

PABRA

Annual Report
2006–2007



Pan-Africa Bean Research Alliance

B E T T E R B E A N S F O R A F R I C A



PABRA

Pan-Africa Bean Research Alliance Annual Report 2006–2007



225791

Copyright © PABRA 2008
Kampala, Uganda
Press run: 1000
Printed in India
March 2008
ISSN 1997-8677

Report coordination	Anne Downes
Text	Robin Buruchara
Design and layout	Jeff Walker
Printing	Pragati Art Printers Hyderabad, India



INTRODUCTION	iv
RESEARCH HIGHLIGHTS:	
RESEARCH AND TECHNOLOGY	2
<i>Increased Utilisation of Bean-Based Technologies</i>	2
Production of five bean varieties rich in micronutrients and ten bean varieties tolerant to at least two biotic/abiotic stresses	2
Options for managing soils, and pests and diseases	6
Reaching end-users with bean technologies	7
COMMUNITY DEVELOPMENT	9
<i>Enhanced Capacity of Communities to Plan and Manage Appropriate Local Initiatives</i>	9
Increased knowledge and skills of farmers to manage better their resources and communities and to develop agroenterprises	9
Increasing the skills of men and women to achieve gender equity at the community and household levels	13
CAPACITY BUILDING	14
<i>Strengthened Institutional and Organisational Capacity of PABRA, Sub-Regional Organisations and Partners</i>	14
Increased knowledge and skills of scientists and NARS, NGOs, and rural service providers staff to address farmers' needs	14
Strengthened intra- and inter-network collaboration within and outside of networks	15
AN OVERVIEW OF PABRA	21
Summary	21
Mission	22
Donors	22
Participants at PABRA Meeting (Open Session) DR Congo	23
PABRA Staff	26
ECABREN Staff	27
SABRN Staff	28
Publications	28
Contact Details	28
PABRA Member Locations	29
Appendix 1: PABRA R&D Framework, 2003–2008	30
LIST OF ACRONYMS	31

Introduction

Established in 1996, the Pan-Africa Bean Research Alliance (PABRA) is a consortium of African regional bean networks (the Eastern and Central Africa Bean Research Network, ECABREN, and the Southern Africa Bean Research Network, SABRN) consisting of National African Agricultural Research Systems (NARS) in a total of eighteen countries in sub-Saharan Africa, an international research organisation (CIAT) and a number of donor organisations.

PABRA is dedicated to enhancing the food security, income and health of smallholder farmers in Africa through research on beans. The progress outlined in this Annual Report shows how PABRA scientists, in partnership with farmers, non governmental organisations (NGOs), traders, and other private sector partners are achieving this objective. PABRA has a unique five-year framework or work plan which is divided into goals, outcomes and activities, upon which this report is based (see Appendix 1: PABRA R&D Framework, 2003–2008, on page 30).

This report, covering the period 2006 to 2007, summarises major activities and achievements of PABRA in terms of outcomes and outputs, and complements the activity-based report for the same period.

The full PABRA activity-based report for 2006–2007 can be viewed on our website at this address:
www.pabra.org/pdfs/AnnualReport06-07full.pdf





Research Highlights

**RESEARCH AND
TECHNOLOGY**

**COMMUNITY
DEVELOPMENT**

CAPACITY BUILDING

RESEARCH HIGHLIGHTS

Research and Technology



INCREASED UTILISATION OF BEAN-BASED TECHNOLOGIES

Production of five bean varieties rich in micronutrients and ten bean varieties tolerant to at least two biotic/abiotic stresses

Developing biofortified bean varieties

Development and utilisation of biofortified bean varieties is regarded as an effective and sustainable strategy for reducing micronutrient deficiencies in Africa. Key steps in the development of micronutrient-rich beans varieties are the collection and evaluation of landraces, germplasm accessions, advanced lines, and released varieties for micronutrient levels, and participatory evaluation of promising materials for their adaptability, and agronomic traits. Genotypes with a relatively high concentration of micronutrients but low number of beneficial agronomic traits, or with susceptibility to biotic stresses such as disease, are usually entered into hybridisation programmes. These breeding programmes produce new varieties that combine mineral density with resistance to biotic and abiotic stress factors, marketable grain types and high yield potential.

In the 2006 to 2007 period, additional germplasm was collected in DR Congo, Kenya, and Tanzania, and seed of four hundred accessions was produced in Kenya to facilitate mineral analyses. Analysis of three hundred lines showed variation in iron concentrations, ranging from 40 to 120 ppm, with sixty six lines with concentrations exceeding 90 ppm. Two landraces collected in central and southern Tanzania showed the highest iron levels, at 114 ppm and 120 ppm, respectively. Multi-location regional evaluation for agronomic traits and farmer acceptability of the high iron and zinc 'fast track' lines continued in ECABREN and SABRN countries. In SABRN the sets included the NUA lines that were developed for high iron and zinc content at CIAT-HQ.

Different countries are at different stages of evaluation – ranging from preliminary yield trials to participatory variety testing with

farmers. The best yielding lines out of fifteen climbers evaluated in Burundi were VCB 81013, VCB 81012, Kiangara, G59/1-2 and AND 10. Thirteen lines were selected in Uganda from the initial thirty-eight "fast track" lines. Four lines (PVA 8, Nain de Kyondo, Gofta and Kirundo) gave higher yields than the commercial variety K132. Evaluation of the black-seeded MLB-49-89A preferred by farmers in northern Uganda continued. In Rwanda, participatory evaluation and seed production with communities – under a collaborative programme between ISAR bean programme and health programmes – resulted in six selected 'fast track' lines (Maha-ragi Soja, Ngwinurare, AND 620, VNB 81010, MLB 40-89A and MLB 49-89A).



Major biotic constraints for beans in Africa include fungal diseases such as angular leaf spot, anthracnose and root rots. Low soil fertility and drought are the most common abiotic constraints. The PABRA programmes aims to develop and release bean varieties with resistance to at least two biotic and abiotic stress factors.

Participatory evaluation of fast track lines was conducted at several sites in Kenya. Sixteen lines have progressed to national variety trial stage in Ethiopia, with a further six promising lines (GLP -2, PVA 8, Kirundo, K-132, AFR 708 and Simama) under consideration for advancement to national trial stage. Farmers in three districts of Tanzania (Mbalari, Mbozi and Mufindi) have already adopted one of the medium iron and zinc line (Roba-1), a variety which is due for release in 2008. Similarly in Malawi, farmers (in Dedza) selected three NUA lines (NUA45, NUA56 and NUA59), which are also expected to be released in 2008.

Studies at the University of Nairobi to assess micronutrient concentrations in bean showed that bean leaves had higher iron concentrations than bean seed. Leaf iron concentration varied from 397 ppm in Awash 1 to 2498 ppm in Ngwinurare, with a mean of 1118 ppm, while seed iron concentration varied from 49.5 ppm (MCM 2001) to 107.5 ppm (M'Sole). However, the levels of zinc in bean leaves were comparable to that of seeds. Leaf zinc concentration varied from 20 ppm (Sugar 73) to 67 ppm (Ngwinurare). The results imply that bean leaves, widely consumed as a vegetable in the region, can also make a significant contribution to dietary micronutrient content.

Developing stress resistant bean varieties

A major aim of the current phase (from 2003 to 2008) of the PABRA programme is to develop and release ten new (bush and climbing) bean varieties with resistance to at least two biotic and abiotic stress factors, and which respond to market demands (domestic, regional and international), and have acceptable production, (adapted and higher yield potential) and consumer (cooking and taste) qualities. Fungal diseases such as angular leaf spot, anthracnose and root rots; viral diseases such as bean common mosaic

and necrotic virus (BCMNV); and bacterial diseases, particularly common bacterial blight and halo blight, represent the major biotic constraints in Africa. The most common abiotic stresses are low soil fertility and drought. To realise these objectives, new bean populations were generated, and selection of new and existing segregating populations and lines for priority traits continues in most PABRA countries.

