

Seed System Security Assessment (SSSA)

Ethiopia, 2016

Synthesis report

**Combined findings and recommendations
from SSSAs led by:**

**CRS & partners
FAO & Government of Ethiopia**

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Background

Between September and December 2016, two large-scale Seed System Security Assessments (SSSAs) took place in Ethiopia, respectively coordinated by CRS and by FAO-Ethiopia along with the Government of Ethiopia. As both Assessments examined farmers' seed security in detail over multiple seasons, and use closely-related tools, there is considerable overlap in the findings. This summary synthesizes findings and recommendations from both Assessments in the areas where there is overlap. It focuses on the impacts for smallholder farmers of acute stress during 2016 *Belg* and *Meher* seasons, and projecting for 2017 *Belg* season, so as to guide immediate implementation options for 2017. However, some comments around longer-term issues are included at the end.

The individual SSSA reports provide more detail than can be covered in a brief synthesis. Also, each Assessment emphasizes slightly different aspects of seed systems. Individual reports are available at:

- FAO & Government of Ethiopia: <http://www.fao.org/publications/en/>
(contact: Alemu.Manni@fao.org)
- CRS & Partners: <http://seedssystem.org/wp-content/uploads/2017/01/Ethiopia-SSSA-Final-Report-Dec-2016.pdf> (contact: matt.davis@crs.org)

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The Seed System Security Assessments (SSSAs)

The rationale for conducting SSSAs at this time was threefold:

- In 2015, Ethiopia farmers and systems experienced one of the worst droughts in 50 years, (comparable to the 1983-5 drought)--- in large part due to El Niño (HRD, 2015).
- The Government of Ethiopia (GoE) and other humanitarian partners swiftly responded to the crisis, distributing 32 000 tons of assorted crop seed during the 2016 *Belg* and *Meher* seasons and with plans for 2017 still being considered. The SSSA aimed to help managers and field staff assess whether immediate seed system interventions were on track as well as to build seed system security assessment capacity.
- Seed security issues are linked to food security issues but also have quite distinct features. These Assessments were designed to give honed technical insight and to shape targeted interventions in the short, medium and long terms.

CRS and partners carried out a Seed System Security Assessment (SSSA) in Ethiopia from September 28 through October 14 2016. This Assessment (henceforth SSSA-1) took place in four Regions – Tigray, Oromiya, Amhara and SNNPR. In each Region two Woredas were selected to represent a range of agroecologies, *Meher* and *Belg* seasons, and to link to partners’ areas of operation. In total, there were 486 household interviews, 46 seed trader/agro-dealer interviews, focus groups and community meetings in each selected region assessed.

FAO and the Government of Ethiopia’s SSSA (henceforth SSSA-2) ran from 31 Oct through 3 December. SSSA-2 covered two Zones in each of the four Regions above, as well as in Afar, and a single Zone in both Somali and Gambella Regions. In total, SSSA-2 interviewed 1 270 farming households, visited 13 markets, and had 46 focus group discussions. A few higher potential areas (e.g. East Gojjam Zone, Ada’a Woreda near Bishoftu) were included in the SSSA-2 sample, as it extended beyond areas of NGO activity.

Thus, the combined SSSAs interviewed **1 756 farming households**, the largest national sample of any SSSA done to date. In both SSSAs, Woredas and Kabeles were selected to highlight diverse factors such as agroecology, trade or stress, and households were randomly-selected for interview. Both triangulated findings using multiple methods and established quantitative and qualitative methods, conducting key informant interviews with many actors involved in seed production, farmer assistance, and value chains. These SSSAs reviewed the functioning of the seed systems farmers use, both formal and informal, and assessed whether farmers could access seed of adequate quantity and quality in the short and medium term. Specifically, the work reviewed the actual farmers used and quantities of seed for their key crops for the 2016 *Belg* and *Meher* seasons, and farmers’ projected seed sourcing for 2017 (*Belg* only for SSSA-1, both seasons for SSSA-2). Both SSSAs used similar survey instruments for questions about seed sources, input use, seed aid experience, and access to new varieties – though SSSA-1 explored two crops per season, while SSA-2 asked about three crops/season. Except where otherwise stated, all figures in this synthesis pool nationwide results from both surveys.

