



ISSD
Ethiopia

BENEFIT-ISSD Ethiopia

ISSUE BRIEF:

Promoting small seed packs to improve smallholder farmers' access to quality seed

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Access to improved seed

Access to quality seeds of improved varieties is essential for increasing the productivity of smallholder farmers.

Access is measured here in timeliness, the proximity of distribution outlets, affordability, preferences of producers and consumers and adaptation to agro-climatic and farming systems of the production target.

To improve access, seed delivery needs to be in an appropriately sized package; just enough to cover the land allocated for a particular variety of a particular crop.

Improved seeds carry state of the art technology to farmers, enabling higher yields, increased tolerance to abiotic and biotic stresses, climate change adaptation, and improved nutrition.

The use of improved seed further triggers the use of complementary inputs (e.g. fertilizers, pesticides, irrigation, and farm machinery), the combined effect of which is increased production and productivity. The increased production contributes to food and nutrition security, and overall economic development.

Mismatch with smallholder realities and practices

In Ethiopia, certified seed is often packed for one-half hectare (1/2ha). However, the average landholding per household for any one grain crop (i.e. cereals, grain legumes and oilseeds) is less than this (CSA, 2019/2020) (**Table 1**). This is known to deter some farmers with smaller landholdings from attempting to purchase certified seeds of improved varieties to boost productivity.

While it is not uncommon to see farmers buying a 12.5 kg hybrid maize seed and sharing amounts with two or more farmers, this general mismatch limits a significant percentage of farmers from accessing quality seeds of improved varieties; mainly poorer farmers and/or female farmer households.

Table 2 shows that more than one-third of holders are having land area under temporary crops (CSA, 2015/2016). It is to be noted that this holding size is further parcelled for different varieties of the same crop and different crops.

Seed enterprises assume that a farmer purchases the one-half seed package of a particular variety of crop to cover her/his full holding for the crop.

However, there are instances in which the farmer cultivates small patches of different varieties of the crop on the already small holding, which further miniatures the size of holdings.

The price of large seed pack also gives the impression that the seed is costly for poor farmers, while the unit cost of small seed packs seems affordable for smallholder farmer.

In addition, to reduce risk, smallholder farmers often hesitate to buy large quantities of seed of a newly released improved variety, unless they are first enabled to experiment/test the seed on a small plot.

Evidently then, the delivery of seed in small packs is necessary to promote new varieties and thereby create demand for quality seed. In other words, the delivery of seed of a new variety in small packs is one key strategies to promote varietal replacement.

And on a very practical level, where access to transport is poor, farmers can carry smaller seed packs by themselves or easily using draught animals such as donkey.

Taken together, the aforementioned aspects clearly justify the need for delivering certified seeds in small seed packs, so as to reach farmers with small landholding and farmers in remote areas.

When certified seed of newly released varieties are made accessible in large pack, farmers are of sceptical about the adaptability of the variety to agro-climatic conditions of their area and indeed do not want to take the risk.

Table 1: Average landholding for major grain crops in Ethiopia
(Based on CSA, 2019/2020)

Cat.	Crop	Number of holders	Area (ha)	Average area/holder (ha)
Cereals	Teff	7,154,930	3,101,177	0.43
	Barley	3,915,584	950,742	0.24
	Wheat	4,879,932	1,789,372	0.37
	Maize	11,475,499	2,274,305	0.20
	Sorghum	5,042,097	1,828,182	0.36
	Finger millet	1,801,080	455,580	0.25
Pulses	Faba bean	4,070,037	466,697	0.11
	Field pea	1,711,570	223,657	0.13
	white haricot bean	972,039	94,789	0.10
	Red haricot bean	2,067,528	186,293	0.09
	Red chickpea	651,429	177,160	0.27
	White chickpea	127,604	31,677	0.25
	Lentil	546,521	87,443	0.16
	Soybean	209,316	54,543	0.26
Oilseeds	Neug	654,710	257,990	0.39
	Linseed	604,716	69,149	0.11
	Groundnut	457,768	87,925	0.19
	Sesame	543,236	375,119	0.69
	Rapeseed	396,405	23,045	0.06



A clear and very welcome benefit of smaller packs is the reduced weight that needs to be carried, often over long distances and on foot.

