Introduction

Informal seed systems include farmer-saved and exchanged seed of important food crops, comprising both local and improved varieties that have been accessed through a formal distribution system. Despite the relatively little focus given to informal seed sources by the government and developmental partners, roughly 80% of Ethiopian farmers continue to source their seeds through informal channels.¹

The lack of formal attention given to informal seed systems has resulted in a low uptake and dispersal of quality farmer preferred crop varieties, contributing to household-level food insecurity and fragile farm income. Therefore, the second phase (2016-2019), of Integrated Seed Sector Development (ISSD) - Ethiopia programme, part of the BENEFIT² Partnership gave special attention to informal seed sector development.

Table: Characterisation of seed systems in Ethiopia³

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Farmer saved</th>
<th>Local seed Business</th>
<th>Public seed enterprises</th>
<th>Private seed producers</th>
<th>Private seed companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>General description</td>
<td>Traditional for food subsistence crops (informal)</td>
<td>Emerging, with short value chains, increasingly linked to local markets (intermediary)</td>
<td>Formal system targeting major food security crops, primarily linked to governmental seed distribution (formal)</td>
<td>Emerging system which still operates as outgrowers, with a potential towards seed entrepreneurs (formal)</td>
<td>Few (national and foreign) companies that operate in the maize market, with new companies emerging for vegetables and potatoes</td>
</tr>
<tr>
<td>Type of crops</td>
<td>Local food crops</td>
<td>Food and cash crops</td>
<td>Major food and cash crops</td>
<td>Major food and cash crops</td>
<td>High value crops</td>
</tr>
<tr>
<td>Major crops</td>
<td>sorghum, tef, barley, enset, legumes, etc.</td>
<td>Maize (OPV and hybrid), wheat, barley, beans and other legumes, potato, onion and other vegetables</td>
<td>Primarily maize (hybrid) and wheat</td>
<td>Maize (hybrid), wheat etc.</td>
<td>Maize (hybrid) and exotic vegetables</td>
</tr>
<tr>
<td>Type of varieties</td>
<td>Local varieties</td>
<td>Local and improved Varieties</td>
<td>Improved varieties</td>
<td>Improved varieties</td>
<td>Improved varieties (hybrids for maize and vegetables)</td>
</tr>
<tr>
<td>Type of seed quality</td>
<td>Farmer-saved, informal</td>
<td>Certified, &quot;quality declared&quot; And informal</td>
<td>Certified</td>
<td>Certified</td>
<td>Certified</td>
</tr>
<tr>
<td>Type of distribution and marketing</td>
<td>Own seed, bartering and exchange, local markets</td>
<td>Variation through contractual, marketing, NGO distribution and bartering</td>
<td>Dissemination</td>
<td>Contractual arrangements towards dissemination and marketing</td>
<td>Marketing</td>
</tr>
</tbody>
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² BENEFIT: Bilateral Ethiopian Netherlands Effort for Food, Income and Trade
What was done?

BENEFIT-ISSD follows "Crowdsourcing" and Participatory Varietal Selection (PVS) approaches. Crowdsourcing is an approach of variety deployment and promotion in which each farmer receives small seed pack of three varieties (often large number of farmers are engaged), to plant on three adjacent plot to select the most preferred variety based on her/his own criteria. As such, "farmers act as local scientists testing, observing, comparing different varieties, trying new farming techniques, and experimenting with different crop rotations to see what works for them – in terms of yield and also resilience, nutrition, taste and resistance to pests and diseases."

Participatory variety selection is another means of variety deployment and promotion in which several varieties are planted on relatively large plots from which farmers are invited to select the best variety. In this process, BENEFIT-ISSD puts gender as an integral part of the programme that engages both male and female farmers to evaluate seed, select varieties, and provide feedback. Both approaches help to deploy and promote varieties, creating demand for seed production.

Where?

BENEFIT-ISSD Ethiopia (2016-2019) works across four regions: Amhara, Oromia, SNNPR and Tigray. The regional ISSD units are hosted by Bahir Dar University (BDU), Haramaya University (HU), Hawassa University (HwU), Mekelle University (MU), and Oromia Seed Enterprise (OSE).

Major activities accomplished

Enhanced empowerment of women in the access and use of quality seed of their preference at household and community level is one of the intermediary outcomes of BENEFIT-ISSD. To achieve this, BENEFIT-ISSD conducted the following activities from 2016 to 2019.

Gender assessment: As part of project implementation, BENEFIT-ISSD first conducted gender analysis through Focus Group Discussions (FGD), mixed groups and women groups discussions, to identify the role of men and women in informal seed system and their different constraints in accessing quality seed. The assessment also included identification of varieties that are found in farmers’ hand and the types of varieties that are lost. Through this assessment, male and female farmers identified traits of the varieties they prefer which brought attention to specific traits women put in varieties selection such as: color, aroma, taste and nutrition; process- and cook-ability (baking ability and time), kernel weight, water absorbability and market.