Select SSSA findings are presented below, across sites, and grouped into short-term findings by season (***Acute seed security findings, Belg and Meher 2016, and Belg 2017***).

I. ACUTE SEED SECURITY FINDINGS: SSSA

Despite the initial shock (or shocks) diverse indicators suggest the seed security of Ethiopian farmers in the seven separate regions has been stable for 2016 *Belg* and *Meher* seasons—and is projected as significantly recovering for the *Belg* 2017 season.

Belg 2016 Season

1. For *Belg* 2016, farmers sourced the lion's share of the seed they planted (**77%**), on their own. The two major seed source channels were informal sector ones: home-saved stocks (40%) and seed from local markets (35%). This is striking, given the important emergency seed aid activities in all but a few of the Woredas sampled; seed aid provided 20% of the seed planted in the *Belg* 2016.
2. SSSA-1 compared quantities sowed for each crop against normal amounts (n=523); for *Belg* 2016, quantities sown were in the range of normal (an overall dip of - 6.0%). A minority (40% of all cases) did sow less of a given crop in *Belg* 2016: farming households gave their main reason for sowing less than normal for each crop case. Among this group of potentially vulnerable farmers, three reasons were given as paramount for reducing sowing amounts. No money to buy seed (15% of responses), insufficient access to land for the season (20% of responses) and simply poor weather (37%)-- which kept farmers from wanting to risk sowing full amounts of the crop. A positive development was the fourth major factor cited: use of less seed due to better agronomic practice of row planting. All four Regions gave similar reasons for reductions, with lack of oxen additionally being highlighted in SNNPR. Poor seed availability (in markets, shops, with neighbors) was an insignificant reason for sowing less (less than 1% of responses cited this reason). Similarly, SSSA-2 also found no evidence of constraints to seed availability: when asked if each seed source provided "enough seed"; only 12% said "no" (out of 662 responses). Absolute seed unavailability is likely lower than this, as farmers use multiple seed sources.

Note: Direct distributions of seed aid normally address an absence of seed (seed not available); the evidence suggests this was not farmers' main constraint that season. While free seed might mitigate financial constraints, such direct seed aid would not address the two driving problems for declined seed use-- poor weather and insufficient land/field access

3. Combining both assessments, the quality of seed by farmers was assessed as good or average (an overwhelming 97% of responses, n=1583). Even though it was a stressed period, crops yields were also rated by farmers as good (34% cases) or average (27% cases) so over 61% of farmer crop cases had acceptable yields for their crops—even following the drought. The reported cases of poor yields varied by crop and region – for instance, a relatively high proportion of farmers rated wheat and barley production as poor that season, while most respondents in the Somali Region reported poor *Belg* harvests in general. Interestingly, there was no association between poor yields and seed source: farmers reported similar proportions of poor yield from seed sourced from a) seed aid b) home stocks or c) local markets.

Note: Last minute weather patterns and access to land/fields (which can fluctuate between seasons) seemed to affect the amounts of seed farmers sowed, to a marked degree. These seem to drive farmers' sowing amounts, not whether seed was on hand. Such dynamism will be important for understanding farmers' seed demand.

Meher season 2016

Farmers' point of view: demand and seed use issues

The *Meher* season 2016 was projected to be a more stressed period than the *Belg* 2016 season, and the majority of seed aid was delivered for then. The general seed security quantitative findings were similar, although explored in greater depth, as both SSSAs occurred during this season, with farming decisions and field assessments happening in real time.

