quantities to be planted for the next major season, 2015-2016 which was about six weeks away at the time of the SSSA. While 'planned seed sources' are not proven 'hard' data, they are a good indicator of whether farmers expect seed stress or other related troubles. Furthermore, given that many of the interviews were conducted by former aid providers, farmers answering this question could have also shown bias by trying to elicit seed aid help. In contrast, the results showed a strong trend toward self-sufficiency – and away from asking for seed-related aid. **In general, anticipated use of seed sources for 2015-16 was the same as for the previous seasons,**

**For upcoming 2015-16 winter season:**

- **62% of seed to be sourced from traders, 22% from own stocks**
- **Quantities to be sown 2015-16: overall increases of + 24.6 %**
- **Some shift in crop profiles. especially toward black seed, coriander and cumin.**

## ***Focusing on potential problems areas and spurring production***

### **Potential problem areas**

The surprising positive agricultural production picture for 2014-16-- in the midst of massive conflict-- should not obscure that there may be vulnerable populations still farming . Here we examine reasons why some farmers are planting less of a given crop as such insight may be important for helping to design critical humanitarian or development assistance. Remember that Tables 5.3 and 5.4 had indicated farmers were sowing less in of a given crop in ¼ to 1/5 of cases measured for the 2014-15 winter and summer seasons respectively.

Table 5.6 summarizes reasons farmers gave to sowing less of a particular crop. There were about 20 different potential reasons for sowing less, generally grouped by seed-related reasons (the top of the table), reasons related to other factor of production like land, labor inputs or weather, (the middle of the table), then reasons linked to bigger strategy or operating environment, such as functioning of markets or investment priorities (the bottom of the table).

Farmers for the winter season sowed less generally for three reasons. By far, the most important constraint was cost and quality of complementary inputs, such as pesticides and fertilizer. Seed cost itself an issue for some. The third major constraint was non-functioning markets: they sowed less of a particular crop (often wheat) as output markets were not functioning.

Farmers for the summer season (focus on irrigated vegetables) sowed less mainly because of the price and quality of inputs. Full stop.

Note that there were virtually no constraints cited around the availability of seed. Seed was available.



**Table 5.6: Reasons (% of responses) farmers cited for sowing LESS Winter and Summer seasons 2014-15.**

<b>Reason</b>	<b>Winter 2014-15 (N=186) % responses</b>	<b>Summer 2015 (N=237) %responses</b>
<b>SEED- RELATED (or indirectly linked)</b>		
<i>Seed availability</i>		
no seed available in market	0.0	0.4
no seed/cuttings available from neighbors	0.0	0.4
<i>Seed access</i>		
no money to buy seed/poor finances or seed too high	11.3	14.8
<i>Seed quality</i>		
seed available is not good quality or the variety is not liked	2.7	2.1
<b>sub-total: Seed-related</b>	<b>14.0</b>	<b>17.7</b>
<b>NON-SEED FACTORS OF PRODUCTION (Limits)</b>		
no/insufficient labor	1.1	2.1
illness/health problems	1.6	0.4
no/insufficient land or land not appropriate/sufficiently fertile	5.9	3.0
lack of tools/tractor/ other machinery to farm	0.5	0.8
plant pests/diseases make production not possible	3.2	4.6
animals/predator make production not possible	0.5	0.0
lack of other inputs: controlled water supply/irrigation or fertilizer	15.1	22.8
Low quality of inputs : e.g. fertilizers, herbicides, pesticides	5.9	5.5
Price of inputs too high	25.3	30.4
poor weather/rainfall	1.1	1.7
Insecurity	2.7	2.5
<b>sub-total: factors of production-related</b>	<b>62.9</b>	<b>73.8</b>
<b>OTHER PRIORITIES/STRATEGIES</b>		
markets for crop or crop products not well-developed	16.1	4.2
other priorities than agriculture (e.g. have shop)	1.6	0.4
Other	3.2	0.4
<b>TOTAL</b>	<b>97.8</b>	<b>96.8</b>

### **Spurring production**

To further understand the rationale for farmers' planting decisions, we end on a positive note: why those who planted more did so-- for a given season and crop (Table 5.7). Households can plant more for multiple reasons, again clustered below between seed-related reasons, those revolving around other factors of production and those tied to changing agricultural strategy or market development.

For both seasons, the major driver to farmers planting more of a given crop is tied to positive market possibilities. Even in this of civil stress, NW Syrian farmers are changing crop portfolios mainly to seize on market opportunities.

Again, giving free seed (enhancing availability) had virtually no impact on farmers' planting decisions.