In SABRN and ECABREN countries during the 2006 to 2007 period, evaluations and selections continued among a large and varied number of segregating populations, accessions, nurseries, and promising lines for multiple constraints under diverse conditions. Evaluations for biotic and abiotic stresses were carried out at 'hot spots' of known constraints. Where necessary, validations for resistance to some diseases were carried out with artificial inoculations at Kawanda (Uganda) and/or Kabete (Kenya). Of significance was the identification and validation of new SCAR markers which were associated with resistance to *Pythium* root rots and angular leaf spot in key resistance sources. Systematic use of molecular markers in selection for specific resistance genes against BCMNV, anthracnose, angular leaf spot and *Pythium* root rots was initiated at the biotechnology laboratory at Kawanda. This is expected to greatly enhance effectiveness, efficiency and speed of selection for more than one trait.

Breeding programmes continued to institutionalise participatory variety selection (PVS) practices in their activities. Farmers and other end-users were involved in the selection of improved varieties in different countries. Acos Ethiopia, a bean processing and export company that recently began operating in Ethiopia is extending its collaboration within PABRA. Acos identified some bean lines from Ethiopia, Madagascar and Uganda that meet their canning requirements. Other bean processors and exporters in Ethiopia, Kenya, Madagascar and Tanzania collaborated in national bean programme activities. Several lines from regional nurseries (e.g. early maturity, climbing bean, root rots, biofortified, low soil fertility, drought etc) were exchanged to facilitate participatory variety selection (PVS) and other research activities during the year. In the SADC region, many national programmes do not have bean breeding programmes of their own. SABRN coordinates regional germplasm nurseries and trials, which contain improved lines and released cultivars generated by various bean breeding programmes in the region, including CIAT and the private sector. This allows sharing of germplasm within the network so that each national programme or the private sector can benefit from the research that is carried out by others.

Twenty five varieties in total were released in seven countries. Twelve new varieties were released in four SABRN countries: DR Congo (three varieties resistant to ALS, BSM, and BCMNV and tolerant to low soil fertility); Mozambique (two varieties, tolerant to low soil fertility, resistant to rust and ALS); Swaziland (five varieties, tolerant to rust and low soil fertility); and South Africa (two varieties, resistant to rust). Thirteen varieties have been released from the ECABREN region and include: four in Kenya (MAC13, MAC 34 and MAC 64 and AFR 708 for low soil fertility), two in Uganda, (RWR 2075-NABE 14, RWR 1946-NABE 13) which are resistant to root rots and tolerant to low soil fertility; and seven in Ethiopia (STTT-165-92-Chore, NZBR-2-5, RAB 484-Dinkesh, XAN 310-Melka Dima, G843-Haramaya, STTT 165-95-Hirna and STTT

Research Achievements from 2003 to 2005: Research and Technology

Improvement through breeding

In collaboration with the Harvest Plus Challenge Programme, several crosses for large-seeded bush and climbing beans have been performed, to combine higher mineral content with other useful traits such as resistant to diseases (such as ALS and BCMNV). One hundred new crosses involving three thousand families which combine drought tolerance and high mineral content in small-seeded beans were created and evaluated. Crosses to combine drought tolerance, iron content, and ALS disease resistance in small-seeded bush beans were made at CIAT HQ. Similar crosses are being made in DR Congo and in Kenya.

Varieties tolerant to two or more biotic and abiotic stresses

Since 2003, twenty four varieties belonging to some of the major market classes and some combining resistance to biotic (mainly diseases) and abiotic stresses (low soil fertility) have been released by PABRA countries.

Overall, 410,210 men and women farmers have received both new and existing ISFM and IPDM technologies across the two bean networks. As at 2005, a total of 343 different service providers have joined PABRA as partners in the delivery of a variety of services in the eighteen PABRA countries. Services offered include bean research-seed diffusion continuum; capacity building and skill enhancement; promotion and dissemination of technologies; agroenterprise development; community empowerment; etc.

Access to bean-based technologies

Results from impact assessment surveys carried out in five countries – DR Congo, Ethiopia, Malawi, Rwanda and Uganda – indicate that over thirty million beneficiaries have received bean-based technologies, already surpassing our original five-year target. Adoption data from the bean impact studies shows that the proportion of farmers adopting improved technologies is 79% in Northern Tanzania, 64% in Rwanda and 53% in Uganda.

A 2004 survey of the effectiveness of bean seed dissemination by the bean programme of EARO (now EIAR), CIAT, and five international NGOs – when 137 tonnes of beans were disseminated – indicated that the partnership approach was working well. These efforts targeted a new set of farmers (including a “poorer” group) who gained access to new varieties in large numbers. Seventy three percent of interviewed farmers reported that they had not previously had access to new bean varieties and were growing them for the first time.

For knowledge-intensive technologies (IPDM & ISFM), a number of approaches have been used for learning and dissemination:

- demonstrations at strategic locations (roadside, health centres or churches)
- promotional materials (leaflets, brochures and posters)
- farmer field schools and field days
- radio broadcasts
- promotional messages during agricultural shows & nutrition days
- farmer exchange visits and village information centres

Market studies

Market opportunity studies for bean and bean byproducts carried out between 2003 and 2004 showed that a vibrant local and regional market exists. K132 (CAL 96) is the largest traded variety in Uganda. Kenya imports 50,000 tonnes of beans annually (principally K132 (CAL 96) variety) from Uganda and 18,000 tonnes from Tanzania through informal cross border trade. Forty thousand tonnes is traded locally in Uganda. In the last two years, Ethiopia has exported 32,000 tonnes of one new variety (Awash Melka) and one older variety (Mexican 142) to Europe and the Middle East. In 2004, the CIAT-bred variety Napilira had the largest sale volume in one area of Malawi: 8.8 tonnes per month during the study period. This was attributed to its high yielding ability due to its tolerance to low soil fertility and resistance to diseases.



PABRA partners aim to reach millions of end-users with technologies that have the potential to make a positive difference to their livelihoods through a 'wider impact' approach.

165-96-Chercher). Twelve candidates have been proposed by the FOFIFA bean programme for release in Madagascar. These included four large white, red mottled and kidney grain types with acceptable export quality, tolerance to disease and to low soil fertility.

Options for managing soils, and pests and diseases

Agricultural intensification and degradation of soils in small farm systems is a serious threat in virtually all PABRA member countries, leading to declining soil fertility and higher incidences of common pests and diseases such as root rots. PABRA continues to focus on developing and adapting integrated solutions for management of soil productivity based on low-cost options, including the use of organic and inorganic amendments, coupled with the use of bean lines tolerant to low soil fertility.

A study in southwest Uganda established that some of the *Pythium* species identified and associated with crops that were intercropped with beans were not only pathogenic to beans, but also affected other crops, particularly peas and sorghum. The latter are likely to play a role in the prevalence of *Pythium* root rots and the survival and level of inoculum in the soil. This has implications for the development of management strategies and technologies. Efforts also continued in the development of a PCR assay for positive identification and measurement of levels of *Pythium ultimum*. This will allow fast and accurate assessment of the impact of different management practices or options on the population of the disease-causing organisms.

Some of the environmentally-friendly options for improving soil fertility and productivity were evaluated in some SABRN countries. These included use of compost manure in Malawi, use of farmyard manure in Tanzania, combining Tephrosia as a green manure with inorganic fertiliser in Mozambique, and use of rock phosphate in combination with manure in Zambia.

Cost-benefit analysis of integrated soil fertility management options (ISFM) in eastern DR Congo showed no benefit in soils of very low fertility. However, management options were economical at various sites where *Tithonia* (green manure) was used at the highest rate, giving the highest net benefit (USD 216), followed by *Tithonia* at half rate (resulting in a net benefit of USD 123), while NPK fertiliser application resulted in a net of benefit (USD 55) which was the same as plots where no soil fertility management options were used.

Efforts focusing on developing options to manage pest and diseases included the use of parasitic wasps to control bean stem maggot (BSM) in Zimbabwe, and use of traditional organic pesticides (such as chillies) for control of storage and field pests in Mozambique and Zambia respectively. In eastern DR Congo, ten farmer groups experimented with different options for protecting seed against bean weevils (bruchids) in storage. Thirty grams of plant powder (containing a mixture of repellent and insecticide plants) per 5 kg of bean seed effectively protected stored beans against bruchids for a minimum of six months. Farmers were trained to train other farmers from neighbouring regions in the use of this method. Other options evaluated by farmers included improved pest tolerant bean genotypes, traditional pesticides (botanicals and different farm products), pest scouting, animal and green manures (farmyard manure, ashes, Tithonia, Tephrosia, etc.) and other traditional practices.