- 5 Combining both SSSAs, farmers sourced 2/3 (**67%**) of seed on their own (focusing on each farmer's most important crops). Home-saved seed provided 41%, with local markets 24%. These sources were still more important than seed aid (21% from combined government, FAO and NGO aid).

In stress periods, local markets tend to be the source for combatting seed insecurity and for obtaining the range of crops/varieties to bolster resilience. This could partly be attributed to effort by local market traders in sourcing seed from less affected farmers and/or region. Local market support might therefore merit greater attention.

- 6 SSSA-1 again compared actual quantities sowed with normal amounts (n= 905 specific crop comparisons): *Meher* 2016 sowings hovered directly around normal (an overall average change of just -1.30%). For a given crop, farmers sowed less than normal in 42% of all cases. Among this group, the main reasons for why they sowed less than normal were the same as for *Belg* 2016: poor weather (main reason 26% of the time); financial constraints (23%); land constraints (16%); and better sowing techniques (15%). Barely any (1.3%) farmers cited lack of available seed as a reason for sowing less. Again, SSSA-2 findings support the conclusion that seed availability was not a major constraint: when asked, crop-by-crop, if there was "enough seed", only 17% (of 2 372 responses) said "no". As before, 'seed not available' is likely to be less of an issue than implied by this figure, as farmers have multiple channels for obtaining seed, and "not enough" could reflect access rather than availability constraints.
- 7 Combining both SSSAs, farmers again judged nearly all their seed as 'good' or 'average' in terms of cleanliness and germination (98% of 4 305 farmer assessments of specific crops and seed sources). Yield obtained or to be obtained from the *Meher* 2016 season was deemed promising or average for 74% of cases with seed from community-based groups and government/FAO/NGO aid getting particularly high scores. Farmers raised specific quality concerns in a few cases, such as around some cases of mixed wheat or tef varieties, or about broken maize seed supplied from local government or cooperative sources. However, these were localised cases.

Note: The need for farmers to have flexibility in what they sow, particularly during stress periods is key. Farmers may alter crops and varieties used according to the immediate weather patterns,

fields available, or prevailing market seed prices. Factoring in farmer choice and ability to strategize could improve the results of aid response. Direct seed distribution (i.e. in-kind aid) does not offer farmers as much flexibility as other modalities, such as seed fairs where farmers can choose among crops and varieties. In 2016, the Government of Ethiopia's Operational Guidelines influenced the modality of seed aid used by humanitarian agencies, which was nearly all direct distribution. These guidelines could usefully be reviewed, in light of these findings.

Access to seed - purchase

8. Both SSSAs showed that farmers bought much of their seed in 2016. In *Belg* 2016, 48% of all seed planted was purchased; in *Meher* 2016, 58% of seed was purchased. Nearly all purchases were with cash, with less than 2% of seed accessed via credit. Seed purchase was common across all sites and crops, and was the most important single means of access, above self-supply from one's own stocks, and far above exchanges with other farmers or free gifts from seed aid. That farmers, even after a stressed year, continued to get seed via cash purchase is striking. It highlights farmers' willingness to invest in this important input, shows that markets are supplying significant volumes to farmers, and suggests future possibilities for market-led approaches to strengthen farmers' longer-term seed security.
9. SSSA-1 calculated seed purchase expenses for an average farmer during *Meher* 2016, based on three major crops per site, average amounts of seed actually purchased for those crops, and current prices in local markets. These figures are indicative only, as actual amounts for each household will depend on land area and crop mixture, but they give a sense of the scale of spending. In Sire-and Dodota Woredas (Arsi Zone, Oromia, in the Rift Valley) the average spend was 2 550 Birr for seed of tef, wheat and barley (~ \$US 116). This reflected large farm sizes (nearly half the farmers there sowed over 2 ha), and the predominance of wheat and barley, which farmers across the drier parts of Ethiopia tend to sow at high seed rates (150 kg/ha or more was not uncommon in several sites). In contrast, Dessie Zuria and Tehuledere Woredas (South Wollo Zone, Amhara), average spending to buy tef, wheat and field pea was 170 Birr (~\$US 8), in part due to smaller land sizes in this highland area (3/4 of households there farmed less than 1 ha). The other sites were intermediate: average spending in Ofla and Alamata (Tigray) was 416 Birr (~\$US19) and in Wolayta and Kambata (SNNPR) it was 290 Birr (~\$US 13).

