

## Bean Impact Studies - the Case of Malawi

In the light of the challenges facing bean production by smallholder farmers, and the importance of beans as a food and cash crop in Eastern and Southern Africa, PABRA has commissioned a number of impact studies. In Malawi in 2005, the Department of Agricultural Research Services (DARS), PABRA and CIAT carried out a study to assess the impact of improved bean varieties and other technologies released to farmers since 1985.

In the eleven districts (out of twenty-eight) in the three regions (north, central and southern) that were selected for this study, a structured questionnaire was used to collect data from a total of 529 farmers in selected households. The survey explored socio-economic characteristics, the performance of local and improved bean varieties in different bean production systems, farmers' perceptions of social and economic impact, and bean production and food consumption patterns. Estimates of output, consumption, income and food security parameters were disaggregated by gender, and wealth category, and trends across target groups were analysed.

The observed adoption rate of new bean varieties in Malawi is one of the highest among PABRA member countries: by 2005, 93% of farmers in the sample grew at least one of the improved bean varieties released between 1985 and 2005, with close to 100% adoption in the central region. Improved bean varieties accounted for 67 % of total beans planted over the previous five years.

Regional differences in bean acreage, output, income, and consumption were significant. The quantity planted per household and average output in the northern region was more than twice that of other areas (because of higher average farm size and increased levels of bean commercialisation). There was an increase in both household income and



*Both male and female heads of households played major roles in decisions to adopt new bean varieties and there were no inter-regional differences.*

consumption across all regions, with the southern and central regions realising more than a two-fold increase in bean consumption over a five-year period. The proportion of farmers who adopted improved crop management practices was high, at 64%. Farmers obtained the seeds from markets and shops, other farmers, and NGOs.

Beans play a major role in the incomes of most subsistence farmers, constituting one quarter of farmers' total household income in 2005. Social impacts of the new technologies were largest with respect to income (compared to consumption): annual bean income increased more than ten-fold for all wealth categories, with the poor earning the highest income from beans. In 2005, 68% of sample households sold beans, and on average, each farmer earned from 9,000 to 21,000 Malawi kwacha (82 to 191 US dollars) from beans.

Apart from the observed increases in food availability and incomes, (a result of increased output), farmers perceived the impacts of improved varieties and management practices to be mainly a result of the following: high yield, high nutritional value, fast cooking time, high market demand, and early maturity. For long term sustainability of seed stocks, farmers depended mainly on purchasing seed from other farmers and markets.

News about bean research and development in countries in sub-Saharan Africa

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### In this issue:

Bean Impact Studies - the Case of Malawi  
page 1

PABRA's Approach to Nutrition & Health  
page 2

West and Central Africa Training  
page 2

ECABREN & SABRN SC  
page 2

New Websites  
page 3

Seed Systems Studies  
page 3

Training Events and Workshops  
page 4

News  
page 4

Calendar  
page 4

## PABRA's Approach to Nutrition and Health

PABRA's strategy for nutrition and health is focused on: using micronutrient-rich bean varieties to promote dietary diversification; continuous nutrition education; targeting specific nutritional deficiencies; and strengthening partnerships with the health sector through capacity building. PABRA and its health partners have

worked with HIV/AIDS-affected communities on bean production for improving their livelihoods. Considering the link between malnutrition and HIV/AIDS, PABRA members now wish to explore the potential role of micronutrient-rich bean varieties in alleviating micronutrient deficiency and protein energy malnutrition-related problems.

In Malawi, western Kenya and Madagascar, scientists and NGO partners have examined the role of micronutrient-rich bean varieties in alleviating severe malnutrition in women and children using bean-based recipes in twelve health programmes. Preliminary data indicates that this approach is working to improve the health of children in these communities. The health of children whose mothers were provided with continuous nutrition education on utilisation of diversified bean-based food baskets improved. These children had average weight gains ranging from 2 and 7 kg, while those provided with nutrition education only, had a smaller improvement of between 2 to 3 kg, measured on a weight-for-age scale.

In western Kenya, eighteen CBOs and PLWHA associations have been targeted through a community-based nutrition programme that encourages cultivation of beans with other crops. A nutrition taskforce with members from the Ministry of Health, AMREF, Maseno University and Lagrotech Seed Company is leading this initiative. Improved seed availability and access has been reported in the region, with more than twenty associations now multiplying their own seed. The Ministry of Health plans to facilitate nutrition education and participatory development of bean-based recipes.