Assessment of the impact of integrated pest and disease management (IPDM) efforts targeting bean stem maggot was conducted in western Kenya. The majority of the respondents indicated that insect pests, diseases and soil infertility were the most serious agricultural constraints to bean production. The adoption of IPDM technologies: planting tolerant varieties of beans; timely planting; use of botanical pesticides; chemical seed dressing with 'Murtano' or 'Diazinon'; and soil fertility improvement through manure and fertiliser application methods, varied between sites. Farmers who participated in evaluating the different options over a four-year period were the highest adopters (85%), compared to non-participating farmers (34.9%). Factors influencing adoption included perceived benefits by farmers, such as increase in grain yield, reduction in pests and diseases, and affordability of botanical pesticides.

Drought tolerant materials released from Kenya (KAT B1, KAT B9, KAT X56 AND KAT X69 varieties) tested in a drought prone area in Burundi showed good adaptation and matured earlier than the local variety (Moore 88002). These materials will be evaluated and multiplied for seed production by farmers.

Reaching end-users with bean technologies

A major effort by PABRA partners is to reach millions of end-users with technologies that have the potential to make a positive difference to their livelihoods. PABRA's approach is to forge partnerships and alliances with key players as recent experience clearly shows a partnership approach to be essential for achieving impact. The number of service providers using alternative methods to disseminate and promote new and existing technologies by NARS in different countries tends to fluctuate from year to year, because some leave the programme (e.g. due to changes in funding), while others join. By 2006 there were 136 new partners involved in seed multiplication, seed dissemination/marketing, participatory variety selection and dissemination of IPDM and ISFM options. In partnership with National Agricultural Research Institutes (NARIs), government seed regulatory bodies, development agencies (government and non-government), seed traders, farmers/community based organisations, local farmer and commercial seed producers, 179 tonnes of beans were distributed.



Participatory variety selection has been a successful approach used with farmers and partners in introducing improved bean varieties to communities and is being integrated in breeding programmes in Southern and Eastern Africa.

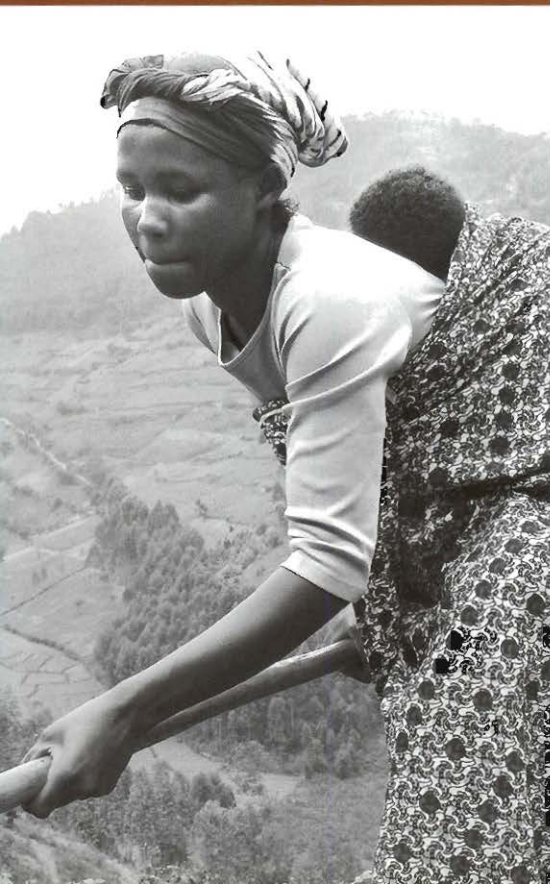
Through concerted efforts of the PABRA–NARS partners and their rural service providers, tremendous progress was made to provide bean-based technologies to a total of 922,847 households in 2006. The households were in Burundi (48,000), Ethiopia (352,700), Kenya (170,000), Mozambique (20,000), Rwanda (160,000), South Africa (3,000), southern DR Congo (20,150), Tanzania (64,500), Uganda (43,500) and Zambia (40,000). One hundred and ninety eight partners reached these households across the ten countries. Households were reached with technologies (varietal and non-varietal) that had been developed through farmer participatory approaches. Factors that influenced technology choices included accessibility, cost effectiveness of the technologies, and gender dimensions of resource ownership. For example, it was noted that green manure was favoured by women, as they do not own, or have access to any means of carrying manure to the fields. A seed distribution study conducted in Tanzania (Babati district) revealed that seed saved from farmers' own production constituted the main source of planting seed (44%) across six selected villages.

Due to relative stability in Burundi, the number of households reached has increased to about 48,000 through a range of different service providers that included FAO Emergency Programme, government extension services, NGOs, and active farmer seed producers. Promotion of seed production has been boosted by the translation of the CIAT Seed Manual Book 1 into Kirundi, with support from INADES. In Kenya, a total of twenty six organisations involved in nutrition and food security-related interventions participated in bean seed dissemination in western provinces of Kenya. Micronutrient-rich bean varieties were distributed to communities affected by HIV/AIDS through fourteen seed groups in western Kenya. In Madagascar, seven major strategic partners were involved in testing and dissemination of bean-based technologies for the benefit of rural communities. The most successful groups that had a significant impact on communities were 'Programme for Promotion of Rural Incomes' and *Maison des Paysans*, consisting of thirty associations or a total of about six hundred members.

A positive attitudinal change coupled with a shift in policy towards decentralised seed systems has been observed in most countries. The Ethiopian Bean Research programme, in collaboration with the Ministry of Agriculture, designed a bean technology dissemination and scaling up strategy which was initiated in the central Rift Valley of Ethiopia. This will ultimately extend to other bean (white pea bean) growing areas. Similar interests from policy makers and public extension services were also observed in Kenya, Malawi, Rwanda and Tanzania.

RESEARCH HIGHLIGHTS

Community Development



ENHANCED CAPACITY OF COMMUNITIES TO PLAN AND MANAGE APPROPRIATE LOCAL INITIATIVES

This outcome (using an approach called ERI) was designed to enhance the impacts of PABRA beyond agricultural productivity to poverty alleviation in pilot learning sites. It links bean production with development, testing and promotion of participatory approaches, and tools for strengthening the organisational capacity of rural communities to take advantage of agricultural innovations to improve their livelihoods. In this context, we are developing, testing and promoting participatory methodologies that promote pro-poor market linkages, farmer experimentation, and investment in natural resource management (NRM) that can benefit and empower women and other vulnerable groups. Originally designed to enhance the capacity of twenty five villages/communities in the project's three pilot areas, the activities of the project have been successfully expanded to more than seventy nine communities in seven countries in both ECABREN and SABRN, further facilitating uptake and enhancing impacts of bean-based technologies and innovations in the context of complex rural livelihoods.

Increased knowledge and skills of farmers to manage better their resources and communities and to develop agroenterprises

Empowering farmers to access market opportunities

In addition to bean enterprises (often used as an entry point to enterprise development) most communities now have a range of different enterprises such as goats, groundnuts, pigs, potatoes, and higher value horticultural products. In the period from 2006 to 2007, three new communities in Malawi, two in Zimbabwe, and six in DR Congo, as well as a network of seventeen farmers field school in Uganda selected a total of eight new enterprises, and accessed both local, domestic, regional (cross border) and internal markets (organic products). Most farmers' groups are accessing both local and domestic markets – in Uganda eight farmers groups have been linked to international export markets for garlic, organic ginger, and pineapple. Other groups in Kabale and Tororo in Uganda are involved in cross-border sale of beans, potatoes

and groundnuts. At community level, all sites have established internal savings and loan schemes, with some groups creating a formal savings and credit cooperative society (with support from SACCOS-Self Help Development International).

Distributional gender impacts of community enterprises

Three empirical impact studies were carried out in Kabale (Uganda), Ukwé and Kasungu Malawi (Kaaria et al., 2006¹) to assess the impacts of participatory approaches for linking farmers to market opportunities. Results show that households benefited significantly from linkages to markets, but there were significant income disparities between women and men members. Women farmers increased their ability to analyse markets, to conduct experiments, and showed willingness to take on leadership positions in project activities. Farmers reported increased skills in a variety of areas: pig management, bean, groundnut and potato production, gender and HIV/AIDS. Some of the reported benefits include improved gender relations and sharing of responsibilities, increased bean production, reduction in piglet losses and behaviour change. However, although women had improved their skills overall, the results showed that in various areas, men's skills improved significantly more than those of the women members.