While most farmers buy some seed, these figures show how that the amounts spent vary considerably by location and that any calculations for seed amount and/or cash/voucher support would also need to be tailored. Of more general note is that costs could be a challenge for some, particularly those buying large quantities. In addition, fertilizer has to be factored in to the tally of input costs.

On the supply side - seed/grain traders: Can the markets deliver?

Where are farmers buying seed? Agro-dealer networks are only just emerging in Ethiopia, with a few shops in larger towns and higher-potential areas (e.g. Adama) selling hybrid maize and vegetable seed. Farmers in a few areas (e.g. West Gojjam) can also choose among a range of maize varieties in purchasing seed, as some maize seed producers have agreements with agents or Cooperatives and market directly to farmers. However, this currently only happens with maize in high-potential areas. Elsewhere, farmers can buy seed via the Bureaus of Agriculture, as part of an input package, often via credit. Package programs tend to focus on a small number of crops

- nearly 80% of formal seed production¹ by volume in 2016-17 is for wheat and maize – and centralized management of seed production and supply mean farmers may not have much scope to choose among varieties.

For most crops, farmers buy much more of their seed from seed/grain markets than anywhere else. In part this reflects choice: a wide range of crops and varieties are on offer. But access is also an important factor, as these markets offer lower prices or terms of trade than formal outlets. Hence, the SSSAs focused attention on these seed/grain markets, where farmers scout out grain that is suitable for planting. For sowing material, farmers seek adapted varieties and look for grain of good quality (mature and not broken, with pebbles, dust and twigs sorted, and no pest damage.) Not all grain in such markets is suitable for sowing; that which could be sowed is referred to as 'potential seed'. These markets take a variety of forms, from open-air traders to those with permanent trading and storage premises, and operate at different scales.

Local seed/grain markets were noted as particularly important for the legumes (common beans, chickpea, cowpea, faba bean, and field pea), for some cereals (especially barley, tef and sorghum), and for local vegetables. In the 2016 *Meher* season, local markets provided between 25-50% of the seed sown for the crops cited above.

10. The majority of seed/grain traders (n=116 observations) assessed *Meher* 2016 supplies as 'normal' or 'more abundant than normal', across a range of crops (wheat, barley, tef, common beans, sorghum and maize).
11. Not every grain trader sells potential seed, but those that do vary from small-scale open market sellers to larger-scale traders with storage and transport facilities. These vendors may take steps to enhance quality (e.g. sourcing potential seed from reputed growers or regions), and sell potential seed at a premium (10-18%) above grain prices.
12. Linked to the above, 'potential seed flows' from one region to another proved extensive and shortages in any one area were offset by incoming supplies from another. For instance, a trader in Korem/Tigray was directly commissioned by the government to source barley ('potential seed') from the surrounding areas of Kombolcha and Ch'erch'er and chickpea from as far off as Adama. For the *Meher* 2016 alone, the trader in question sold 200 MT (2000 qtl) to the Korem Bureau of Agriculture office. Specific adapted varieties were purchased with quality screening monitored by government staff during the transaction.

Any seed security zonal or woreda-level plans might practically project for such for inter-zonal/woreda flows, acknowledging that supply dips in one region can be compensated by inflows from another. Seed security plans should also recognize the key importance of 'potential seed' traders. Such traders need to be identified and supported in their quest to gather or produce quality seed. Activities might be targeted to this group to enable them rapidly and efficiently move needed and appropriate seed among areas. Again, they provide important amounts of seed and particularly of the legumes and minor cereals which are poorly represented in the formal commercial channels.