Launching workshops: BENEFIT-ISSD conducted launching workshops in all regions where the gender assessment results were used as baseline information to conduct joint planning. Representatives from Regional Agriculture Research, Regional Bureau of Agriculture, Woreda Office of Agriculture (WoA) Development Agents (DAs), farmers and representative from Woreda Women’s Affairs Office and Children Office participated in these workshops.

Focal Persons Assignment: Following the workshop, the programme assigned focal persons at WoA and Woreda Women’s Affairs Office and/ or a gender focal person at the WoA.

Recruitment of Experts: BENEFIT-ISSD also hired gender and rural development experts in all regions to serve as primary contact persons responsible for coordinating and implementing informal seed system activities at regional levels. Together with seed experts, the gender and rural development experts lead the development of the regional gender responsive informal seed system to achieve the target of reaching at least 50% women farmers in all programme activities.

Implementation areas selection: In 2017, the programme in collaboration with implementing partners (WoA, Agricultural Research Centers, and Universities) selected target areas based on the nature of the intervention and criteria set by BENEFIT-ISSD. Some of the criteria included interest, accessibility and availability of seed through formal seed system, women inclusion, land size etc. Overall, BENEFIT-ISSD implemented crowdsourcing and PVS in 30, 45 and 53 woredas in 2017, 2018 and 2019 respectively.

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1Citizen science is defined by Oxford English Dictionary as “scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions”. The European Commission Green Paper as “general public engagement in scientific research activities where citizens actively contribute to science either with their intellectual effort, or surrounding knowledge, or their tools and resources”

2Ann Tutwiler, Director General, Diversity International’s blog: From the fields of Bihar, India.

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Beneficiary Selection: Farmes (at least 50% women) were selected by focal persons and DAs where a priority was given for Female Headed Households. One of the roles of the Woreda Women and Children Office, Gender Focal Persons and Experts was to mobilize women beneficiaries to participate in training, field day and experience sharing activities.

Seed collection and distribution: Based on the traits identified during the assessment, seed was collected from potential seed sources, such as agricultural research centers, universities, public seed enterprises, seed producing cooperatives, private seed companies. That was followed by treating the seed with chemicals to protect them from insects and pests, weighing and packing.

Three varieties were distributed randomly to each of the selected farmers with close monitoring and recording of who received what and how much. Enumerators/DAs recorded traits of the distributed varieties including sowing date, maturity date, disease resistance characters, harvesting date etc. Enumerators / DAs assisted farmers starting from planting to harvesting and collected data based on observation card.

<table>
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<tr>
<th>Figure: No of varieties per crop deployed in 2017</th>
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<tbody>
<tr>
<td>Sorghum</td>
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<tr>
<td>Wheat</td>
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<tr>
<td>Haricot bean</td>
</tr>
<tr>
<td>Barley</td>
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<tr>
<td>Chick pea</td>
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<tr>
<td>Teff</td>
</tr>
<tr>
<td>Finger millet</td>
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<tr>
<td>Potato</td>
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<tr>
<td>Faba bean</td>
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<tr>
<td>Fieldpea</td>
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</table>

Legend:
- Amhara
- Oromia East
- Oromia south west
- SNNPR
- Tigray
- Total
Capacity buildings for partners: Training of Trainers (ToT) on crowdsourcing, PVS, quality seed production, post-harvest technologies by-law development and gender and nutrition mainstreaming was provided to woreda experts, DAs, enumerators and researchers responsible for cascading what they have learned to the farmers. Gender related awareness creation sessions and trainings were also provided based on the importance and/ relevance of the topics.

Monitoring, coaching and evaluation: Continuous monitoring visits and coaching were undertaken by BENEFIT-ISSD staff, Woreda experts, DAs and enumerators. This allowed agricultural researchers and other potential seed producers to gather valuable information from both female and male farmers to further improve traits of varieties.

Evaluation events and field days: As part of the evaluation process and experience exchange, field days and workshops were organized. Groups (male only, female only and mixed group) of farmers evaluated the varieties planted at Farmers' Training Centers (FTCs) and other PVS trials. These events were a great opportunity to create seed demand for the newly introduced varieties and exchange experiences. In addition, BENEFIT-ISSD together with implementing partners organized different workshops where DAs, enumerators, woreda focal persons, Woreda Women and Children Office Gender Experts, and woreda extension process owners evaluated the process, results, and identified lessons learnt and address challenges.

Data analysis and management: The WoA focal persons submitted the data collected to BENEFIT-ISSD for data analysis and management in December of each year. Both crowdsourcing and PVS data were collected, processed and presented in a gender disaggregated way to identify difference between female and male farmers’ preferences. Since CS data was prepared separately for individual farmers, it enabled the programme to identify specific female and male farmers’ preferences and experiences. The results of this analysis were also used to inform seed producers on how to align their production with the demand created through this process.