Farmers' reinvestment priorities

Cross-sectional, household and monitoring surveys were carried out in selected sites in Malawi, Tanzania and Uganda to investigate income, expenditures and investment priorities of rural farmers. The results showed that households in Malawi (Katundulu and Chinseu) invest most of their income in food security and NRM, while households in Kabale, Uganda (Nyabyumba) invested in household items. NRM investments in Malawi, mainly involved the purchase of fertiliser for the maize crop. In Uganda, 27% of farm households used inorganic fertiliser, and a much higher percentage (94%) applied pesticides. Similarly, 74% of households questioned indicated that they hired labour during the main agricultural production periods, and most of the hired labour (74%) was for potato production. However, for the majority of farmers in Kabale, reinvestment in NRM (crop rotation, incorporating crop residue, use of manures, agroforestry, trenches, trash lines, cover crops, and resting land) was not a priority. A key finding from this study is that targeted intervention is necessary to influence farmers' investment decisions.



Thanks to the efforts of PABRA partners in helping farmers to link to local and regional markets, many farmers in PABRA countries have reported increased household income levels.

¹ S. Kaaria, A. Abenakyo, W. Alum, R. Best, C. Chisike, R. Delve, I. Kahi, P. Kankwatsa, E. Kaganzi, R. Muzira, G. Nalukwago, J. Njuki, P. Sanginga, and N. Sangole (2006) *Enabling Rural Innovation in Africa: An Approach for Empowering Farmers Exploit Market Opportunities and Improve Livelihoods*. Paper presented at the Innovation Africa Symposium, 21–23 November 2006 Speke Resort Munyonyo Kampala Uganda.

Building community capacity for experimentation

Several farmer participatory research experiments were initiated, in collaboration with partners in all the sites, to support the sustainability and competitiveness of the agroenterprises, strengthen farmer capacity and generate information for decision-making. These include participatory evaluation of several new beans genotypes (BIOFORT, BIWADA, BILFA), IPDM and ISFM technologies, as well as other crops (soybeans, groundnuts), based on market opportunities in DR Congo, Malawi and Rwanda.

Evaluating bean-based technologies for HIV/AIDS

In Rwanda, collaborative efforts by ISAR bean programme, Ministry of Health, partner NGOs and the network of groups of people living with HIV/AIDS (PLWHA) in participatory evaluation and seed production of

Research Achievements from 2003 to 2005: Community Development***Increased knowledge and skills of farmers***

In the period from 2003 to 2005, the number of market and technology information sources from which communities accessed information increased from seventeen to forty-two – representing a 59% increase. These information sources represent a range of diverse partners who are working in collaboration with ERI, and include:

- Ministry of agriculture extension services (Bulindi ARDC, Malawi DARS) that provide support to participatory research
- NGOs (Africare, CIP, Pride Uganda, TIP, World Vision), who facilitate farmers to gain access to technologies
- wholesale and local traders (Kapani meat processors, Nandos, and local markets) who provide market information
- innovative farmer groups and farmer associations (Kadifa), who advise new farmers

New agroenterprises developed have grown from fifteen agroenterprises in eight communities in 2003 to twenty-two agroenterprises in twenty-four communities in 2005. These include cassava, chickens, forages, ginger, goats, green beans, groundnuts, onions, pigs, potatoes, sweet corn, sweet melon and water melon. A total of 814 farmers have participated in different enterprises. The average percentage of participating female farmers in agroenterprises is 40%. Internal saving mechanisms in most farmer groups are at \$700 in Malawi; \$200 in Tororo (Uganda), and \$400 in Nyabyumba (Uganda).

Increased gender equity

At community level, women are more willing to speak in group meetings, and to participate in project activities either as project participants or as committee members serving in different capacities. Based on a farmer survey in Bokosi village, Malawi, half of the farmers who were interviewed were female committee members in the following capacities: chairlady, treasurer for participatory market research (PMR) group, member of the livestock committee, and members of the market committee. In Chisewu village, Malawi, 40% of those interviewed were female committee members in the following capacities: secretary for the farmer participatory research (FPR) group, secretary PMR group, and treasurer of FPR group.

As a result of the projects interventions, both men and women in the twenty-four communities have been empowered to be economically active through participation in twenty-two agroenterprises. However, continued assistance to these communities is required before they can be considered to be wholly sustainable. Support continues to be provided by the partner organisations and, particularly in pilot areas, communities continue to be linked directly to an ERI researcher.



Farmer participatory experiments have been successful in supporting the sustainability and competitiveness of their agroenterprises, strengthening their capacity and generating information for decision-making.

fast track lines with HIV/AIDS-affected communities continued. Two well performing climbers (Ngwinurare and VNB 81010) and three iron- and zinc-rich bush bean varieties (AND 620, MLB-40-89A and MLB-49-89A) were evaluated across selected agro-ecological zones. Among five performing micronutrient rich varieties (Ngwinurare, VNB 81010, Maharagi Soya, MLB-40-89A, & AND 620) that were tested, Ngwinurare, Maharagi Soya and AND 620 were preferred by smallholder farmers in communities affected by HIV/AIDS, due to their high yield and pleasant taste. These varieties have been disseminated across target regions to nineteen associations of PLWHA and other vulnerable groups. Seed multiplication is ongoing in seven focal health and nutrition centres based in five provinces. A number of locally available complementary crops

were used to develop bean-based food baskets. These include orange flesh sweet potatoes (OFSP), yellow cassava, quality protein maize (QPM) and ten species of indigenous vegetables. The food baskets developed were included in the national guidelines for nutrition care and support of PLWHA and have been used in various nutrition centres to rehabilitate malnourished children.

PABRA is currently working with 1021 farmer groups and nineteen associations of PLWHA in Rwanda. Over one hundred recipes and diet information manuals were developed and disseminated through partners to twenty village information centres (VICs) and seven health and nutrition centre libraries. Other programmes and forums for PLWHA, such as anti-retroviral drugs (ARVs) provision days, micronutrient supplementation days, health days, vaccination and immunisation days have been used for dissemination of information and nutrition education. A training of trainers' module for nutritionists was developed for use as a generic manual for other countries, and also for continuous nutrition education in Rwanda.

Partnership and scaling up

There are encouraging signs that many of the partners in the Enabling Rural Innovation (ERI) programme have initiated the process of institutionalising and scaling up ERI, and have expanded to new sites or have integrated ERI in their organisation's strategy. At the same time, demands from new partners and new countries are increasing, offering considerable prospects to scale out ERI and influencing research and development approaches in several countries. For example, the Traditional Irrigation and Environmental Management Programme (TIP) in Tanzania, has mainstreamed ERI in its 'package'. In 2003, TIP and CIAT initiated ERI in three water-user groups in Lushoto district and subsequently expanded to eighteen



PABRA's work with communities has resulted in changes in gender dynamics in targeted rural communities, resulting in joint management (by men and women) of agroenterprises becoming increasingly common.

new water-user groups in Arumeru district, and is now reaching over six hundred and twenty groups in 2006. In Malawi, a collaborative initiative was started with I-LIFE, a consortium of seven international NGOs (Africare, Care International, Catholic Relief Services, Emmanuel International, Salvation Army, Save the Children, and World Vision) to strengthen their capacity in linking smallholder farmers to reliable market outlets for their farm produce.

Increasing the skills of men and women to achieve gender equity at the community and household levels

Mainstreaming gender in agroenterprise development

Integration of gender in agroenterprise activities has been achieved in consultation with our partners. Agroenterprises that benefit women more (such as beans and groundnuts) have been initiated in all the sites where current enterprises – such as pigs for example – were exclusively controlled by men. Gender disaggregated data, especially in the areas of labour changes, decision-making, and the control and use of income by men and women, is being collected for the different enterprises. For example in a recent survey in Katundulu (Malawi), 43.5% of women and 47.6% of men indicated that their workload had increased as a result of the introduction of a pig enterprise. Gender specific action plans have been developed in Ukwé (Malawi), to address the fact that most of the benefits of the livestock enterprise were not accruing to women. Gender training has succeeded in redressing the gender balance, with a move towards intra-household decision-making in favour of women. At the same time, increased commercialisation of crops such as beans has caused some women to lose exclusive control of their enterprises.