13. Trader analysis of peak prices per quintal also showed relatively stability, comparing the current *Meher* 2016 with the *Meher* 2015 sale prices. Overall price rises were measured at

¹ Formal production is mainly via the Ethiopian Seed Enterprise, and Regional Seed Enterprises.

+18%, with variable changes by crops (some, like tef or sorghum, increased more than 20%, others like wheat or faba bean were actually cheaper in 2016 than in 2015).

All in all, seed/grain traders at each site saw potential seed supplies as available, with prices changes not unusually high, at least according to the trader point of view.

Other key issues across seasons related to seed use: Belg 2016 and Meher 2016

15. Both SSSA samples show impressive levels of access to new varieties. Within the 'last five years', 73% of households said they had gained access to a new variety. However 79% of these new accessions have been of maize, wheat or tef. There has been negligible access to new varieties of the legumes, which are key for nutrition.
16. New varieties were also overwhelmingly accessed via government or FAO/NGO channels (74% cases), mostly coming in the form of aid, rather than through demand-driven commercial outlets that might serve farmers on a more continuing and sustainable basis.
17. Across both SSSA samples, inorganic (chemical fertilizer) was employed 74% of farmers for the Meher 2016 season. Usage rates were lower for the Belg (41%, data from SSSA-1); in rainfall-stressed areas, farmers noted that it can be risky to use fertilizer as it 'burns the soil if there is a lack of rain'. Fertilizer is mostly applied on maize and tef (Belg) and wheat and tef (Meher).
18. Seed aid, that is free distribution of seed as part of emergency response and development initiatives, has been conducted on a large scale, with 55% of the sample having received such aid within the last five years. In lower potential areas, the proportion receiving aid was higher. Aid was received in the general population on average 1.6 times within the last five years, with a high of seven times. Most of the aid cases were implemented by direct seed distribution (84%), with a few citing seed loans (15% of cases).

Aid methods which allow farmers choice and the ability to strategize, such as cash, vouchers or seed fairs were virtually non-existent for the full sample.

Projections for Belg 2017

Projections for seed sourcing for the *Belg* 2017 were also obtained, crop by crop. As the upcoming season was several months away at the time of the assessment, such figures are but speculative. Major points for the *Belg* 2017 projections are:

Farmers expect to rely on informal channels for the bulk (69%) of their seed for their major crops. They project own stocks to supply 33%, and local markets 36%.

Farmers project overall sowing rates to rise sharply compared with normal rates: +28% (showing a level of optimism).

Farmers have already factored in important government/FAO/NGO assistance for 16% of seed the next season, focused especially on maize, wheat and common bean. This may represent farmers' preference or hope (seed aid is a way to get certified seed, and for free). But, it may also signal dependency in some cases, especially in locations where seed aid has become routine. For the other crops, they are counting on general self-sufficiency.

Longer-term issues

Both SSSAs reviewed breeding, seed production and seed marketing systems in Ethiopia, and the full reports provide much detail here. This brief summary highlights a few salient points.

19. Ethiopia's National Agricultural Research System has released a large number of crop varieties. As SSSA-2 highlights, since 1991 there have been 669 varieties released in Ethiopia (530 of them since 2001), including: 322 cereal varieties (half of those wheat and maize); 196 pulse varieties (with haricot bean, field pea and faba bean predominant); 81 varieties of root crop (led by Irish and sweet potatoes); and 71 varieties of oilseed crops (mainly groundnut, sunflower, linseed, and sesame).
20. Seed production is carried out by both public and private seed enterprises, with limited seed production from select Farmers' Cooperatives and individual farmers. Aggregate national production is estimated to be 130 000 metric Tonnes, 90% of this for cereals. Other crops get far less attention from seed multiplication efforts. Equally, not all released varieties get multiplied. The Oromia Seed Enterprise, to take one example, produces a range of wheat (23) and maize (8) varieties, but only 1-2 varieties for most other crops. While focusing on a limited product range is understandable for these enterprises, at a systems level this means that many potentially useful crop varieties are not able to reach farmers.
21. Certified seed, produced by from enterprises or cooperatives, is typically supplied via Woreda Agricultural Development Offices. Issues noted here include shortage of supply of some crop seed (e.g. barley and a number of pulses) or late delivery to some locations. About 12% of seed production is carried over as unsold stock in the formal sector; this highlights the challenges faced in estimating and meeting seed demand in a complex and centrally-organized system.
22. Both SSSAs documented the need for novel ways of seed production and delivery-- --much closer to zones where farmers plant, and offering farmers the large array of crops and