A recently concluded assessment of dietary characteristics and practices in central



*Vegetable cooking demonstration events held in Ruhengeri in the North province of Rwanda have been popular with women farmers in the area.*

Uganda, western Kenya and Madagascar indicate that most households rely on seasonally available plant sources of micronutrients, while only 3% of diets consist of proteins and micronutrients. Diets are not nutritionally balanced and are mainly characterised by staples (maize, bananas), with a minimum levels of animal protein, as well as fruits and vegetables. In recognition of this dietary deficiency, PABRA is working with the Community Enterprise Development Organisation (CEDO) to reach over 300,000 farmers with micronutrient (iron and zinc) rich bean varieties in central Uganda. Current intervention is being broadened for wider impact through strengthening partnerships with the health sector.

## West and Central Africa Training

A training workshop for NARS staff from new collaborators and partners in West and Central Africa was held in Cameroon, from 19 to 23 November 2007. It was jointly organised by PABRA-CIAT and the Institut de Recherche Agronomique pour le Développement (IRAD) of Cameroon and was attended by twenty-one scientists from eight West and Central African countries: Burkina Faso, Cameroon, Central African Republic, Congo Brazzaville, Guinea Conakry, Nigeria, Senegal, and Togo.

The following topics were covered:

- germplasm collection & characterisation
- germplasm evaluation for resistance to biotic and abiotic stresses
- bean production systems
- bean pest and disease identification and control
- integrated soil fertility management
- participatory variety selection and technology development

## ECABREN & SABRN Steering Committee Meeting Report

ECABREN and SABRN held a joint steering committee meeting in Mbeya, Tanzania in October 2007. Thirty-six participants attended the meeting. The objectives were to: receive a briefing on the road map towards developing a new PABRA framework and on ongoing impact studies; explore potential ideas for the new PABRA framework; and to review research progress and develop network plans. Participants agreed on a list of stakeholders who should attend the January 2008 PABRA stakeholders meeting. Based on recommendations in the JEEP report, suggestions were made for improving the surveys carried out in a selected number of countries in ECABREN and SABRN.

The planning of activities for the period from October 2007 to March 2008 was completed. A strategic planning committee was formed to determine the new vision of ECABREN and identify future research and development areas. The new vision and research priorities of the bean-cowpea collaborative research support programme (CRSP) were also discussed. Five countries; Kenya, Malawi, Mozambique, Uganda, and Zambia were considered for inclusion in CRSP project implementation.

- promotion & dissemination approaches aiming at wider uptake and utilisation of improved bean varieties and non-seed technologies
- participatory and integrated monitoring and evaluation
- introduction of baseline surveys and their uses

Workshop participants agreed on the following action plan and areas of intervention:

- to share the knowledge/outcome of the training with their colleagues and NARS management teams
- to carry out baseline surveys (on area under dry beans, productions systems, markets and bean consumption trends) involving participatory diagnosis, collection and characterisation of existing germplasm.
- to continue the evaluation of existing and new germplasm within their respective NARS



Participants attending field training course which was conducted at one of the farmer field sites in Cameroon as part of the West and Central Africa bean research group training workshop held in November 2007.

## New Websites

PABRA, ECABREN and SABRN now have their own new look independent websites! All three websites are linked to each other and to the CIAT website and are easily accessible to all users, including to those on 56kb dial-up connections. They hold a wealth of information on all aspects of PABRA, ECABREN and SABRN.

We would be very interested to know your comments on the new websites. Please email us with your views. Contact the website manager: [a.downes@cgiar.org](mailto:a.downes@cgiar.org)

[www.pabra.org](http://www.pabra.org)

[www.ecabren.org](http://www.ecabren.org)

[www.sabrn.org](http://www.sabrn.org)



The PABRA website and the CIAT, ECABREN and SABRN websites are interlinked. The PABRA, ECABREN and SABRN websites will soon be available in French and Portuguese.

## Seed System Studies

In 2003 PABRA initiated a “wider impact” approach to seed systems which has facilitated both decentralised (informal and formal) and centralised (commercial) seed actors to produce and supply bean seeds to farmers. Before it was initiated, seed dissemination of improved bean varieties was limited to farmer research groups or through parastatals. A study which assessed the effectiveness of existing seed systems was carried out in Ethiopia, South Tanzania and Uganda. Below are some of the highlights:

- Demand for improved bean varieties in all three countries is high. The time lag between variety release and their wider use was reduced from 5 years to 1 year.
- Each NARS has developed the capacity to produce its own foundation seed to supply to partners.
- The dissemination of improved varieties was more efficient where NARS was engaged in partnership with local service providers and there was good social and human capital in farmers groups.
- Farmers reported that the number of on-farm demonstrations was relatively low and the access to information on improved varieties is still inadequate.
- According to seed company owners, the production and supply of beans seeds is not profitable, unless there is an opportunistic market such as organised large-scale seed distribution by NGOs/GOs.
- The number of people receiving improved bean varieties was higher than originally thought due to farmer-to-farmer seed supply. The multiplier effect of farmer training is relatively high.