Changing gender dynamics

There have been measurable changes in gender dynamics resulting in increased control of enterprises by women, and joint management of agroenterprises by men and women is becoming more common. For example 19.2% of respondents reported an increase in joint control of the pig enterprise, from 11.5%, to 53.8%. Participation in family decision-making by women also increased in key aspects of pig management. For example, shared decision-making on how to use money from the sale of pigs rose from 8.3% to 85.7% in Katundulu, Malawi. Exclusive decision-making by men on the use of money in their households had decreased from 100% of households to less than 15% of households. Households in which there was joint decision-making on the use of money from bean sales increased from 14.3%, before the interventions, to 81% after.

Capacity Building

STRENGTHENED INSTITUTIONAL AND ORGANISATIONAL CAPACITY OF PABRA, SUB-REGIONAL ORGANISATIONS AND PARTNERS

Increased knowledge and skills of scientists and NARS, NGOs, and rural service providers staff to address farmers' needs

This outcome is designed to strengthen and enhance individual and institutional capacities of PABRA partners, while improving the exchange of information and fostering collaboration within and between networks.

Capacity building

Graduate Students: During the reporting period, thirty three Ph.D. and M.Sc. students were partially or fully associated with PABRA and conducted studies at different universities in the region and abroad. Their research work represents a broad range of relevant topics which contribute to the PABRA research and development agenda.

Capacity building of NARS partners and service providers continued, with a major focus on developing skills and enhancing capacity of service providers to carry out some activities previously conducted under PABRA. A total of 3587 individuals were trained in agroenterprise/marketing/market chain analysis, bean IPM, biofortification, breeding, communication, community-based seed production, ERI approaches, facilitation skills, FPR, group dynamics and gender, ISFM, marker-assisted selection, molecular diagnostic tools, NRM innovation in SSA, PD, planning, PM&E, PMR, and PPB/PVS.

Innovation Africa Symposium

An important highlight this year has been the successful organisation and hosting of the Innovation Africa Symposium (www.innovationafrica.net) held on 20-23 November 2006 in Kampala, Uganda. It was organised by a multi-institutional partnership, including CIAT and PROLINNOVA (Promoting Local Innovation). The Symposium brought together one hundred and



forty practitioners in enhancing agricultural innovation systems, to reflect on current thinking on innovation systems and to share experiences. A number of papers were presented at the Symposium. A poster on *Participatory Agroenterprise Development* that describes the ERI approach to linking farmers to markets was awarded the prize of Excellent Partnerships in Research for Development.

We have also produced two guides based on our progressive field experiences, results and lessons accumulated in the implementation of ERI in pilot learning sites in Eastern and Southern Africa.

- *ERI Guide No. 1: The Power of Visioning: A Handbook for Facilitating the Development of Community Action Plans* (Sanginga and Chitsike, 2006) aims to improve the practice and use of participatory approaches for engaging with rural communities and local stakeholders in defining their collective visions and committing to action for improving their livelihoods in a sustainable manner. www.ciat.cgiar.org/africa/pdf/eri_guide1/contents.pdf
- *ERI Guide No. 2: A Market Facilitator Guide for Participatory Agroenterprise Development* (Ferris et al., 2006) describes ERI approaches for building the capacity of stakeholders to identify market opportunities and develop integrated agroenterprises for small-scale farmers. This is the most popular publication on the CIAT-Africa website with over 59,000 downloads to date since its publication in July 2006. www.ciat.cgiar.org/africa/pdf/eri_guide2/contents.pdf



Farmers are being encouraged and helped to develop their bean production capacity in order to capitalise on lucrative local and regional bean markets.

Strengthened intra- and inter-network collaboration within and outside of networks

PABRA-CIAT/FARA Regional workshop in West and Central Africa

PABRA has been considering the potential mechanisms and possibilities of establishing collaboration among interested countries in the CORAF/WE CARD region. It is in this context that PABRA, through FARA, convened a three-day workshop at the FARA Secretariat in Ghana from 4 to 6 October 2006. The objectives of the meeting were to review relative importance of beans and the current status of bean research in the West Africa/CORAF region; share experiences from the bean networks in Eastern Africa (ECABREN) and in Southern Africa (SABRN); and to explore the potential for establishing partnership and collaboration within CORAF partners and between CORAF/WE CARD and the other African bean networks. Twenty five participants including NARS scientists and extension workers, NGO and private sector

staff from West and Central Africa (WCA) countries in the CORAF/WE CARD sub-region attended the workshop. Key decisions made during the meeting were:

- formal establishment of a network through CORAF/WE CARD – named WECABREN. IRAD of Cameroon was mandated to serve as the focal institution for the coordination of bean R4D in WCA, with linkages to CORAF/WE CARD and PABRA
- FARA and CORAF/WE CARD to facilitate access to other bean research networks in the region and to support information and learning exchanges in bean R4D across the sub-region, with technical backstopping provided by PABRA-CIAT
- participants/national programmes to undertake surveys on common beans in WCA and germ-plasm characterisation and exchange
- PABRA-CIAT to offer training in common bean R4D
- to capitalise on the highly lucrative local, regional, and international common bean markets



Farmers have indicated that their bean varieties perform better when they are trained in improved pre- and post-harvest bean management. Increased bean prices coupled with improved yield, has stimulated farmers to invest in bean production, resulting in areas under bean growing by almost three-fold in less than three years.

Publications and communications

Over the period 2003 to 2006, various countries in PABRA have developed a variety of technology promotional and communication materials. These included leaflets, posters, calendars etc. for service providers and end-users. In 2006, bean seed manual book 1 was translated into French and Malagasy. A thousand copies of each were produced and disseminated; other products include: 1702 brochures produced in five countries; Mozambique (2), Lesotho (700) and Ethiopia (1000); 1002 posters in SDRC (1000) and Mozambique (2); and 1002 leaflets in Northern Tanzania (2 in Swahili) and Ethiopia (1000); 2000 calendars in Ethiopia (1000) and southern DR Congo (1000) and 800 pamphlets in Lesotho. Other publications developed at PABRA level and translated (into French and Portuguese) included CIAT in Africa Highlights (four), Seed Aid for Seed Security Practice Briefs (ten) and PABRA Brochure, PABRA Outlook Newsletter and Poster. The proceedings of the PABRA Millennium Conference were published. In addition to an active distribution mechanism, all of these were made available for download on the new PABRA website (www.pabra.org) – which was set up in 2007. Demand for seed manuals continued and reprints of current versions and translation into Amharic, Chibemba, Chichewa, Kirundi, Malagasy, and SiSwati were completed.

Inter-network collaboration

There were significant inter-network activities, mainly in proposal development and joint workshops and training courses. ECABREN and SABRN played active roles in participating and supporting the stakeholders meeting in West Africa. The highlight of these interactions was the joint ECABREN and SABRN steering committee meeting which was held in Kenya. It offered opportunities of sharing and exchanging experiences in the two networks, but also facilitated a more harmonious planning process to operate at PABRA level.

Research Achievements from 2003 to 2005: Capacity Building***Increased skills and knowledge***

The numbers of people who attended short training courses in 2003, 2004 and 2005 were 320, 750, and 913, respectively. The proportion of women participants in these courses was 32%, 25% and 32%, respectively. Participants were drawn from the NARIs, and partner institutions in the private and public sectors. The training courses were in the following areas: PPB/PVS, biotechnology, community-based seed production, IPDM, marker-assisted selection (MAS), agroenterprises, research methods, market analysis and PM&E. A regional assessment of PPB work indicated that more than half of ECABREN and SABRN plant breeders use participatory approaches in their plant breeding and selection work. Similar assessments are yet to be undertaken in the other key areas of training to determine extent of application of skills and knowledge acquired. Between 2003 and 2005, twenty-six students from NARIs in PABRA countries enrolled in postgraduate programmes (M.Sc. and Ph.D.) in the areas of: cross-border trade, HIV/AIDS & agriculture, agri-business, community development, bean improvement for disease resistance and molecular and virulence characterisation, and technology transfer. Of these, 29% were women students.

