Photo: Authors

Women have been able to increase their incomes by selling beans on the market, as preferred bean varieties have become much more plentiful.

A new approach for facilitating farmers' access to bean seed

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Common beans (*Phaseolus vulgaris* L.) are an important crop for food, cash and agro-ecosystem improvement in many countries in eastern, central and southern Africa. The crop is mainly grown by small scale farmers with limited access to agricultural inputs. Since the introduction of beans in the sixteenth century, farmers have been able to maintain, adapt, increase and share a large genetic diversity to suit their needs. But because of different problems, such as root rots and drought, some of the farmers' bean genotypes are no longer adapted to their growing conditions. At the same time, a rising demand for beans in the cities and abroad means that some of the local varieties are no longer among the most preferred by the consumers in general. For both reasons, many farmers are eager to get access to and experiment with new bean varieties, complementing (and not necessarily replacing) their own local types.

With the support of the International Centre for Tropical Agriculture (CIAT), various National Bean Research Programmes and their partners are running a region-wide programme, supporting the existing seed systems through the provision of bean varieties coming from these research centres. The approach aims to increase and speed up farmer access to novel types, while at the same time strengthening the existing institutional and social networks which supply seed to farmers on a continuous basis.

Assessment of existing seed systems

These efforts started with an assessment of the existing seed systems. This meant looking at the factors which guide farmers' preferences, at the institutions which provide access to these varieties, and at how the flow of existing and new genotypes can be continued. The advantages and disadvantages of the different seed systems were looked at by farmers and extension agents, together with a "self assessment" which focused on the roles of the various actors involved, and on the possibilities for new roles. Apart from showing the differences between the "local" and the "commercial" systems (Table 1), these assessments facilitated the interaction among the various social actors, and paved the way for stronger relationships among them.

Even though both systems have advantages, the decentralised, local one, has unique aspects which make it particularly suited to small scale farmers' needs: it has a greater geographic reach, greater social reach, costs less, offers farmers a greater variety of options, and is accountable for its product – to the community. Hence, strategies which try to reach lots of farmers, at an affordable price, need to build on the strengths of the local system, rather than ignoring it. Needless to say, these assessments also showed that the introduction of new varieties through the local system also presents some challenges. Among these, an inadequate supply of initial ("basic" or "foundation") seed; an often restricted geographic coverage of local seed providers; and diffusion rates which are relatively slow when small quantities of new varieties enter the local seed channels.

A new approach

Starting in 2002, CIAT-PABRA (Pan African Bean Research Alliance) decided to try a new approach to address these challenges and help small scale farmers access new bean varieties more effectively. Carried out with partners in eastern, central and southern Africa, this multi-partner bean seed system approach followed these steps:

1. An assessment of farmers' needs through participatory interactions.
2. A search for suitable varieties to address these needs.
3. On-farm participatory variety assessments, involving farmer groups and the local extension service providers.
4. The selection of the appropriate varieties by farmers and other users.
5. An examination of the existing seed systems; exploring the possibilities for strengthening them and for fostering new linkages.
6. The dissemination of research-derived (or "improved") varieties through these newly integrated seed channels.
7. Strengthening of farmers' skills in pre-and post harvest bean management.
8. Strengthening of local actors' capacities to sustain the intervention and improve dissemination.
9. The promotion of a research for development alliance by focusing on the comparative advantages of each partner and supporting a co-learning process.

This new seed chain approach moved away from the standard practice which puts the full responsibility of new variety production and delivery on centralised national research programs, public extension systems and formal seed suppliers. In contrast, it moved towards a more decentralised approach, aiming to produce the preferred varieties in the areas where they were selected. This approach builds on the strong points of different stakeholders, considering that there are many who can contribute to an effective seed chain. For instance, farmers organisations and NGOs are often locally based and have good links with the community, while traders may have special skills for moving products widely throughout a region.

Results

Having assessed the different seed systems and the role of the different actors within them, scientists from the national research programmes had the opportunity to present new bean varieties in response to the existing farming constraints. Common actions were planned jointly for effective dissemination, depending on the expertise and strengths of every organisation. The majority decided to strengthen their interactions and initiate national or regional platforms where they meet regularly to assess the progress and look at any emerging issues.

The results of such partnerships can be clearly illustrated using a case study from Ethiopia. By building links among the different actors, the Ethiopian Bean Research Programme and its partners have expanded their outreach in many different ways. Before producing and distributing the seeds, potential varieties were evaluated by farmers in their own contexts, using their own selection criteria (for example, the total yield, drought tolerance, marketability, cooking time and taste). Suitable varieties, such as 'Awash Melka', 'Awash -1' (canning beans for export) 'DOR 544', 'AFR 222' and 'AFR 702' (regional and food types) were taken up as the basis of the whole initiative. Working together since 2004 mainly in the Central Rift Valley, in the east and southern highlands of Ethiopia, this collaborative group can already show a number of key results:

Scaled up production of basic seed

To respond to the growing demand for bean seeds, the production of basic seed became the focus of the Ethiopian Seed Enterprise and the Ethiopian Bean Research Programme. The annual production of basic seeds of the key improved varieties increased 50 times (from 3.3 tonnes to 149 tonnes) in three years. This occurred as both the Ethiopian Seed Enterprise and the bean programmes explicitly intensified efforts to meet increased requests: the Ethiopian Seed Enterprise expanded its output from 50 to 550 hectares (including contracting small scale farmers) and more bean research centres became engaged in basic seed production.

Dissemination of a greater number of varieties

Instead of focusing on only one or two varieties, the initiative facilitated the distribution of several varieties, which enabled farmers to choose the ones they prefer. Overall, within Ethiopia, the organisations involved went from working with six varieties in 2004 to working with 14 in 2006. In other words, they recognised the farmers' need for a range of varieties.

