

Highlights

CIAT in Africa

No. 15
December 2004

The Highlights series summarises research results and policy implications from the work of CIAT and its partners in Africa

Enhancing farmers' access to seed of improved bean varieties in Rwanda

In Rwanda beans are an important household food, constituting 65% of the protein intake in the diet and accounting for 32% of calorie intake. Different bean varieties are grown twice a year in each of the three agro-ecological zones, each variety (or mix of varieties) being adapted to local agro-ecological (soil, pests & diseases, climatic) conditions. Beans are the second most popular crop grown in Rwanda after banana and are increasingly becoming a cash crop.

For instance in 1990, 16% of the bean produced was traded, while in 2000 the traded proportion was estimated at 74% of total bean production (148,000 metric tonnes), generating a cash income estimated at US\$30 million. Although beans in Rwanda are a significant household food and source of cash income, the majority of Rwandan farmers are not adequately responding to those demands due to low bean productivity and inaccessibility to quality seeds of bean varieties of their choice.

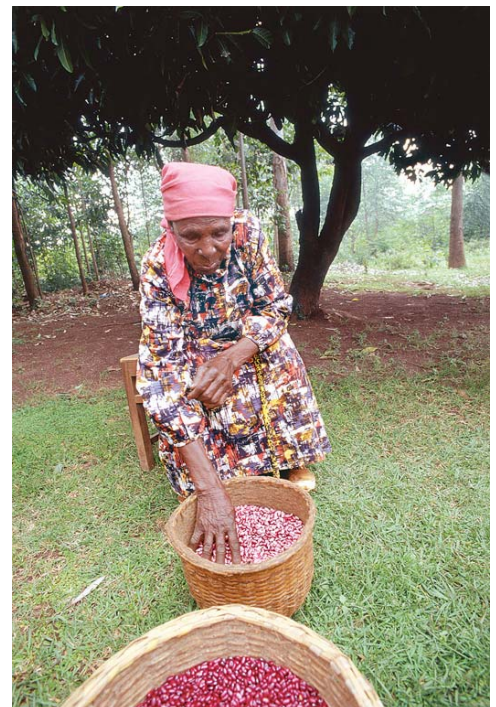
Existing bean seed systems

Farmers in Rwanda largely source beans from the informal systems, which prove the major supplier for both improved and local varieties. Seed is saved from the last harvest, acquired from local markets or through gift or exchange (with relatives or neighbours). Markets provide an opportunity for farmers to fill their inadequate stocks and to purchase new (including improved) bean varieties. These new varieties then spread horizontally to other farmers through grain markets or through exchange.

Seed supply of improved bean varieties to farmers has been largely unsatisfactory. There are no commercial seed suppliers in Rwanda but a limited amount of certified bean seed (equivalent to 1.1% in 2002 of total seed required) is supplied to farmers by the government-owned Service National des Semences (SNS). The bean seed provided in this way has a narrow range of genetic diversity and access to improved bean varieties is difficult. The bean research programme of the Institut des Sciences Agronomiques du Rwanda (ISAR) was involved in improved seed distribution to farmers on a seed credit (loan & recovery) basis, where supplied seed is planted and some of the seed harvested by farmers is recovered by ISAR. This approach (which ran until 2003) was designed to expose farmers to the benefits of new bean varieties but was limited in its scope and impact.

Constraints

Bean yield per unit area has been decreasing at an alarming rate (about 18% over the last 10 years). The major factors contributing to this situation are



Bean seed mixtures are the norm for production and consumption in Rwanda.

fragmentation of farm size per household, limited capacity of farmers to replenish soil fertility (through use of fertilisers or manure), and to control pests & diseases. ISAR has developed bean varieties that are more tolerant to degraded agro-ecosystems (these are RWK 10, SCAM80/15, RAB 48 bush bean and NG22-4, RWR 167 climbing beans).

The challenge is to make these improved varieties more accessible to farmers by improving existing farmer seed supply systems which are based on local bean seed producers and their linkage to local seed suppliers (traders or other farmers).

The various bean seed procurement mechanisms (farm-saved, local seed purchase and/or seed or labour exchange) used by farmers are operating reasonably well in accessing seeds to farmers. However, these local systems have inadequate linkages to reliable sources of improved bean varieties.

Improved bean varieties acquired by farmers since the 1980's have degenerated or are no longer adapted to the changing biophysical and market environment. Therefore better linkages between seed producers and research organisations are necessary to strengthen local seed systems so that more appropriate bean varieties (which suit particular areas and meet market demands) could be introduced. Timely provision of appropriate technical information is also important for successful bean production by farmers.

An alternative approach ...

With support from CIAT and the Eastern & Central Africa Bean Research Network (ECABREN), the ISAR Bean Research Programme and its partner organisations are now strengthening existing seed systems by supporting decentralised bean seed production and supply of improved varieties.

This is achieved largely through support of community-based seed producers, existing and new (selected by their neighbours). Those seed producers are supplied with seed of improved varieties for assessment and multiplication. They are encouraged to sell their own seeds or to establish linkages with local seed traders. This approach has proven to be successful in making quality seeds available to the majority of farmers in their communities and in the wider market.

In an attempt to achieve wider impact, strategic principles have been developed and applied by ISAR and its partner organisations (and incorporated into a Memorandum of Understanding). The agreed principles are as follows:

- Expose the farming community (and grain traders) to a wide range of promising bean germplasm - on research stations and on farms.
- Assist farmers in selecting bean crop varieties of their choice and to communicate effectively the reasons for their preferences to extension workers and researchers.
- Increase the quantity of seed of preferred bean varieties (by ISAR) which is distributed.
- Support community-based seed multiplication of improved bean varieties.
- Enhance capacities of seed producers through training, and provision of technical manuals.
- Improve local seed availability by fostering linkages among seed producers, and between seed producers and local seed markets/ISAR for acquiring new preferred bean varieties.
- Continue to involve farmers through participatory on-farm plant breeding & variety selection work.
- Encourage local seed producers to demonstrate and promote their products.
- Publicise the characteristics of new varieties that meet farmers' acceptance (through field days, brochures, radio and drama).
- Encourage sharing of experiences and skills among stakeholders (farmers, seed producers & traders, extension workers, policy makers, and researchers).

The formalisation of this partnership is likely to enhance farmers, bean traders and partner organisations' participation in the research and development of bean varieties for improved dissemination. This should accelerate the update of new technologies, broaden their reach (social and geographical) and enhance their sustainability. Ultimately, the wider adoption of improved bean varieties by farmers will be translated into increased bean productivity and more income for farmers, more business for seed traders and better quality beans for consumers. This is only good news for Rwandan farmers.



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We gratefully acknowledge financial support from USAID for this work through the Agriculture Technical Development & Transfer Programme. The views expressed are not necessarily those of USAID.

