



GATSBY

# BOOSTING UGANDAN BEAN PRODUCTION

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Diseases, pests and low soil fertility lowered Ugandan bean yields for years. Improved varieties were developed, but often did not reach farmers due to under-funded extension services. Of those that did, many were rejected by farmers due to incompatibility with local farming systems plus distinct local preferences over taste and cooking qualities.

- From 1997 to 2006 Gatsby supported efforts to strengthen the transfer of improved varieties to farmers
- Gatsby funded the National Agricultural Research Organisation (NARO) to use techniques such as participatory varietal selection. In five years the project distributed 10,000 kg of improved seed to more than 2,000 farmers, with 60-80% of farmers in the target districts growing improved varieties. Yields increased fourfold, from 500 to 2,000 kg/ha
- In the project's second phase, 12 farmers' associations were established across the districts and produced 60,000 kg of improved seed



## IMPORTANCE OF BEANS

In highland areas and throughout Eastern and Central Africa, beans are an important part of the economy and are eaten twice a day, every day, by many rural people. A highly adaptable crop, with a growth cycle of only 70-90 days, beans can be intercropped with many starchy crops, including banana or cassava, in addition to cereals. Consumed with these foods, beans provide the main source of dietary protein for people who do not have access to adequate supplies of meat or fish.

Beans provide 45% of total protein and 25% of total calorie intake in Uganda, and with their short growing cycle and adaptability to a wide range of growing conditions they are a vital source of income for many families, contributing up to 9% of household income in some areas.

However, diseases, pests and low soil fertility had reduced yields for some time. High-yielding varieties developed by breeders often failed to reach farming communities because Uganda extension services were under-funded and under-resourced, while the crop often proves unprofitable for private seed companies.

Improved varieties were disseminated, but many were rejected by farmers due to their incompatibility with local farming systems plus distinct local preferences over taste and cooking qualities.

For example, the K131 variety released in 1994 was better yielding and had higher disease-resistance, but was a Carioca-type bean - popular in Brazil but unfamiliar to East African consumers - and took a long time to cook - a severe constraint in the many areas of Uganda where fuelwood is scarce.

## BOOSTING PRODUCTION

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In Uganda, NARO invested substantial amounts of resources in bean research and development geared towards boosting production and productivity through the use of improved technologies. In conjunction with the International Centre for Tropical Agriculture (CIAT), the National Bean Research and Development Programme (NBRDP) developed several improved bean production technologies to meet end-users' needs.

Gatsby supported the transfer of these improved technologies by helping NARO include farmers in varietal selection, accelerate the multiplication and distribution of improved seed through a sustainable community-based bean seed production and supply system, and train farmers and extension workers in improved crop management techniques.

## VARIETAL SELECTION

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Promising new Andean varieties developed by CIAT in Colombia were distributed to farmers in different locations. Farmers helped the researchers evaluate performance and used their local knowledge to gauge whether the varieties were likely to be accepted within the area.

66 sites were set up across four project districts to demonstrate 14 varieties of both bush and climbing bean genotypes. The demonstrations were set up by seed producers, bean coordinators in the districts and technicians from NBRDP to create awareness among the communities of the different improved bean varieties available, and the recommended agronomic practices. Farmers who hosted demonstration plots were responsible for management of all the operations.

## SEED DISSEMINATION

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Seed producers faced major constraints, including unreliable weather conditions (especially persistent drought), unreliable markets and fluctuating demand and prices.

To address these constraints, farmer groups were tasked with raising awareness about improved bean production technologies within their communities and linked with different partners and institutions within their areas to create

better marketing opportunities. During training on farming practices, an emphasis was placed on early and timely planting to address the problem of unreliable weather.

Successful varieties were disseminated more widely using a seed-loan system, whereby farmers borrowed a quantity of seed which they returned at the end of the season for further distribution. They were given training on the most effective ways to manage the crop, including post-harvest, and how to market and sell the seed to other farmers in the community.

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**“I bought half a kilo from a neighbour, and these beans have changed my life” - Sam Opio started planting improved beans in 1998. He replanted his entire first harvest of 7 kg, producing 600 kg in the second season.**

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In the second stage of the project, NARO helped farmers combine into associations which packaged, marketed and sold seed collectively, thus increasing returns to individual members. NARO then supported the associations in efforts to target profitable export markets, particularly in South Africa.

## IMPACT

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The project improved access to high-yielding bean varieties resulting in enhanced production and improved food security and nutrition. Seed producers' capacity and organisational skills were enhanced and farmers realised additional social benefits. There was also a transformation in perception and attitude, with farmers beginning to equate seed production, if carefully managed, with a profitable income-generating activity.

Bean yields in the four target districts increased fourfold from 500 kg/ha to 2,000 kg/ha and 60-80% of farmers in the districts began growing improved varieties.

From 1997 to 2002 the project distributed over 10,000 kg of improved seed to more than 2,000 farmers. In the second phase, from 2002 to 2006, 12 farmer associations



comprising 280 members were established across the districts and in total produced 60,000 kg of improved seed.

As a consequence, farmers' associations became better managers of their own resources, increasing their knowledge of both seed production and post-harvest handling, as well as creating awareness about improved varieties within their communities.

## LESSONS

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Including farmers in varietal selection brought in a vital source of local knowledge and contributed to a high uptake of improved varieties.

Farmer to farmer dissemination also proved particularly successful, multiplying the initial intervention many times over. Without the training offered by NARO on packaging, marketing and selling seed, this would not have been possible.

While improved varieties help farmers cope with erratic weather conditions, it is important that farmers diversify to hedge against such conditions. Helping them access improved planting materials for other crops may be extremely beneficial.

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Building on Gatsby's previous work with beans, the Kilimo Trust (an independent organisation founded by Gatsby and dedicated to agricultural development across East Africa) is currently undertaking detailed scoping and analysis of the regional bean sector across the East African Community.