Use and adaptation of new approaches

Participatory plant breeding or variety selection is being integrated in breeding programmes in Southern Africa. Seed systems approaches (partnerships and delivery approaches) are now being applied by some NARIs which previously never interacted with development partners.

The NGO Tip has had considerable success in linking farmers to technology development and markets following close collaboration with the ERI programme in Tanzania. They have since received support from IFAD to coordinate and scale up their success in many new districts. Gains observed by communities working with Plan-Malawi led Plan-Zambia to seek similar support from the PABRA-ERI programme.

Bean networks have identified national and regional specialists that support PABRA work in seed dissemination, impact assessment, agroenterprises, PFR, community PM&E, IPDM, and breeding. The number of national and regional specialists has risen from five in 2003, to fourteen in 2004, and to twenty-three in 2005.

Publications

Bean root rot posters for farmers, developed in 2003, have been translated into Swahili for use in Kenya, Tanzania and Uganda. A draft agroenterprise development manual developed from ERI/PABRA experiences is in use in Tanzania by TIP, which produced its own Swahili version. Business manuals for farmer seed producers were translated into Portuguese, French, and the two main local languages in Uganda. Four occasional publications (No. 39 to 42) on coping with drought, bean production in urban areas, local seed systems for beans in Malawi, and a baseline study on poverty and rural livelihoods in Malawi, Tanzania, and Uganda, were published and disseminated. Five policy briefs on Seed Systems in Stress were published in 2004.

PABRA partnership frameworks

The partnerships established within and between networks have widened and improved through the operation of more integrated frameworks such as seed systems, PM&E etc. Across the eighteen PABRA countries, the partnership approach is being integrated into national bean research programmes' (NBRPs) activities and interventions. The approach is also highly valued by NBRPs partners. For instance, in Madagascar, a platform of bean commodity actors was established two years ago and is chaired on a rotational basis. It includes the FOFIFA-NBRP, bean exporters, NGOs working in development and promotion of beans, and government seed services. Since its creation, platform members have had the opportunity to share responsibilities such as training, establishment of participatory variety selection, and sharing of seeds of different preferred varieties.



As a monitoring and evaluation function, PM&E provides regional networks and national partners with the mechanisms for monitoring progress of bean-related activities against regionally and nationally defined milestones.

SAHA, a Swiss Development Cooperation (SDC) supported integrated rural development project which is member of the platform has supported the following activities:

- production and dissemination of a newsletter
- support of FOFIFA-NBRP to produce and disseminate a variety of promotion materials
- translation of the bean seed manual into Malagasy
- support of the platform meetings
- facilitation of linkages of FOFIFA-NBRP with farmers through field visits and farmers' training on bean pre- and post-harvest management
- PVS and local distribution of the preferred varieties

A similar approach is yielding tangible results in three regions of the southern highlands of Tanzania. The national bean programme team at Uyole Agricultural Research Institute received a distinguished award from the Prime Minister's Office for improving livelihoods of farmers through the dissemination of preferred and appropriate bean varieties. Through a process of fostering partnerships, there are now more than twenty development partners working with the institute, ranging from NGOs, district extension staff, individual stockists, and farmers. As a result in the last four years, these partnerships have enabled over 700,000 households to access improved varieties.

In Ethiopia, navy bean yield has doubled in target rural communities as a result of partnership in dissemination of varieties, supported by farmers' training in improved agronomic practices. Involving or partnering with bean traders and exporters in bean R4D has resulted in the payment of farmers for beans increasing three-fold (USD132/ton to USD300/ton). Farmers have indicated that their bean varieties perform better when they are trained in improved pre- and post-harvest bean management. Increased bean prices coupled with improved yield has stimulated farmers to invest in bean production, resulting in areas under bean growing by almost three-fold in less than three years. This success has encouraged many partner organisations and increased their interest in supporting farmers in bean production.

PABRA performance measurement

Participatory monitoring & evaluation (PM&E) is considered to be beneficial in strengthening national capacities to effectively engage with partners and to enhance the delivery of integrated project objectives at the national level. As a project management process, PM&E has been linked with improved performance, enhanced decision-making of national partners (who are driven by mutual objectives), and a sense of ownership. PM&E provided regional networks and national partners with the mechanisms for monitoring progress of bean-related activities against regionally and nationally defined milestones.

Participatory planning, monitoring & evaluation continued during 2006–2007, building on the existing monitoring systems of NARS and NGOs. Through several platforms, groups of key implementation partners with a common interest were targeted. A characteristic of the platforms was that they were multi-disciplinary and multi-institutional, spanning across several public and private partnerships and between actors in the bean chain, encompassing research scientists, representative farmers, NGOs, exporters and processors. Participatory assessment of existing PM&E practices was determined, and baselines for institutionalising PM&E were developed in four national bean programmes in Kenya, Malawi, Mozambique and southern Tanzania. PM&E continued to be strengthened and catalysed in seven additional national bean programmes in eastern DR Congo, Ethiopia, Madagascar, northern Tanzania, southern DR Congo, Zambia, and Uganda. Support in PM&E was also given to partners working under the ASARECA supported biofortification project in DR Congo, Kenya, northern Tanzania and Uganda.

A prototype PABRA information database, established to support knowledge management in PAPRA underwent a period of pre-testing. Technical recommendations were proposed for remodelling and adaptation to suit the type of users envisioned amongst PABRA partners. Its linkage to the PABRA website to allow access for a wider audience was delayed following reconstruction based on the recommendations proposed. Data was synthesised to facilitate its use for tracking progress of member countries against regionally developed performance indicators in the PABRA performance framework. Synthesised data was used to inform networks and steering committees, and to catalyse feedback and integrate recommendations on future strategies for the short, medium, and long term.

Analysis of monitoring and evaluation data continued during the year to deliver findings against several indicators in the PABRA framework. Desk studies on the relative performance of member countries were effective in assessing the extent of adoption and the extent to which outcomes were realised and performance indicators accomplished. Progress on the extent of reach, perceptions of the partners (NGOs, CBOs and national and regional partners), and indicators for impact of BBTs on households, and the extent of local and international trade was determined for the reported period.

Fundraising initiatives

SABRN actively participated in the development of two bean seed and climbing bean proposals (now funded by the McKnight Foundation) covering Malawi, Mozambique and Tanzania. PABRA partners from Ethiopia, Kenya, Malawi, Rwanda and Tanzania were part of a consortium of partners that participated in the initial discussions to develop a proposal on 'Improving Tropical Legume Productivity in Africa and South Asia using Conventional Breeding Technologies, with an Emphasis on Drought'. Bean is one of the legumes proposed in a project to be supported under the Bill and Melinda Gates Foundation. Similarly, PABRA partners from Kenya, Malawi, Rwanda, Tanzania, and Uganda participated in an initiative by the Kirkhouse Foundation (UK) to discuss the development of a proposal on strengthening the capacity of NARS in the application of biotechnology in breeding.

Joint external evaluation of PABRA (JEEP)

A joint external evaluation of PABRA covering the period from 1999 to 2006 – but with an emphasis on the activities from 2003 onwards – was conducted during September 2006. The objectives of the review were to assess the relevance, effectiveness, and efficiency of PABRA's aims with regard to impact, outcomes, and outputs, and to draw lessons and recommendations for the future of the programme, based on a series of key questions. The evaluation report was widely distributed to PABRA stakeholders and was discussed at the 11th Annual meeting of the PABRA Steering Committee in Nazareth, Ethiopia in March 2007.

An Overview of PABRA

Established in 1996, the Pan-Africa Bean Research Alliance (PABRA) is a consortium of African regional bean networks (the Eastern and Central Africa Bean Research Network, ECABREN, and the Southern Africa Bean Research Network, SABRN) consisting of National African Agricultural Research Systems (NARS) in a total of eighteen countries in sub-Saharan Africa, an international research organisation (CIAT), and a number of donor organisations.