Table 2: Land Use Area (in hectare), Number of Households and Holders by Size of Holding, (after CSA (2015/16)

Item	Holding size (ha)							Total
	<0.10	0.1-0.50	0.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	>10.0	
Temporary crops	28,686	827,008	2,038,578	4,382,955	4,756,479	861,076	112,540	13,007,323
Number of households	1,046,122	4,813,651	3,951,623	4,061,177	2,206,487	204,028	13,036	16,296,124
Average area/holder	0.03	0.17	0.52	1.08	2.16	4.22	8.63	0.80
Percent of households	6.42	29.54	24.25	24.92	13.54	1.25	0.08	100.00

Stimulating uptake

Since, the 2017 cropping season, the ISSD Ethiopia Programme has been creating awareness about the significance of delivering seed in small packs. Together with CIMMYT/Ethiopia, the programme has also provided grants to support some seed companies to develop and deliver small seed packs to smallholder farmers.

These initiatives are part of the overall goal of ISSD Ethiopia Programme; to improve smallholder farmer access to and use of quality seed of new, improved, and/or farmer preferred varieties to sustainably increase agricultural productivity.

Promoting the sale of small seed packs, suitable for as little as 10-25% of a hectare, will increase seed purchase and utilization by poor smallholders, constituting an important opportunity for a group who make up over a third of Ethiopia's farmers. **Table 3** highlights the scale and detail of the initiative.

Farmers with small land holdings are preferring purchasing certified seed in small seed packs because the size covers their holdings without wastage, easy to transport, test the technology with minimum risk and it is affordable. In the image, you see seed producer cooperatives in West Hararghe Zone of Oromia, Ethiopia, selling seeds of chickpea, common bean, and teff of about 2000 small seed packs (1-2kg).

Likewise, the Amhara Seed Enterprise witnesses that the delivery of chemical treated maize seed in 6.25 kg (enough for $\frac{1}{4}$ th of ha) is safe for farmers, who otherwise indulge to divide between two or more farmers after purchasing the 12.5 kg package.

These promising shifts are seen across private and public seed enterprises, as well as farmers' cooperative unions and seed producer cooperatives in Ethiopia from 2017-2020.

This comes despite a recorded challenge which sees reluctance from some producers to package seed in small packs due to the increased cost. The challenge calls for new thinking to see that small landholder farmers are the direct customers of the seed.

Awareness creation and the provision of the aforementioned grants from ISSD Ethiopia and CIMMYT/Ethiopia have been instrumental for the success of piloting seed delivery in small packs in the country.

Company	Grant provider	Crop	Package size (kg)	Beneficiary Farmers
Amuari PLC (Oromia)	ISSD	Tef		106,664
		Chickpea		10,769
		Lentil		1,000
		Wheat		800
Ziandeta PLC (Oromia +SNNPR)	ISSD	Maize	6.25	700
		Wheat		300
Nono PLC (Oromia)		Maize	6.25	1,000
Gadissa Go-bena PLC (Oromia)	ISSD	Maize	2 & 5	1,500
		Tef	2 & 3	2,000
		Faba bean	5	120
		Neug	2 & 3	100
Chercher Oda Bultum Farmers' CoopUnion (Oromia)	ISSD	Maize	2	130
		Chickpea	2	112
		Haricot bean	2	175
		Tef	2	174
		Sesame	2	50
Burqa Gallitii Union Oromia	ISSD	Haricot bean	5	140
Arfan Kello union (Oromia)	ISSD	wheat	5 & 7	212
		Haricot bean	2 & 3	298
Amhara Seed Enterprise	ISSD + CIMMYT	Maize	6.25	3,000
Oromia Seed Enterprise	CIMMYT	Maize	6.25	2,000
		Wheat	37.5	150
Amhara Seed Enterprise	ISSD+ CIMMYT	Maize	6.25	42,936
Tuqa Katar SPC (Oromia)	ISSD	Malt barley	31.25	320
Lemu Dima SPC (Oromia)	ISSD	Malt barley	31.25	640
Fate Muruta Dicha (SNNPR)	ISSD	Wheat	25	720
Solomon Ayalew PSP (Tigray)	ISSD	Teff	5	300
		Pepper	0.25	200
		Tomato	0.25	150
Yohanness Girmay PSP (Tigray)	ISSD	Onion	1 & 0.5	1,000
Hadnet Raya Seed Union (Tigray)	ISSD	Wheat	30	8,813
Miebale seed union (Tigray)	ISSD	wheat	30	3470
		Teff	5	3,733
Desta farm centre (Tigray)	ISSD	Sesame	5	608
Ethiopia Seed Enterprise (ESE) Tigray branch	ESE	Maize	6.25	1,608
		Tef	5	1,753
		Wheat	30	7,373
		Sorghum	10	2,702
Total beneficiaries of small seed (i.e. for less than one-half ha)				207,720