varieties they need—not just for production, but also to meet their resilience and nutrition needs. Some decentralized seed production is starting to fill this gap, such as from Farmer Coops who multiply seed. For these efforts to be sustainable, and provide farmers with crops and varieties choices, they need to be demand-driven with farmers as the clients (rather than institutional buyers, like NGOs or Bureaus of Agriculture).

SALIENT POINTS SUMMARY/REFLECTIONS: *Belg 2016, Meher 2016, Belg 2017*

1. Farmers use multiple seed sources in Ethiopia. During the *Belg 2016* and *Meher 2016* seasons, farmers sourced seed for their major crops largely from informal seed sources, with a focus on their own stocks and local market channels (77% seed sourced from informal channels for the *Belg*; and 67% informal for the *Meher*.)
2. Overall, the quantities of seed farmers sowed in 2016 showed little change from the amounts they normally sowed.
3. Emergency seed aid during these *Belg 2016* and *Meher* seasons provided around 20% of the seed sowed for their major crops in each season. *It is not possible to calculate the absolute degree to which this aid was crucial: farmers sometimes preferred to sow the new varieties and certified seed even when they had seed in their own home-saved stocks. Certainly the aid had some positive effect, by securing access to certified seed of new varieties, or by allowing farmers to use their money for other key purchases.*
4. Focusing on the potentially vulnerable, that is, those sowing less of a given crop in either the *Belg* or *Meher 2016*, three main reasons were given for the reduction. No money to buy seed, insufficient access to land/fields for the season, and simply poor weather-- which kept farmers from wanting to sow full amount of seed for the crop. Lack of seed availability (in markets, shops, with neighbors) feature insignificantly as a rationale for sowing less. Reasons for reductions were similar across all four regions, with lack of oxen additionally being highlighted in SNNPR.

Note: While giving free seed might help with the finance constraint, such direct seed aid would not have solved the two driving problems for declined seed use-- poor weather and insufficient land/field access.

In terms of sowing less due to money constraints (which will be key for calculation cash/voucher needs), This affected 6.3% of the total farm households during the *Belg 2016* and 10% of the total population during the *Meher 2016*.

5. Seed grain traders, those crucial for seed security in stress periods, assessed supplies the *Meher 2016* as normal or above normal, confirmed that normal trading and supply routes were open and calculated that peak prices for potential seed overall rose 18% from *Meher 2015* to *Meher 2016* (perhaps not a striking rise). Several cases were noted where seed/grain traders also became part of the government seed aid procurement process.