A faster diffusion of varieties

The initiative also facilitated faster access to new varieties.

Table 1: Advantages and disadvantages of the decentralised (local) and commercial seed systems

Important comparison criteria in seed systems	Local system	Commercial systems
Bean genetic diversity	Supplies multiple varieties	Focuses on a few varieties
Agro-ecological suitability	Seeks varieties adapted to micro-ecology e.g. intercropping	Seeks widely adapted varieties
Means of accessing seeds	Varieties move through seed gifts, seed exchanges such as grains/labour, cash	Varieties move only via cash and often at higher prices (for example, three times the local seed price)
Access to information about new varieties and techniques	Information exchanges between neighbours and farmers, at demonstrations, field days and in social networks	Very minimum promotion by seed stockists or agents
Types of clients	Potentially all farmers, based on their interests and needs (for variety, seed quality and quantity)	Commercial farmers and those geared to export, NGOs and government agencies involved in development work and relief
Seed quality assurance	Promoted through "social certification" (i.e. "if you cheat me, neighbours will know")	Promoted through "formal certification" (Governmental stamp of guarantee)
Building partners' (farmers, extension agents) capacity	Strengthening farmers' skills and organisations development e.g. encouraging experimentation/ promoting innovation in local seed systems	Benefiting only seed stockists and other formal suppliers
Amount of seed supplied	Over 95%	Less than 5% (and often 1-2%)

For instance, following regular approaches, 'Awash Melka', a variety which was officially released in 1999, had not really reached farmers even five years later. However, by 2006, using the new multi-partner seed system approach from 2004 onwards, this same variety represented about 15 percent of bean grains exported from Ethiopia. More recently released varieties, such as 'AR04GY' and 'Dimtu', have also reached large numbers of farmers in less than three years. The faster and wider spreading of varieties was a result of the several assessment meetings organised locally. These were followed by seed production efforts at the local level which built on the existing social and institutional assets, such as farmers' cooperative unions.

Scaled up production

By engaging other (non-formal) interested partners, the amount of bean seeds regularly supplied to farmers increased six times in about three years. The efforts of individual farmers and local organisations represented almost half of the seed supplied in 2006. As examples of scale, the Loma Adama Farmers Union, extension-service supported farmer seed producers and various NGOs (e.g. Catholic Relief Services, Self-Help Development International) multiplied 250, 200 and 300 tonnes respectively of acceptable quality bean seeds. This clearly shows the important role which local seed producers can play.

Increased number of diffusion partners

Before this initiative started, the most important seed partners of the Ethiopian Bean Research Programme were a few collaborating farmer research groups and the Ethiopian Seed Enterprise. However, with the new approach, many other partners became engaged, including the district Bureaus of Agriculture and Rural Development across the country, large farmers' co-operative unions, NGOs, bean exporters and traders, and large and middle scale seed producers. Building on these different partnerships lead to wider geographic coverage, facilitating the promotion of bean varieties with different objectives (for local consumption or for export).

Increased number of farmers being reached

The Ethiopian Bean Research Programme estimates that more than one million Ethiopian households countrywide gained access to new bean varieties between 2004 and 2007. This does not include the farmers who received seeds directly from other farmers (non-seed producers) through normal exchange networks. Engaging with multiple, diverse partners helped to reach remote and poor farmers, many of whom had not had access to new bean varieties before.

Some of the partners involved, such as the Melkassa Agricultural Research Center, Catholic Relief Services, Self-Help Development International, and the Amhara Agricultural Research Institute, have mentioned that the impacts achieved have mainly been due to two factors: targeting the resource poor, and not the model farmers in traditional bean growing areas like the Central Rift Valley; and the introduction of bean varieties to areas where bean production had stopped or where it had never fully developed, such as the Amhara region. In general terms, we can say that success has depended on various factors:

- An impact-oriented national bean research programme;
- The identification of farmers' preferred varieties through several decentralised assessments across the country, using farmers' groups as community entry points;
- The provision of seeds of preferred varieties through various channels, including farmer-to-farmer exchanges and local seed markets;
- The focus on local seed systems which are already providing seeds, information and capacity building through social networks;
- The enhancement of farmers' skills and capacities in pre- and post-harvest management, including wide awareness-raising through social networks and promotional campaigns;
- The creation of a multi-stakeholder platform to review and assess progress; or
- The active participation of traders in supporting the various seed supply procedures, and linking production to external markets.

Challenges and next steps

After four years of working together, many of the partners in this initiative are already thinking of working in similar ways with other crops such as teff (*Eragorstis tef*, fam. Gramineae) and sorghum. At the same time, development organisations like Catholic Relief Services have also taken the approach as model for increasing farmers' access to improved varieties in other countries. However, among the problems which concern critics, two are consistently raised. First, some worry about the quality of seed resulting from local production. Our work shows that worries are often based more in myth than reality: tests carried out in several countries (Ethiopia, Rwanda, Kenya and Uganda) have shown that farmers are able to produce acceptable quality bean seed. Second, as the approach is gaining popularity among diverse partners, the demand for the first seed (the "basic" or "foundation" seed) increases dramatically. This puts pressure on the formal seed sector to scale up the initial multiplication, a challenge which is already being taken up in Ethiopia.

The multi-partner seed chain approach is very versatile and gives farmers access to new varieties quickly and widely. One of its key attributes is that it builds on existing local skills and knowledge, support farmers' own organisations, and ensures that even the poorest can access new variety materials, if they desire. More specifically, this approach works to create partnerships and networks with actors at different levels of the seed production and supply chain. This strategic, inclusive linking, benefits those in the formal sector desiring broad impact as well as the many local organisations which work to increase and stabilise agricultural production, even in remote and stressed zones. ■

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