Contribution to Women’s Empowerment

To capture the contribution of BENEFIT-ISSD to women’s empowerment, the programme through ISSD-MU conducted an in-depth interview with wives of male headed household and female headed households. The interviewees were selected from three woredas in Tigray region: Asgede-Tsimbal woreda (low altitude), Adwa woreda (mid altitude) and Degua-Tembien woreda (high altitude) areas. The result indicated that:

1. Women access to alternative seed source minimized quality seed shortage.
2. Women’s experience in seed multiplication led to communities using women as seed source.
3. Women differentiate crop varieties based on their own criteria including minimum workload (doesn’t take much time to clean the fiber), color, seed size (large), and water absorb-ability in addition to male’s criteria such as high yield, easy to harvest, early maturity and drought, pest and disease resistance, marketability and good for animal forage.
4. The inclusion of women in the intervention increased frequency of visits from development agent and Woreda Office of Agriculture experts to women farms.
5. Participation in the intervention helped women understand the relevance of proper farm management like sowing properly, timely weeding, row planting, fertilizer application and pesticide application. They now know how to manage all varieties as well as men and know the difference between grain and seed.
6. The intervention helped women to diversify their food consumption contributing to improving nutrition at household level.
7. The intervention increased women’s income from selling of high demand new seed varieties.

Letebirhan Tsehayu lives in central part of Tigray region, Adwa woreda, Endabagerima kebele. She is a widow and has five children. Although the area where Lettebirhan lives is mid-altitude, due to her very small land size (¼ ha) and frequent rain shortage, she has always been food insecure and depended on the government Productive Safety Net Programme (PSNP) programme for her survival.

In 2017 through BENEFIT-ISSD MU, Lettebirhan received training on good agronomic practices (land preparation, row planting and fertilizer application) and received three wheat varieties to test on her small plot of land and choose the variety she preferred.

Lettebirhan said, “Following the trails I selected the once that is most productive, disease resistant, early maturing and short in size (easy to harvest). I harvested 80 kilos from this variety and plan to provide the seed to the seed cooperative found around here to earn income and change my life.”
Wahid Tesfay who lives in North Western part of Tigray region, Asgede Thimlal woreda, Dedebit kebele, joined the activities of BENEFIT-ISSD in 2017. Considering the fact that the area was frequently affected by drought, Wahid was given an opportunity to test three types of drought resistant improved sorghum varieties on her farm land. Following her training on land preparation, fertilizer application and row planting she conducted the trial twice (2017 & 2018). Even though her experiment was challenged by birds that inflicted damage on her crops in 2017 and shortage of rain in 2018, she is more than happy with the performance of one of the varieties. She said “In spite of all the challenges I faced the new variety is much better than the local since it matures early, is convenient to harvest (short in size) and not affected by wind easily. The straw is also thick and good for our livestock. I have learned using the right kind of seed and good crop management means better productivity and higher income. I plan to exchange the seed with higher market value food crops. I am also glad the programme gave equal opportunity to men and women and the Kebele Agriculture Office selected me to be part of the trails.”

Aheze Negash lives in Hadinet Kebele, Agereselam woreda, South Eastern Part of Tigray. She is head of her household and has five children. When she joined BENEFIT-ISSD project in 2017, she received three barley seed varieties, took the necessary training on good agricultural practices and attended field visits (farmer to farmer experience exchange program organized by ISSD). The training included fertilizer application, row planting and land preparation. She conducted trails twice before she selected her preferred variety. She said “I liked the variety since it tolerates heavy rain and the fact that the yield I got from small amount of seed is much better than the local variety I used. Using the recommended amount of fertilizer also helped to increase the yield. I plan to save some for seed for next year and sell the remaining amount for a good price or exchange it for another high value crops like teff and white wheat for household consumption. And I plan to use the income to pay for my children’s school.”

The Integrated Seed Sector Development Programme in Ethiopia (ISSD Ethiopia) aims to improve female and male smallholder farmer access to and use of quality seed of new, improved, and/or farmer preferred varieties to sustainably increase agricultural productivity. https://issdethiopia.org/

The Bilateral Ethiopia-Netherlands Effort for Food, Income and Trade (BENEFIT) Partnership unites five programmes (ISSD, CASCPAE, ENTAG, SBN and REALISE). The BENEFIT Partnership works to help achieve increased quantity and quality of sustainable agricultural production, improved markets and trade and strengthened enabling institutional environment for the agricultural sector for rural people in Ethiopia. It is funded by the Embassy of the Kingdom of the Netherlands and is implemented with support from Wageningen University and Research (WUR). www.BENEFITethiopia.org