PABRA has evolved from a CIAT project to an African partnership programme by strengthening the national bean programmes and by supporting the regional networks. PABRA facilitates collaborative research within and between the networks by providing a forum for building and maintaining linkages to multiple partners (researchers, non-government organisations [NGOs], community-based organisations [CBOs], and farmers). These linkages are maintained through joint planning, agreed division of responsibilities, joint implementation of activities and joint reporting. The collaborative approach facilitates the sharing of knowledge, the exchange of germplasm and the dissemination of technologies and methods across national frontiers. The Alliance also facilitates capacity building. With PABRA support, the regional networks identify, develop and deploy national expertise in a range of areas such as plant breeding, farmer participatory research, seed dissemination, agroenterprise development, and integrated pest and disease management.

The countries participating in PABRA are Angola, Burundi, Cameroon, DR Congo, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Rwanda, South Africa, Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.



MISSION

PABRA's goal is to enhance the food security, income and health of resource-poor farmers in Africa through research on beans. To achieve this goal, PABRA works in partnership with farmers and rural communities, NGOs, traders and other private sector partners. The major beneficiaries of PABRA's work are rural women, who are primarily responsible for the crop's production and post harvest handling.

DONORS

Canadian International Development Agency (CIDA)	www.acdi-cida.gc.ca
Cassava Biotechnology Network Ginés Mera Fellowship	www.ciat.cgiar.org/biotechnology/cbn
European Union through ASARECA	www.europa.eu
McKnight Foundation	www.mcknight.org
Rockefeller Foundation	www.rockfound.org
Swiss Agency for Development and Cooperation (SDC)	www.sdc.admin.ch
United Kingdom Department for International Development (DFID)	www.dfid.gov.uk
United States Agency for International Development (USAID), through ASARECA	www.usaid.gov



PARTICIPANTS (STEERING COMMITTEE MEMBERS AND INVITED GUESTS) AT THE PABRA MEETING (OPEN SESSION) HELD IN LUBUMBASHI, DR CONGO IN MARCH 2006

Principles of partnership are an integral part of the culture of PABRA – collaborative advantage, mutual trust, and the giving and sharing of credit. The PABRA Steering Committee is an annual planning and reporting meeting where the bean networks, sub-regional organisations (SROs) and representatives, who are all members of the Steering Committee, are represented. The Steering Committee offers guidance to PABRA and also provides a forum for discussing in an open and transparent manner annual commitments, plans, activities and budgets, and accountability of the latter. During the Steering Committee open session (which usually takes place on the first day), invited members from host countries participate in a forum which shares results on research and development.



Dymphina Andima	Sociologist KARI – Kisii P. O. Box 532 Kisii, Kenya	Email dymphinaandima@yahoo.com Tel +254-73589546
Robin Buruchara	Coordinator, PABRA P. O. Box 6247, Kampala, Uganda	Email r.buruchara@cgiar.org Tel +256-414-567259/567670 Fax +256-414-567635
Rowland Chirwa	Coordinator, SABRN, P.O. Box 158, Lilongwe, Malawi	Email r.chirwa@cgiar.org Tel +265-1-707387 Mob +265-8-822851 Fax +265-1-707278
Helene Divova Nsolani	President of Seed Producers' Association Lubumbashi, DR Congo	Email moydove20002000@yahoo.fr
Andreas Gerrits	Programme Officer Swiss Agency for Development & Cooperation (SDC) East and Southern Africa Division Employment and Income Division, Freiburgstrasse 130, 3003 Bern, Switzerland	Email andreas.gerrits@deza.admin.ch Tel +41-31-322-3328 Fax +41-31-324-1695

Robert Kalyebara	NARO Kawanda Agricultural Research Institute P. O. Box 6247, Kampala, Uganda	Email kalyebara@hotmail.com Tel +256-414-567630
Antoine Kanyenga Lubobo	Head, Bean Program INERA Kipopo P. O. Box 224 Lubumbashi DR Congo	Email antoineklubobo@yahoo.fr Tel +243-997025862
Nyembo Kimum	UNILU P. O. Box 825 Lubumbashi DR Congo	Email luccusnyembo@yahoo.fr Tel +243-810-4095813
Roger Kirkby	CIAT Africa, CIAT Africa Coordinator, P.O. Box 6247, Kampala, Uganda	Email r.kirkby@cgiar.org Tel +256-414-567670/566089 Fax +256-414-567635
James Land Quarsaie	Program Manager UMCUR P. O. Box 389 Lubumbashi, DR Congo	Email jqarslie@umcur.drc.org Tel +243-810-4076825
Dieudonne Lunanga	Senior Development Officer / Pan- African Programme, Africa and Middle East Branch CIDA, 200 Portoge, Hull Quebec, Canada	Email lunianga@hotmail.com
Santos Makelele	World Vision 1854, Kapinga Lubumbashi, DR Congo	Email santos_makelele@yahoo.fr Tel +243-81400513
Aaron Marshall	Head of Mission UMCUR P.O. Box 389 Lubumbashi, DR Congo	Email amarshall@umcur.drc.org Tel +243-810-509747
Hudson Masambu	USAID/REDSO/ESA Duduvile-Kasarani Road Box 30261, Nairobi, Kenya	Email hmasambu@usaid.gov Tel +254-20-862400 Fax +254-20-860562
Rachel Muthoni	PM&E Specialist, PABRA Kampala, Uganda	Email r.muthoni@cgiar.org Fax +256-414-567635 Tel +256-414-567670

Kasongo Mutshaila	National Director and Representative, World Vision Congo 1854 Av. Kapenda P. O. Box 4539 Lubumbashi, DR Congo	Email kasonfo_mutshaila@wvi.org Tel +1-775-262-4496 Tel +243-814000190
Jean-Pierre Naketana	PACT DR Congo	Email pactgp@ic-lubum.cd Tel +243-0997010373
Robert Naweji Soni	ARDERI P. O. Box 1033 Lubumbashi DR Congo	Email robertmaweji@yahoo.fr Tel +243-0180609007
Kilumba Ndayi	Agronomist Centre de Recherche sur le Mais P. O. Box 3386 Lubumbashi, DR Congo	Email kilumbandayi@yahoo.fr Tel +243-811612724
Macky Ngoma	Seed Producers' Association Lubumbashi, DR Congo	Tel +243-0997030075
Michel Ngongo	UNILU, DR Congo	Tel +243-00997027140
Lumbar Nyambo	SADRI 37 Av. Kananga Lubumbashi, DR Congo	Email lumbangambu@yahoo.fr Tel +243-997731894
Moses Onim	Lagrotech Seed Company P.O. Box 1244 Kisumu, Kenya	Email lagrotech@lagrotech.org Tel +254-722-739583
Mukishi M. Pyndji	ECABREN Coordinator CIAT, Selian Agricultural Research P.O. Box 2704, Arusha Tanzania	Email ciattz@habari.co.tz Tel +255-27-250-2268/8557 Fax +255-27-250-8557
George Weber	Agricultural Specialist Africa and Middle East Brand CIDA, 200 Promenade du Portage Hull, Quebec, Canada K1A 0G4	George_Weber@acdi-cida.gc.ca Tel +1-819-994-4106 Fax +1-819-997-5453

PABRA STAFF

Robin Buruchara	Plant Pathologist Coordinator of Pan-Africa Bean Research Alliance (PABRA) Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda	Tel +256-414-567670/567259 Fax +256-414-567635 Email r.buruchara@cgiar.org
Susan Kaaria	Economist/Participatory Research Coordinator, Enabling Rural Innovation CIAT, Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda	Tel +256-414-567804/567670 Fax +256-414-567635 Email s.kaaria@cgiar.org
Pascal Sanginga	Rural Sociologist, Enabling Rural Innovation CIAT, Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda	Tel +256-414-566749/567670 Fax +256-414-567635 Email p.sanginga@cgiar.org
Jemimah Njuki	Social Scientist, Enabling Rural Innovation CIAT P.O. Box MP228 Harare, Zimbabwe	Tel +263-4-369120/2/4 Fax +263-4-369124 Mobile +263-912-572722 Email j.njuki@cgiar.org
Rachel Muthoni	Social Economist and PM&E Coordinator, PABRA Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda	Tel +256-414-567670 Fax +256-414-567635 Email r.muthoni@cgiar.org
Martha Nyagaya	Nutrition Specialist Kawanda Agricultural Research Institute P.O. Box 6247 Kampala, Uganda	Tel +256-414-567670 Fax +256-414-567635 Email m.nyagaya@cgiar.org