**Table 5.7: Reasons farmers (% of responses) gave for planting MORE than normal of a given crop in Winter and Summer seasons 2014-15**

Reason	Winter 2014-15 (N=211 ) % responses	Summer 2015 (N= 185 ) % responses
<b>SEED RELATED</b>		
<i>Seed availability</i>		
more seed available due to good harvest	0.9	0.5
more seed available due to free seed	0.0	3.2
<i>Seed access</i>		
more money to buy seed or seed price low	0.9	3.2
got credit to buy seed	0.9	4.3
Got vouchers (or NGO-provided cash)	0.0	1.1
<i>Seed quality</i>		
have especially good seed or good variety	1.4	3.8
<b>sub-total: Seed-related</b>	<b>4.3</b>	<b>16.2</b>
<b>NON-SEED FACTORS OF PRODUCTION (opportunities)</b>		
good/increased labor	10.4	11.4
feeling strong/healthy	0.5	2.2
have more land/more fertile land	10.0	4.3
have tools/tractor, other machinery to help farm	0.5	0.0
have access to irrigation, fertilizer or other inputs (for example, stakes)	1.4	8.1
good weather/rainfall	14.2	8.6
good security (peace has arrived)	2.4	2.7
<b>sub-total: factors of production-related</b>	<b>39.3</b>	<b>37.3</b>
<b>OTHER PRIORITIES/STRATEGIES</b>		
well-developed /new markets for crop or crop products	45.5	38.4
have decided to give more priority to agriculture	3.8	2.2
Other	6.6	4.9
<b>TOTAL</b>	<b>99.5</b>	<b>98.9</b>

## ***Can the markets deliver seed 2014-2016?***

In all of this, a key question in seed security becomes, “Could and can the markets deliver? Will seed be put on offer, with the quality that farmers want and at prices that make purchase accessible for smallholder farmers?”

Chapter IV looked at general formal and informal seed market functioning. The SMD and contracted growers are still operating albeit at uneven scale. More importantly, a network of former contracted growers and especially large ‘potential’ seed and grain traders (seed/grain) seem to have considerable functioning processes in place and are able to navigate the varied conflict zones. Here are summarized the immediate crop/seed supply to determine if are problems--- or not.

### **Agro-pharmacists/ Trader supply 2014-16 seasons**

Larger traders and agro-pharmacists were interviewed at all sites. Note that both sets have commerce in higher quality seed (certified and from former contracted farmers) as well as normal farmer seed, that farmers routinely use for crops such as barley and legumes.

Merchants willing to share insights on quantities by crop near unanimously indicated that supplies were easily available. (Table 5.8)

**Table 5.8: Traders’ assessment of supply: ‘current’: acceptable supply (2015) ?**

<b>Item</b>	<b>Easily available</b>	<b>Not easily available</b>	<b>Not available at all</b>
<b>Wheat</b>	XXXXXXXXXXXXX	X	
<b>Barley</b>	XXXXXXXXXX		
<b>Lentil</b>	XXXXXXXXX	XX	
<b>Cumin</b>	XXXXXXX		.....
<b>Black seed</b>	XXXXXX		
<b>Chickpea</b>	XXXXX	XXX	
<b>Coriander</b>	XXX		
<b>Faba bean</b>	X		

Charting of specific sale patterns over two seasons, the last and current (whereby sales were taking place during the period of assessment) further indicate that sales were up for all the seven major crops monitored, with increases from 39% (for wheat) to 117% (for potato).

**Table 5.9: Traders' charting of sales over two seasons, 2014-2016**

<b>Crop</b>	<b>N traders</b>	<b>Sales 2015-2016 (t)</b>	<b>Sales 2014-2015 (t)</b>	<b>Difference in sales (t)</b>	<b>% Difference in sales</b>
Wheat	15	144	104	40	<b>39</b>
Barley	10	73	38	35	<b>91</b>
Lentil	6	28	12	16	<b>129</b>
Chickpea	<b>5</b>	<b>15</b>	<b>8</b>	<b>8</b>	<b>100</b>
Faba bean	12	25	10	15	<b>150</b>
Black seed	9	20	9	11	<b>122</b>
Potato	10	287	132	155	<b>117</b>

The traders' assessment of supplies being available concurs with that of farmers own assessments that 'lack of seed available' is not a constraint to their sowing (Table 5.6 above).

It is important to emphasize that while the supply side of markets seems to be functioning or even flourishing, the market context is not a normal one, especially from the farming community perspective. Due to security threats; markets days are not being routinely held; farmers may travel during the day but certainly are reluctant to move at night; and multiple continually monitor population movement.

And then there has been significant market infrastructure damage. The site of Darkoush serves as one example, where market bombing has brought to the ground the full local market ground and stall and small surrounding shops.

### **Is Money an issue around seed?**

The issue then revolves around whether farmers can afford to pay for the seed on offer? Tables 5.10 and 5.11 and calculated the expenditures needed for the major crops farmers sowed and planned to sow over two winter seasons-- in the amounts farmers indicated they use. Adjusting for variable currency exchange rates, farmers spent \$364 in 2014- 2015 and project to spend \$153 for 2015-16 (with the decline) being linked to their greater emphasis on black seed). Team members did not sense these expenditures for seed stressful. It was rather other accompanying inputs (fertilizers, agri-chemicals) that drive up production costs. (see Table 5.6 on constraints to sowing and Box 5- comparing wheat and black seed production costs).