Table 3: Seed producers (public, private, seed producer cooperatives and cooperative unions) promoted seed delivery in small seed packs with support of ISSD and CIMMYT/Ethiopia as well as based on own initiative (2017-2020)



Learning on small seed packs in other situations

The Africa Seed Access Index (TASAI) (2016) reported that smallholders need seeds in small packs because they have small landholding, which is further shared for several varieties of same crop in the same season. Many studies have shown that delivering seed in small seed packs has the following advantages:

- *It enables seed distributors to reach those farmers with small landholding.*
- *It helps to reach farmers in remote areas:* Transporting small seed pack is easy for by individual farmers in remote areas, including women farmers, where farmers have to carry seeds on their shoulders/back or load on animals such as donkeys.
- *It serves as one means of varietal and seed promotions:* Small packs of seed of newly released varieties are given out (often for free) along with the seed variety with which farmers are already familiar with in order to promote the new variety. The small seed packages allow farmers to experiment with new seed variety without making a major financial investment and involving much risk.
- *Small seed pack is affordable:* Although the price of seed in small pack may be higher relative to the big size (often estimated on quintal basis), it is cheaper for the farmer and hence it is affordable (Phiri et al., 2000). For instance, in Malawi, putting new varieties on offer in small (<100 g) packet sizes makes seed more affordable for farmers, lowering the cost of experimenting and allowing even the poor to try new variety (PABRA/KARI/CIAT/TLII, 2010; Sperling et al. 1996). Indeed, farmers are willing to try and evaluate a variety they may have seen or heard about, only in a small area of land using a small amount of seed. Therefore, small seed packs become handy in promoting the use of improved varieties among resource-constrained smallholder farmers (Audi et al., 2015).

The African Seed Access Index (TASAI) annually monitors the development and competitiveness of national seed sectors in Africa. To this effect, TASAI has developed a number of indicators under different themes.

One of the themes is service to smallholder farmers, with two sub-indicators, namely, availability of seed in small packages (measured as percentage of total amount of seed sold), and concentration of rural agro-dealer network (measured by km travelled by farmers to access seed).

TASAI (2016) argues further that small packs create an important incentive to promote the utilization of certified seed among smallholder farmers. Similarly, according to Seed System Security Assessment (SSSA, 2016) report of Ethiopia, seed sale in smaller pack sizes (1 kg, 2kg & 5 kg) may open up opportunities for poor farmers to access new varieties and quality seed.

One of the recommendations in the report of direct seed marketing in Ethiopia is to increase attempt of delivering seed in small package size (6.25 kg, & 3.125 kg) for hybrid maize (IFPRI, 2016). According to TASAI (2016), maize seed in South Africa is sold by kernel count – 60K, 80K or 180K and in Kenya on average 94.4% of maize, sorghum, beans and cow pea are sold in less than 5 kg packs.

While analysing seed systems resilience to stress, McGuire and Sperling (2013) reported that access and use of hybrid maize seed increases with smaller pack sizes in eastern African countries.