6. For most legume and cereal crops (barring wheat and maize), local markets provided 30 to 50 percent of the seed farmers sowed during these two seasons. *Seed security plans might recognize the key importance of 'potential seed' traders. Such traders could usefully be identified and supported in their quest to gather, transport or identify quality seed.*
7. Farmers purchased 48 percent of all seed sowed in *Belg* 2016, and 58 percent in *Meher* 2016 –the vast majority of it via cash. Varied sources were used, though local markets dominated. Purchase amounts and overall costs varied greatly by region, according to land sizes and different crop profiles. As farmers are already investing in buying seed, this suggests opportunities for using market-led approaches to offer better choice and good quality seed to farmers – though business models need to understand, cultivate, and serve, actual local demand. Affordability may be an issue for some farmers. Understanding of local context and farming strategies will be important for understanding farmers' overall seed purchase strategies.
8. Farmers are getting impressive access to new varieties- but mainly through free distributions with a focus on cereals. Legumes, key for nutrition, receive less attention in emergency aid and good quality seed remains difficult for farmers to access on an on-going basis.
9. Emergency seed aid is common, with over half of all farmers receiving aid, on average 1.6 times in the last 5 years. Also, direct seed distribution (DSD) is the dominant form. This approach gives farmers little/no ability to strategize in stress periods. Farmers routinely alter what they sow *according to the immediate weather patterns, fields available, or prevailing market prices. Such flexibility might be factored into future support to increase aid effectiveness.*
10. Both SSSAs investigated farmers' projections for seed sourcing for the *Belg* 2017, crop by crop. As the upcoming season was several months away at the time of these assessments, such figures must be considered as speculative. Farmers expect to rely on informal channels for the bulk of their seed of two major crops (69% of seed sown). Farmers project overall sowing amounts to be higher than normal: +28%. That said, farmers in the sample also project 16% of their seed will come from government/FAO/NGO assistance next season, which may signal that they hope to get aid seed (because of its quality) or that they expect to (as aid has become routine).

II. RECOMMENDATIONS: geared to the short-term

Below find key recommendations that are applicable across all sites. They emerge from an analysis of the field evidence and focus on recommendations in the short-term. (Site by site recommendations, including those to deal with chronic stress and medium term will follow.)

1. **Direct seed aid (distribution) for 2017 should be limited.** There is little evidence of seed unavailability in home stocks and markets, and farmers do not cite seed unavailability as a reason for planting less.
 - 1.1 To minimize risk. any direct seed distribution might focus on crops and varieties already known and used by farmers in a given region;
 - 1.2 Direct seed distribution in emergency might best avoid technologies which tie poor farmers into repeated obligations of re-purchase (such as hybrid maize).
2. **Vulnerable farmers should be given means to access seed in Belg 2017 (cash, vouchers, possibly through fairs).** The major seed-related reason for farmers' planting less had to do with money. This was true for all sites and both *Belg* and *Meher* seasons.
 - 2.1 The amount of any cash/voucher transfer might best be tailored by region as seed costs vary dramatically according to land size and crop profile.
 - 2.2 As vouchers/cash/fairs also aim to allow farmers to strategize during stress, specific efforts should be made to ensure a wide range of crops are on offer (also legumes and minor cereals).
3. **Vulnerable farmers might also be given means to access /alleviate other constraints Belg 2017. Vouchers for oxen, or for farm labor, might be explored. Some analysis of vouchers for field rental might also be considered.**
4. **Support for local markets in emergency/stress should be considered.** Local markets provided 30 to 50% of the seed sown for all legumes and key minor cereals. Select Seed/grain traders are also already serving to provide emergency seed stocks in key regions.
 - Seed security traders might be usefully identified in each region;
 - Seed security traders might receive support to ensuring a quality product;
 - Training on seed sourcing and selection
 - Possible credit for better storage, or incentives for accessing storage inputs, such as pallets.

RECOMMENDATIONS: For The Medium-Term

There is need for more broad-based thinking on how to improve the seed security of smallholder farmers in Ethiopia. Government development efforts, as well as repeated aid, are currently driving production and delivery mechanisms. This has had important impacts in increasing the supply of certified seed of major cereal crops. Expanding farmers' options to choose among a wide diversity of crops and varieties, and acquire good quality seed in ways they can afford, will strengthen seed security. As modest areas for wider action, suggestions below are:

5. **Variety choice should be enhanced.** Government and partners should provide at least two varieties within the conventional seed distribution channels in any single delivery, to allow farmers greater choice. In the medium term, seed enterprises/producers in collaboration with extension offices support participatory farmer's demonstrations of new varieties at Kabele levels for at least 1-2 seasons to create effective demand and avoid negative effect associated with "unknown new" varieties. Better still, there is need to scale up and out the decentralized/direct seed marketing without limiting it to maize and some zones. In the long term, more participatory plant breeding efforts in crops such as cowpea, mung beans and grass pea are needed.
6. **Critically review capacity in seed quality management.** Regional seed laboratories need sufficient equipment and human capacities to be able to carry out their roles. If these laboratories are to support, and eventually certify, more decentralized seed production groups, they will need to be sufficiently resourced.
7. **Support a diversified seed sector to increase the availability and diversity of good quality seed for farmers.** This could be supported in a number of ways. Public/private partnerships will be important, as will adequate supply of basic seed from a wide range of crops and varieties to all seed sector actors. Improved credit services or other targeted support could help attract more private participants in the seed sector.
8. **Decentralized seed production** needs to become a more strategic and effective force in serving farmers as the formal seed sector will never be able to handle a) the range of crops needed for stress zones; nor b) the range of varieties. Efforts need to be made to support cooperatives and organized groups to multiply crops which attract little attention from the seed enterprises, such as haricot beans, faba beans, chick pea, field pea as well as some cereals such as sorghum and barley. Decentralized seed production and delivery will prove particularly important for the legumes and for the vegetatively-propagated crops. At this point, the decentralized seed multiplication initiatives seem to be having modest gains. Those visited had limited crop portfolios and their expansion was hampered by the full-fledged requirement of Certificate of Competency (CoC). As a general recommendation, sustainable decentralized seed production models need to be confirmed many regions of Ethiopia.
9. **Delivery mechanisms for giving all farmers regular access to new varieties** need to be intensified. Diversifying sale outlets beyond Farmer Coops, Unions and agro-dealers could help expand farmers' choice to a wider set of crops/varieties. Sale of diverse seed in broader range of outlets, e.g. via rural shops on consignment, might help expand access. The experience of some seed producers marketing their seed directly to farmers, via

agents (as in West Gojjam) should be studied for lessons and possible replication elsewhere. Sale in smaller pack sizes (1 kg, 2kg 5 kg) may also open up opportunities for poorer farmers to access new varieties and quality seed.

10. **Given that local markets (and their traders) are important for farmers' seed supply, more attention should be given to encouraging that these open seed/grain markets supply the kinds of potential seed farmers want and need on a more consistent basis—** and not just in emergency As one point of departure, seed/grain traders could be powerful partners in helping to move *new modern varieties* widely, within and among farming communities. Traders could also receive basic information on grain/seed quality aspects and management through trainings, leaflets and/or radio messages.
11. **Economic development efforts should be linked.** Strengthening local financial services and, particularly around credit provision, will be useful, especially in Oromia, Afar, Gambella and Somali Regions. Linked to this, value addition should be supported where possible, as better market opportunities enhance farmers' purchasing power, and underpin sustained seed demand.
12. **Research for development (R4D):** Seed issues are interrelated with production challenges, and therefore addressing some of the crop production challenges with directly or indirectly affect seed security. Some of the challenges that need due attention and action include;
 - *Development of striga resistant/tolerant variety:* this will minimize the impact of the weed on productivity and subsequently own saved seed.
 - *Integrated Pest Management:* For control of major pests, there is need to promoted use of integrated pest management (IPM) practices, which may include the followings among others. *Regular monitoring and scouting of field pest, use of appropriate cultural and production practices as well appropriate application selective pesticides*
13. **Finally, the focus on quality seed for increased production might usefully be broadened to include the goals of 'enhanced resilience' and 'enhanced nutrition'.** A prime focus on cereals alone (the current *de facto* strategy) may not be sufficient to help strengthen farming systems in these times of repeated climate stress and food insecurity.