**Table 5.10: Average expenses per farmer (SYP), winter season 2014-15**

most important crops	N growing this crop	Average Spending SYP				
		Neighbors	local market	input shops	All sources	% of total
Wheat	274	870.7	17277.3	1686.1	<b>19834.1</b>	<b>24.2%</b>
Barley	133	2072.2	23397.8	787.0	<b>26257.0</b>	<b>32.0%</b>
Black seed	89	683.6	34662.1	645.6	<b>35991.3</b>	<b>43.8%</b>
<b>total (of 3)</b>		<b>3626.4</b>	<b>75337.2</b>	<b>3118.8</b>	<b>82082.4</b>	<b>100.0%</b>

**\$US 364 (USD=225)**

**Table 5.11: Average projected expenses per farmer (SYP), winter season 2015-16 (upcoming)**

most important crops	N growing this crop	Average Spending SYP				
		Neighbors	local market	input shops	All sources	% of total
Wheat	280	1549.7	20062.9	960.0	<b>22572.6</b>	<b>44.8%</b>
Barley	110	318.2	8400.0	540.9	<b>9259.1</b>	<b>18.4%</b>
Black seed	134	1068.8	16595.6	890.7	<b>18555.1</b>	<b>36.8%</b>
<b>total (of 3)</b>		<b>2936.7</b>	<b>45058.5</b>	<b>2391.6</b>	<b>50386.8</b>	<b>100.0%</b>

**\$US 153 (USD=330)**

### ***Community assessment of seed security***

Finally, as a cross-check to the above quantitative data, the communities themselves were asked to assess the seed security of their members. Seed Security was defined as either having the seed already in hand, or being able to access the seed with some certainty (though purchase, barter, gift, or other). Community meetings at all sites involved 20-30 people, men and women, or men only, and the discussions were intense and interactive. Table 5.12 present twelve communities' own assessments of whether their members would have the seed they need for the imminent winter planting season. Seed security was assessed for the three to five most important crops as prioritized by the community groups. Results overwhelmingly showed, across sites that ***communities themselves assess they will be 90-100% seed secure for the upcoming season.***

When asked how the small minority might address their seed shortage problems, farmers responded that there were several coping strategies routinely used (depending on the severity of the problem):

If seed insecure, farmers might

- a. change the crop sowed
- b. change the variety sowed
- c. rent out your land
- d. get seed from neighbors
- e. get community- shared seedlings (for the vegetative-propagated crops).

**Table 5.12: Community assessment of the % of its members who are seed secure for 2015-16, upcoming season.**

<b>Crop</b>	<b>&lt;25</b>	<b>25-50</b>	<b>&gt;50-75</b>	<b>&gt;75-90</b>	<b>&gt;90-100%</b>
Wheat			XX	XX	XXXXXXX
Barley				X	XXXXXXX
Lentil		X			XXXXX
Chickpea				X	XXXXXX
Coriander					X
Cumin					XXXXX
Black seed					XXXX
Potato		X	XXX		XXX
Vegetable seed				X	XX
Fava bean					XXXX
Onion					X

## Summary of salient points: Acute Seed Security Findings

Multiple and diverse indicators suggest the seed security of NW Syria farmers in the short-term is quite stable and even positive.

### **From the farmer point of view, 2014-16**

1. For the 2014-15 main winter growing season and summer 2015, 80% of farmers sowed the same or more than usual with sowing rates overall increasing by 15.34% and 7.62% respectively for the two seasons (sowing rates bring a proxy for land area cultivated).
2. Harvests for both 2014-15 seasons, winter and summer, were also rated by farmers as 'good (60% of cases) or average' (30%) across their full range of priority crops.

*Hence areas sown were stable or growing and with promising harvests.*

3. Farmers largely relied on the informal sector for the lion's share of their seed and planting materials with about 56% coming from traders (local markets) and 24% coming from home-saved seed for the winter and summer seasons. Seed contributions from formal sector sources were negligible overall, with two exceptions. During the winter season, about 11% of the seed for wheat was sourced from the SMD and 9% of Irish Potatoes was sourced from contract growers.
4. The sowing plans for the upcoming 2015-16 winter season project that farmers will largely continue to large use the same seed sources (so not relying on the government or humanitarian aid) and will continue on the positive trend to expand seed use by, 24,6 %.

5. Farmers' reasons for sowing more of a given crop were straightforward. For both seasons, the major driver for planting more is tied to positive market opportunities. Secondary reasons involved getting access to more land and labor and good weather.

*As Incentives for expanding seed use, and extending land area are especially linked to the emergence of better-developed output markets, care should be given for any aid/development response not to undermine these.*

6. These overall positive trends should not obscure that some farmers are sowing less of a given crop (about 20% of cases) and there be key reasons for their doing so which suggest signs of vulnerability.

- Farmers for the winter season sowed less generally for three reasons. By far, the most important constraint was cost and quality of complementary inputs, such as pesticides and fertilizer. Seed cost itself an issue for some. The third major constraint was non-functioning markets: they sowed less of a particular crop (often wheat) as output markets were not functioning.
- Farmers for the summer season (focus on irrigated vegetables) sowed less mainly because of the price and quality of inputs. Full stop.

*Note that there were virtually no constraints cited around the availability of seed. Seed was available. ('No seed' was not tied to farmers sowing less).*

7. Calculations were made on the costs for farmers of obtaining the seed they actually sowed or would sow. \$364 for winter season 2014-15 and \$153 for upcoming winter 2015-16. Such costs of seed seemed not to cause concern, it is rather the high costs of accompanying inputs (fuel, fertilizer and pesticides) that farmers highlight as important financial constraints.