Improved bean varieties of the types preferred by farmers are not easily available through commercial channels. Farm-based seed production has proved to be an efficient way of reaching many farmers. This system responds better to local bean variety needs and strengthens social and human capital. However there is a need to continue supporting it through continuous exposure to new varieties and decentralised variety demonstrations.

## Training Events and Workshops

### IPHIS Software Training

Fifteen scientists from DR Congo, Kenya, Malawi, Tanzania, Zambia and Zimbabwe were trained in the use of a specialist bean breeding database software - the international Phaseolus information system (IPHIS) in a workshop held in Nairobi, Kenya in February 2007. Participants continuing their training with a course on symbiotic nitrogen fixation research and inoculum production. Skills learned during the course are currently being applied in nitrogen fixation trials in DR Congo, Kenya and Uganda. The workshops were sponsored by the Catholic University of Leuven, Belgium through the Nutribean project and PABRA-CIAT.

### Proposal Writing & Data Analysis Skills



Development of good quality research proposals is becoming an indispensable skill for many researchers. A course to enhance proposal writing skills and data analysis (using Genstat software) was held at Egerton University, Njoro, Kenya in November 2007 and was attended by nineteen scientists (including three women) from a range of countries in ECABREN and SABRN.

### CIAT support to Ph.D. students

Training and support

Three Ph.D. candidates (Teshale Asfaw, Asrat Asfaw and Louis Butare) from Ethiopia and Rwanda are conducting part of their research at CIAT Headquarters in Cali, Colombia. They are all working on different aspects of drought resistance in common bean. Virginia Gathoni Gichuru, Ph.D. candidate with Makerere University also worked at CIAT headquarters in Cali, Colombia as a visiting researcher for three months from September 2007.

### Scholarships

Financial support for four postgraduate degrees (two M.Sc. and two Ph.D.) in

different aspects of bean breeding for drought-prone areas has recently been offered through the Gates project. The selection process is close to completion.

## News

### Fundraising Initiatives

Gates support - Tropical Legumes 1 (TL-1) and 2 (TL-2)

In 2007 two significant projects focused on drought were approved for financing and the bean component of the projects will operate in Ethiopia, Kenya, Malawi, Tanzania, and Zimbabwe. TL-1 focuses on basic research in drought resistance breeding. TL-2 is on practical breeding and has eight objectives. Six objectives deal with the improvement of specific crops: groundnuts, cowpeas, common beans, chickpeas, pigeon peas, and soybeans. The other two objectives cut across the different crops: diagnostics, targeting, and impact; and seed systems. In the case of bean, these will focus on Ethiopia and Kenya, where drought resistant materials are ready to move into seed systems and early adoption. Targeting will use geographical information systems (GIS) across the region to focus our research and delivery on the most appropriate areas and the neediest farmers.

### Improving Effectiveness of Seed Aid in Ethiopia

On 10 to 11 December 2007, the first national level seed aid for seed security workshop for Ethiopia was held in its capital, Addis Ababa. It brought together stakeholders to recommend guidelines and policies to make seed aid more effective, and to re-focus on development in stress zones. It worked off recommendations produced from a two-year-long critical analysis of seed aid in Ethiopia. The report is available at: [www.ciat.cgiar.org/africa/pdf/long\\_term\\_seed\\_aid\\_Eth07\\_full.pdf](http://www.ciat.cgiar.org/africa/pdf/long_term_seed_aid_Eth07_full.pdf) For more information contact Louise Sperling, Email: [l.sperling@cgiar.org](mailto:l.sperling@cgiar.org)

### New Publications

PABRA poster

A poster in English which details the work of the Pan-Africa Bean Research Alliance (PABRA) is now available for download online: [www.pabra.org](http://www.pabra.org)

## Calendar for 2008

### Meetings/Workshops

PABRA Steering Committee Meeting. 17-19 March 2008. Lusaka, Zambia

**PABRA OUTLOOK** is a regional newsletter which seeks to inform readers of the progress of the Pan-Africa Bean Research Alliance (PABRA). To obtain more information about PABRA and its publications please contact:

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