Similarly, MacRobert (2009) listed suitable seed packaging as one of the requirements for farmers to access improved seeds of adaptable crop varieties. The same author indicated that most seed companies in Africa pack maize seed into packs of 2-10 kg, while high unit prices combined with large pack sizes are causing problems of accessibility of maize seed in remote areas of developing countries.

The need for small seed packs is even higher for self- and open-pollinated varieties than for hybrid varieties, which are often used for varietal replacement. Rohrbach and Malusalila (1999) reported that smallholder farmers often buy high quality seed of open-pollinated varieties in small packs, mainly to obtain new variety material and to expand seed enterprises' client-base (McGuire and Sperling, 2016) and/or to experiment with different varieties of the same crop (TASAI, 2016).

For instance, experimental programs, involving six legumes in 13 African countries by the Tropical Legumes have facilitated delivery and sale of small seed pack sizes which farmers find more affordable (Sperling and Boettiger 2013). Some private seed sector companies are moving to this model, at scale, e.g., Dry lands in eastern Kenya packed 50 MT of beans in small packs in 2013 (Sperling et al. 2014) and AGRA also trains its private seed sector grantees to pack seed in smaller units (Sperling and Boettiger 2013).

A review by the same authors pointed out that small seed packs are also able to reach a different customer base. They noted that lotions, detergents, mobile phone scratch cards and other fast-moving consumer products are often found in small sizes, packaged according to needs of consumers. Tesfaw (2015) concluded that farmers' tendency of utilizing certified wheat seeds and the volume of certified seeds utilized was significantly influenced by many factors, including the size of land allocated for improved varieties, which implies that farmers with small land holdings are in need of small seed packs from the formal sources.

In Uganda, selling small seed packs through a network of stockists is common; smaller quantities can make seed more affordable; selling small seed packs to increase their outreach to farmers. One of the factors that makes African seed entrepreneurs successful is selling small seed packs to increase their outreach to farmers.

Researchers in Burkina Faso conducted research on seed packaging for small producers and the results show that it is the most important innovation for seed marketing strategies – mini packs. Sold from 2010 onwards at an affordable price, these 100 to 200 g packs enable farmers to test improved varieties on a small plot of their land before adopting them (Cirad-Agricultural Research for Development, 2016).

Although the small pack seed delivery is a recent introduction in Ethiopia, research on cases in Mali, Nigeria, Tanzania and Uganda show gaining popularity among seed companies as the most efficient and cost-effective means of reaching more farmers with affordable quantities of seed and a wider range of preferred varieties.

Smaller sized seed packages were clearly demanded but seed industry representatives stated that packaging seed into small units added cost, thus making this option untenable, except with large orders from NGOs (21_PSP folder). According to Rubyogo et al. (2019), another constraint to delivering seed in small pack is institutional seed marketing, where seed is often provided in large packs (50–100 kg) that are unaffordable for smallholder farmers— a practice that further strengthens the perception that farmers do not purchase seed even when it is made available.

The approach also provided an opportunity for private companies to expand the seed business to remote and poor hard-to-reach women farmers. The use of small packs showed that farmers not only want new varieties, but are also willing to pay for certified seed at affordable prices.

Conclusion

Small seed packs have not received the necessary attention and the required investment in Ethiopia. Our preliminary results of delivering seeds in small packs demonstrate increasing acceptance among farmers.

A challenge is that seed companies are reluctant to delivery seeds in small packs as it adds cost and time for packaging. It is noteworthy that delivering seed in small pack is one of services to farmers as customers and not for convenience of seed companies.

Indeed, observing the small patches of different crop fields in Ethiopia, one can be encouraged to delivery seed in small seed packs so as to reach more, poor and more remote smallholder farmers with quality seed, who are often women and having small land holdings.

The small pack approach allows farmers to get more access to new varieties, and to test them at low risk. A small pack also encourages farmers to test one or several varieties of same crop or different crops on offer.



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BENEFIT-ISSD Ethiopia

The Integrated Seed Sector Development project in Ethiopia (ISSD Ethiopia) is implemented under the umbrella of the Bilateral Ethiopian Netherlands Effort for Food, Income and Trade Partnership (BENEFIT Partnership).

Our goal is 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.



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