### **On the supply side, 2010-2012**

8. While government formal sector sources have tumbled, agro-dealers themselves indicated no shortage of their normal supplies. Traders also suggested supplies easily available for major crops. Traders also reported sales as increasing between last and upcoming winter seasons (by 39 to 117% depending on crop.).
9. Traders also suggested supplies easily available for major crops. Traders also reported sales as increasing between last and upcoming winter seasons (by 39 to 117% depending on crop.)

### **Community summary:**

10. Overall, communities (N=17) themselves emphasized 90-100% seed secure across crops. This includes field crops and seed for kitchen gardens.

## Chronic seed system concerns and emerging opportunities

We now move to examining some broader trends in NW Syria agricultural and seed security. Community-level assessments were done in all five geographic areas and involved a range of methods: community meetings, special focus groups with women, and key informant interviews (with government leaders, business men, NGOs staff and others), and market analyses. The varied methods allowed for cross-verification and opened possibilities to assess medium-term processes. The following topics are highlighted below: dynamism in use of seed sources, crop diversification dynamism in seed sources, access to new varieties and use of inorganic and organic inputs.

### *Crop diversification and changing crop profiles*

Communities provided overviews of major crops sown in their area, and rated their respective importance for food consumption, income, and possible transformation from raw agricultural goods into value-added products. While the wider range of crops is notable (example table 5.13), so is the rapidly changing crop portfolio. In most of the communities, traditional revenue earners such as cotton and sugar beets barely figured in the current crop portfolio. In contrast, NW Syrian farmers are focusing on crops for income and especially moving to cumin, coriander, and black seed. As noted previously, because these crops are considered medicinal, they can still be easily exported (especially to Iraq). Their seed is also cheap and needed inputs few. Also, black seed, coriander and cumin do not have many insects, so they need less in terms of inputs. Potatoes are also important—but to relatively few: they need wetter lands, quality seed, and strong disease management.

**Table 5.13: Diversity of crops, rapidly changing profiles, distinct food and income crops: case of Dair Jamal**

Crop	Importance for food	Importance for income	Transformation?
Wheat	+++	+	Pasta, burgul, flour
Barley	++	+	Fodder
Lentils	++	++	---
Chickpea	++	++	paste
Black seed	-	+++	Natural medicine/spice
Cumin	+	+++	"
Coriander	+	+++	"
Potato	+++	+++	---
Onion	+	++	---
Faba bean	++	++	---

Box 5 explores some of the specific calculations guiding changes in crop profiles, here moving to black seed and cumin-- and away from wheat.



**Box 5. WHEAT versus black seed and cumin production calculations: a first sketch**

Below are some of the current calculations (as of Sept 2015) linked to production of wheat, black seed and cumin. At this point, the box is a tally of a large range of inputs and an estimate of aggregate output.

Qualitative assessments show that farmers are definitely shifting out of wheat and towards these spices and medicinal crops. The SSSA did not carry through the full economic analysis--- but this is sorely needed to guide concrete strategic investment.

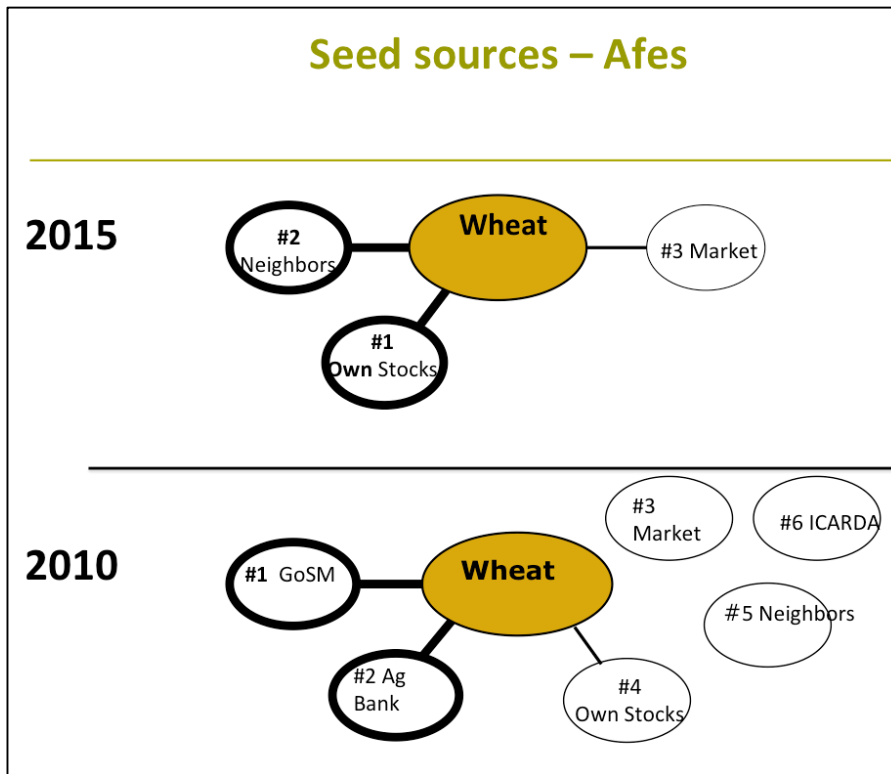
	WHEAT rainfed		Black SEED(black cumin)		Cumin	
	input	output	input	output	input	output
Seed	200kg/ha 14000SYP (1kg=60SYP)	-2.5- 3.5 TN 1Kg=55 SYP	15-20kg/ha 17000SYP	1-2 TN 2400USD\$	35 kg/ha 30.000SYP  or 500SYP/ 1kg	0.7-1.5TN/ha  450 syp/kg
Fertilizer Urea 46%	Superphosphate 100kg Urea 46% 250 Kg 55000SYP		Superphosphate 200kg Urea 46% 250Kg 55000SYP		Superphosphate 200kg Urea 46% 100Kg 30000SYP	
Pesticide	Insecticide, herbicide and fungicide. 10.000-15.000SYP rent tractor 4000SYP		Insecticide, herbicide and fungicide. 20.000-25.000SYP		Insecticide, herbicide and fungicide. 25.000-30.000SYP	
Fuel/Ploughing+ sowing	12.000-15.000 fuel for sowing and ploughing		15.000-20.000 fuel for sowing and ploughing  rent tractor 3000SYP		20.000-25.000 fuel for sowing and ploughing	
Labor+/Harvester	30.000SYP harvester  bag purchase 2500-3000 bags		15.000-25.000SYP harvester  50.000 labors. 1000-2000SYP bags		No machine harvester, harvest by hand/labors, cost about 50.000SYP/ha.	

## Seed sourcing patterns

Community mapping of seed sources traced trends in seed source strategy and specifically compared how seed is being sourced, now, in 2015 versus just before the crisis. Basically, communities were asked crop by crop, 'what are the major seed sources', 'how are such sources ranked in order of importance', and 'if the use of a source has altered since the start of the crisis'.

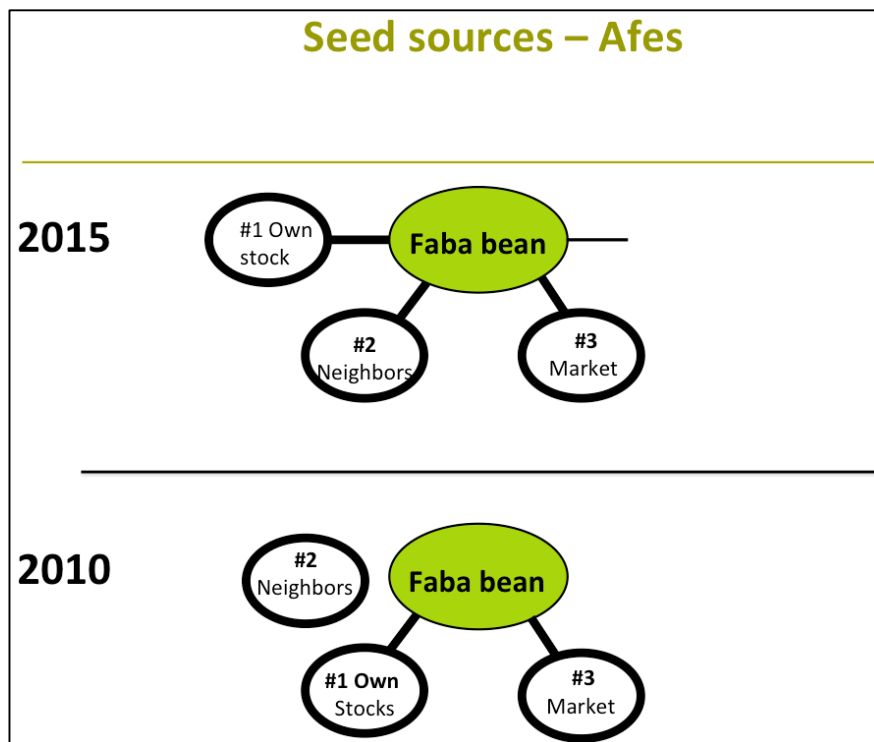
For some crops, there have been dramatic changes in the way seed is sourced, even in this short time frame. A good example is for wheat seed (and Figure 5.2 traces changes in the specific community of Afes). Wheat production used to be promoted and subsidized by the government. Seed sources in 2010 included the Government Seed Multiplication Unit (GoSM), seed from the Agricultural Bank (farmer associations) and even from the neighboring research station, ICARDA. None of these sources is functioning today. That said, some of the secondary sources used in 2010 still persist today, for example, use of own stocks, seed from neighbors and from local markets. These sources that were minor for wheat seed in 2010 have now become the major ones used today.

Figure 5.2. Farmers' sources of WHEAT seed in Afes: 2015 versus 2010



For other crops, however, the seed sources used have remained staple (i.e. basically unchanged) since the start of the crisis period. Many of the legumes have always been sourced mainly from local channels-home stocks, markets and neighbors, and this scenario continues today. Figure 5.3, for Faba bean in Afes (the same community as figure 5.2) demonstrates this stability. The same sources and the same relative importance of sources, is consistent, then and now.

**Figure 5.3. Farmers' sources of FABA BEAN seed in Afes: 2015 versus 2010**



If one were to summarize seed channel stability and dynamism, across crops, 2010 versus 2015, the overall trends might be as follows:

- For government (GoS) support crops, key sources have been lost (GOSM, Banks/farmer associations, ICARDA);
- Some new sources have emerged for key crops (e.g. wheat)-, like the Seed Multiplication Department (SMD)--but these do not operate at the same scale (see Box 4)
- For many crops, the seed sources remain the same, then and now, although the order of importance may have changed. Certainly use of trader seed seems to have sharply risen.
- Agro-pharmacies can still supply a range of vegetable seed (although perhaps not as abundantly as before).
- Contract growers still exist- shifting from GOSM to SMD oversight and sometimes going independent). The varieties are often the same but the quality management regimes have declined.

For most farmers, this mix of stability and change means that they can still get the varieties and seed they want and need (and tables 5.6 and 5.7 did not signal variety or quality problems). The exception might be for those farmers who are looking for certified seed only—but such farmers tend to produce for highly regulated output markets and such markets (wheat, cotton, sugar beet) have largely collapsed, at least within NW Syria.

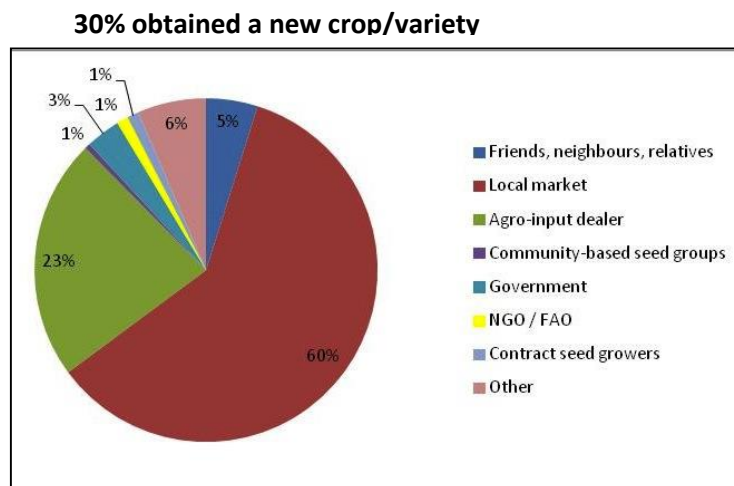
Of all seed source challenges, only potato seed production might stand as a firm constraint. Simply, potato production requires quality planting material to fend off viruses.

## New varieties

Continuing to search for possible changes due to the crisis, the issue of new varieties is examined. Within the context of assessing seed security, it is especially important to consider new variety access as varieties can be an economical way to increase production, combat disease constraints or meet special consumer preferences. New varieties are not being bred or formally diffused at this time anywhere in Syria. However, it seems that materials new to farmers are reaching communities. These varieties may not be 'modern' but they are innovations for the farming family. (Note: some modern varieties from government-controlled areas may be moving to the NW, but this was not possible to verify.)

Figure 5.4 and Table 5.14 show that about 30% of families have obtained a new variety since the start of the crisis, mainly of Irish potato and wheat, and from traders or agro-input dealers.

**Figure 5.4. Where farmers have obtained crops/varieties new to them- since crisis**



**Table 5.14: Profile of new crop varieties obtained- since crisis**

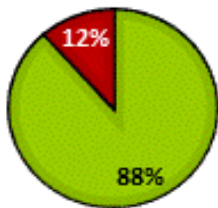
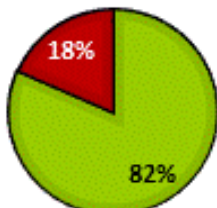
Crop	N Varieties	%

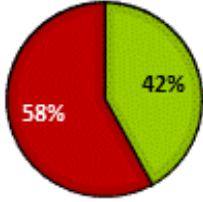
Irish potato	57	28.6%
Wheat	49	24.6%
Barley	10	5.0%
Faba Bean	10	5.0%
Black seed	8	4.0%
Tomato	7	3.5%
Onion	7	3.5%
Cucumber	7	3.5%
Watermelon	6	3.0%
Cumin	6	3.0%
Misc.	32	16.1%
<b>Total</b>	<b>199</b>	<b>100.0%</b>

### ***Fertilizer, Pesticide and Manure Use***

Select input use was also examined during the NW Syria SSSA as a complement to the seed security analysis. This included examining farmers' use of mineral fertilizer, manure and compost and a large range of pesticides. Given how key non-seed inputs are to commercial NW Syria farming, these products should have been central and much more in-depth scrutiny than these quick SSSA could allow.

**Figure 5.5. Select inputs being used by farmers in SSSA sample 2014-2015**

Input and farmers' use or not	Priority crops for use	Reasons for not using	
		reason	% of responses
<p><b>FERTILIZER</b></p> <p>■ Yes ■ No</p> 	Wheat Irish potato Tomato Onion Aubergine Barley Black seed Cumin Cucumber	Too expensive No credit Not necessary	69 20 9
<p><b>PESTICIDES</b></p> <p>■ Yes ■ No</p> 	Wheat Irish Potato Tomato Barley Cumin Black Seed Cucumber	Too expensive No Credit Not necessary	52 17 17

<p><b>MANURE</b></p> <p>■ Yes ■ No</p> 	Irish Potato	Too expensive	57
	Wheat	Not available	20
		Not necessary	16

Findings on non-seed inputs are but surficial ones. The large majority of farmers (4/5 of the sample) are still using fertilizers and pesticides at some levels. That said, the fieldwork did not focus quantities on used, effectiveness of targeting or methods of crop application. Those not using select inputs indicate that they are just too expensive and/or farmers cannot get the credit needed to purchase them.

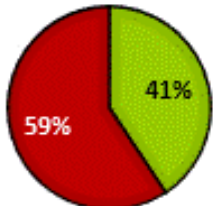
Manure and compost is being used to a lesser extent. In addition to reasons cited above, a good number of farmers indicate that these organic inputs are just not available.

**Storage Loss and Storage Chemical use**

As the potential input, storage chemicals are considered. Only about 40% of farmers use any chemicals with normal losses reported as fairly modest: 10-15%.

Among those not using chemicals, note that 1/3 of the farmers in the full sample store nothing at all. Without understanding the rationale behind this non-storage, it is difficult to assess if storage issues present problems or not.

**Figure 5.6. Seed storage loss and storage chemicals being used by farmers in SSSA sample 2014-2015**

<p><b>STORAGE CHEMICALS</b></p> <p>■ Yes ■ No</p> 	Wheat	<p>Mean storage losses:</p> <p>10-15%</p>	Reasons for not using:
	Irish Potato		133 farmers (1/3 sample)
	Black seed		<b>Nothing is stored.</b>
	Barley		Other reasons:
			Not necessary- 15%
			Too expensive 10%

Note that the fieldwork on storage focused on the farmer level. The issue Government arranged storage facilities has been mentioned previously. There are currently no such facilities in NW Syria. Wheat silos, for example, need rehabilitation. Larger storage facilities even at the community level seem to not be currently available. This issue of larger, communal storage merits further attention.

## Summary of salient points: Chronic Seed Security Findings + Emerging Opportunities

The review of medium-term trends in seed security in NW Syria shows most of all that communities are continuing to farm and at full speed. That said, there have been a number of important shifts as well as substantial adaptations to an evolving situation.

1. Crop diversification. The wide range of crops is notable as is the rapidly changing crop portfolio. Traditional revenue earners such as cotton and sugar beets barely figured in the current crop repertoire. In contrast, NW Syrian farmers are focusing on crops for income, especially moving to cumin, coriander, and black seed. Because these crops are considered medicinal, they can still be easily exported (especially to Iraq). Their seed is also cheap and need few inputs.
2. Seed sourcing changes. For some crops, there have been dramatic changes in the way seed is sourced, even in this short time frame. A good example is for wheat, which was formerly subsidized by the GoS. For other crops, however, the seed sources have remained staple since start of the crisis period, especially for the legumes. If one were to summarize seed channel stability and dynamism, across crops, 2010 versus 2015, the overall trends might be as follows:
  - For government (GoS) support crops, key sources have been lost (GOSM, Ag banks/farmer associations, ICARDA);
  - Some new sources have emerged for key crops (e.g. wheat), like the Seed Multiplication Department (SMD)--but these do not operate at the same scale.
  - For many crops, the seed sources remain the same, then and now, although the order of importance may have changed. Certainly use of trader seed seems to have sharply risen.
  - Agro-pharmacies can still supply a range of vegetable seed (although perhaps not as before).
  - Contract growers still exist- shifting from GOSM to SMD oversight and sometimes going independent). The varieties are often the same but the quality management regimes have declined.

*For most farmers, this mix of stability and change means that they can still get the varieties and seed they want and need. The exception might be for those farmers who are looking for certified seed only—but such farmers tend to produce for highly regulated output markets and such markets (wheat, cotton, sugar beet) have largely collapsed, at least within NW Syria.*

3. New varieties. New varieties are not being bred or formally diffused at this time anywhere in Syria. However, it seems that materials new to farmers are reaching communities. These varieties may not be 'modern' or 'improved' but they are innovations for the farming family. In NW Syria, about 30% of families have obtained a new variety since the start of the crisis, mainly of Irish potato and wheat, and from traders or agro-input dealers.
4. Substantial input use. The large majority of farmers (*4/5 of the sample*) are still using fertilizers and pesticides at some levels. That said, the fieldwork did not focus quantities used,

effectiveness of targeting or methods of crop application. Those not using such inorganic inputs indicate that they are just too expensive and/or farmers cannot get the credit needed to purchase them. Manure and compost is being used to a lesser extent. In addition to reasons of cost, a good number of farmers indicate that these organic inputs are just not available.

5. Seed storage puzzle. Only about 40% of farmers use any chemicals in storage with normal losses reported as fairly modest: 10-15%. Among those not using chemicals, it is notable that 1/3 of farmers in the full same store nothing at all. Without understanding the rationale behind this non-storage, it is difficult to assess if storage issues present problems or not.

All in all, this is a very dynamic farming situation, with many changes. That said, there are no signals that 'farming has broken down.'" It is evolving—and continuing to be geared to market opportunities.



## V. OVERALL RECOMMENDATIONS: ACROSS SITES

The opportunity for the SSSA team to conduct assessments in five geographic regions provided field teams a useful perspective on seed security across regions of NW Syria.

Below is a set of recommendations that are applicable across all sites, as of September 30, 2015. Recommendations for the short-term (1-2 seasons) are followed by recommendations for the medium term (3-4 seasons) and then those 'longer' term that anticipate periods of stabilization.

Again, as emphasized in the introduction, much has changed in NW Syria since the completion of the fieldwork, end of September 2015. Specific action points will need to be tailored to this fluid situation.

### SEED SECURITY: ACTIONS NEED IN THE SHORT-TERM (EMERGENCY, 1-2 seasons)

**Overview context.** *Seed availability*, that is, lack of seed per se was not identified as a problem in any of the sites. In fact, the overall trend for farmers to increase their sowing rates for the winter 2016 is supporting testament to this positive situation. *Seed access*, that is, having the means to exchange or buy seed was identified as a problem for a subset as was the money to buy other inputs, such as fertilizer, herbicides, pesticides. *Seed quality*, that is not having the right variety or having good quality seed, was also not identified as a problem by farmers. Seed quality was rather identified as a concern by some NGOs (and former researchers) who sense that farmers should be sowing certified seed, especially of wheat, as this was the GoS strictly guided practice for many years.

In addition, the SSSA results showed that both farmers and traders were expanding market enterprise across a number of value chains and that trading routes were functioning to move an important number of major grain and seed commodities (even across contested geographic zones).

As an overall recommendations of the seed/agricultural system status quo, the report puts forward two general recommendations.

#### ***Recommendation 1: Initiatives should avoid undermining the seed channels that are functioning well.***

More specifically, tailored to the different seed security constraints encountered, the following action points are recommended.

Action 1.1. **Humanitarian organizations should avoid/limit direct seed distribution so as not to harm the functioning local markets.** That said, in cases of the 'most vulnerable', or besieged populations, direct seed distribution (DSD) should be weighed carefully as a possible valid response.

Action 1.2. **To address possible access issues, Humanitarian organizations should consider use of vouchers and cash which could be used to support functioning local traders**

**and agro-pharmacists.** Such a system also lets farmers choose what crops, varieties and quality seed they want to sow.

***Recommendation 2: Initiatives should avoid actions which directly undermine current major output markets***

Action 2.1      **Humanitarian organizations aim to avoid importation of grain flour and other crops demonstrated to be available in NW Syria. Strive to procure locally (even for items such as aid food baskets)**

## **SEED SECURITY: ACTIONS NEEDED IN THE MEDIUM-TERM (3-4 seasons)**

**Overview context:** Within NW Syria, the basic agriculture outreach services formally supported by the central government have completely broken down. The number and range of services not functioning is formidable (*see Table 3.5 for SSSA team summary*). There is a need to prioritize which gaps should be addressed first, and how to address in the absence of a central coordinating body. The two central recommendation areas listed below represent needs that can potentially be addressed in the medium term. The focus suggests a role for humanitarian organizations in facilitating important **‘institutional service support’** which extends beyond their more routine humanitarian focus on aiding direct beneficiaries.

***Recommendation 3: Enhance extension services for ‘all’ aspects of agricultural production***

Action 3.1      **Aid organizations give focus to providing agricultural advice and training materials on themes such as disaster risk reduction and conflict and how to manage risk in a variable context. (*This would be a substitution function for the former government agricultural services*).**

Action 3.2      **Aid organizations intervene to raise the quality and encourage consistency in the agricultural input supply chain -----for fertilizers, pesticides, herbicides, etc. Exact actions need to be weighed carefully. (*The aim is to provide some standards and traceability in agricultural inputs being put on offer in routine commercial channels. Again, this is a substitute function in the absence of an official regulation body.*)**

***Recommendation 4: Program activities to build and strengthen the existing informal seed system.***

Action 4.1      **Aid organizations support farmers to produce and save high quality seed.** Given that NW Syrian farmers seem to be drawing more on their own seed stocks, farmer skills in field selection, harvest techniques, and storage procedures need to be enhanced.

- Action 4.2      **Aid organizations work with traders and agro-dealers to recognize and test for higher quality seed** (including seed from contract growers or that which might be sold which might be moved on local markets,)
- Action 4.3      As a developmental response (not linked to emergency), aid organizations are considering certified seed introductions. **Certified seed introductions should be considered ; a) only where there are clear farmer pay-back systems in place to reduce subsidy and    b) if value-chains are functioning that can absorb the resulting high quality end product.**

## **SEED SECURITY: LOOKING FORWARD TO ACTIONS NEEDED IN A STABILIZED SECURITY SITUATION**

**Overview context:** With NW Syria, fundamental plant breeding research and development (R+D) and basic, early stage seed services have fundamentally broken down. It is not clear what type of organization(s) or processes might be spurred to fill in these critical voids. Services which need to be re-established include: (but are not limited to)

- Formal sector plant breeding research, development and variety release;
- Formal seed sector multiplication (breeder, foundation and certified seed)
- Plant Quarantine (domestic and cross border) regulatory bodies and laboratory facilities.

As a final overarching recommendation, it is suggested that such longer-term needs not be overlooked. The future viability of Syrian agriculture will partially depend on the existence such formal bodies.

***Recommendation 5: Develop processes and actor coalitions to re-establish formal breeding R+D and formal seed service capacity and plant quarantine facilities that can serve NW Syria.***

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