ECABREN STAFF

Mukishi M. Pyndji	Plant Pathologist Coordinator, Eastern and Central Africa Bean Research Network (ECABREN) CIAT, Selian Agricultural Research Institute Dodoma Road, P.O. Box 2704 Arusha, Tanzania	Tel +255-27-2502268/2508557 Fax +255-27-2508557 Email m.pyndji@cgiar.org
Paul Kimani	Bean Breeder Department of Crop Science University of Nairobi College of Agriculture and Veterinary Science Kabete Campus P.O. Box 29053 Nairobi, Kenya	Tel +254-20-630705/631956 Fax +254-20-630705/631956 Email kimanipm@nbnet.co.ke
Sindi Kasambala	Programme Assistant CIAT, Selian Agricultural Research Institute Dodoma Road P.O. Box 2704 Arusha, Tanzania	Tel +255-27-2508558 Fax +255-27-2508557 Email s.kasambala@cgiar.org
Betty Travas	Administrative Assistant CIAT, Selian Agricultural Research Institute Dodoma Road P.O. Box 2704 Arusha, Tanzania	Tel +255-27-2502268/2508557 Fax +255-27-2508557 Email b.travas@cgiar.org
Eva Ngallo	Secretary CIAT, Selian Agricultural Research Institute Dodoma Road P.O. Box 2704 Arusha, Tanzania	Tel +255-27-2502268/2508557 Fax +255-27-2508557 Email ciattz@habari.co.tz

SABRN STAFF

Rowland Chirwa	Coordinator, Southern Africa Bean Research Network (SABRN), Bean Breeder CIAT, Chitedze Agricultural Research Station P.O. Box 158 Lilongwe, Malawi	Tel +265-1-707387 Mob +265-822851 Fax +265-1-707278 Email r.chirwa@cgiar.org
Jean-Claude Rubyogo	Seed Systems Specialist CIAT, Chitedze Agricultural Research Station P.O. Box 158 Lilongwe, Malawi	Tel +265-1-707387 Fax +265-1-707278 Email j.c.rubyogo@cgiar.org
Ella Ngondo	Administrative Assistant CIAT/SABRN, Chitedze Agricultural Research Station P.O. Box 158 Lilongwe, Malawi	Tel +265-1-707278 Fax +265-1-707278 Email ciat@malawi.net

PUBLICATIONS

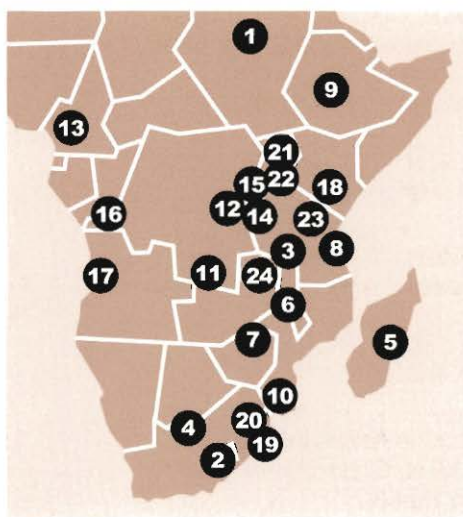
Publications list for PABRA staff for 2006-2007 can be found at:
www.ciat.cgiar.org/africa/pubs_2006.htm

CONTACT DETAILS

Robin Buruchara
Plant Pathologist
Coordinator, Pan-Africa Bean Research Alliance (PABRA)
Kawanda Agricultural Research Institute
P.O. Box 6247
Kampala, Uganda
Phone: +256-414-567670/567259
Fax: +256-414-567635
Email: r.buruchara@cgiar.org
Website: www.pabra.org

PABRA MEMBER LOCATIONS

1. Agricultural Research Corporation (ARC)
Wad Medani, Sudan
2. Agricultural Research Department
Maseru, Lesotho
3. Agricultural Research Institute
Uyole, Tanzania
4. ARC Grain Crops Institute
Potchefstroom, South Africa
5. Centre National de la Recherche Appliquée au Développement Rural (FOFIFA/CRR)
Antanarivo, Madagascar
6. Chitedze Research Station
Lilongwe, Malawi
7. Crop Breeding Institute
Harare, Zimbabwe
8. Division of Research and Development (DRD), Ministry of Agriculture and Food
Dar-es-Salaam, Tanzania
9. EIAR (Ethiopian Institute of Agricultural Research)
Addis Ababa, Ethiopia
10. IIAM
Maputo, Mozambique



11. INERA – Kipopo
Lubumbashi, DR Congo

12. INERA – Mulungu
Bukavu, DR Congo

13. Institut de la Recherche Agricole pour le Développement (IRAD)
Yaoundé, Cameroon

14. Institut des Sciences Agronomiques de Burundi (ISABU)
Bujumbura, Burundi

15. Institut des Sciences Agronomiques du Rwanda (ISAR)
Butare, Rwanda

16. Institut National Pour l'Etude et la Recherche Agronomiques (INERA)
Kinshasa, DR Congo

17. Instituto de Investigacao Agronomica
Luanda, Angola

18. Kenya Agricultural Research Institute (KARI)
Nairobi, Kenya

19. Lowveld Experiment Station
Matata, Swaziland

20. Malkerns Research Station
Malkerns, Swaziland

21. NARO/NACRRI
Kampala, Uganda

22. National Agricultural Research Organisation (NARO)
Entebbe, Uganda

23. Selian Agricultural Research Institute (SARI)
Arusha, Tanzania

24. Zambia Agricultural Research Institute
Kasama, Zambia

APPENDIX 1: PABRA R&D FRAMEWORK, 2003–2008

Activities sets	Reach	Outputs	Outcomes	Impact
1. Improving bean varieties 2. Developing more options for managing soil productivity, and pests and diseases 3. Increasing access to new and existing technologies 4. Increasing the knowledge and skills of groups and farmers from communities in pilot areas to manage better 5. Increasing gender equity awareness and skills of men and women 6. Increasing the knowledge and skills of scientists and staff from NARIs, NGOs and rural service providers 7. Strengthening intra- and inter-network collaboration both within and outside of networks 8. Project management and performance measurement	<p>Poor rural communities in Eastern, Central and Southern Africa (target group, with a special focus on the needs of women and children)</p> <p>Governments of Eastern, Central and Southern African countries</p> <p>ECABREN</p> <p>SABRN</p>	<p>1. Fifteen improved bean varieties rich in micronutrients (Fe, Zn and protein) and tolerant to two or more major biotic and abiotic stresses</p> <p>2. Ten new environmentally friendly options developed for managing soil productivity (fertility), and bean pests and diseases</p> <p>3. Increased access to new and existing technologies by at least 1.5 million households</p> <p>4. Increased knowledge and skills of groups and farmers from communities in pilot areas to manage better their resources, identify and develop agroenterprises, better organize their communities and link up with rural service providers</p> <p>5. Increased skills of men and woman to achieve gender equity at the community and household levels</p> <p>6. Increased knowledge and skills of scientists and staff from NARIs, NGOs and rural service providers to effectively address clients' needs</p> <p>7. Strengthened intra- and inter-network collaboration both within and outside of networks</p>	<p>1. Increased utilization of bean-based technologies</p> <p>2. Enhanced capacity of 25 villages/communities in the project's three pilot areas to plan and manage initiatives to meet their needs</p> <p>3. Strengthened institutional and organizational capacity of PABRA, constituent sub-regional organizations and partner</p>	<p>Improved nutrition, food security, income and community empowerment for poverty alleviation, and in a sustainable manner</p>

List of Acronyms

ALS	angular leaf spot
ARVs	anti-retroviral drugs
ASARECA	Association for Strengthening Agricultural Research in East and Central Africa
BCMNV	bean common mosaic and necrotic virus
BBT	bean-based technologies
BSM	bean stem maggot
CBB	common bacterial blight
CBOs	community-based organisations
CIAT	International Centre for Tropical Agriculture
CIAT-HQs	International Centre for Tropical Agriculture-Headquarters
CORAF/WE CARD	Conseil ouest et centre Africain pour la recherche et le développement agricole/ West and Central African Council for Agricultural Research and Development
DR Congo	Democratic Republic of Congo
EARO	Ethiopian Agricultural Research Organization
ECA	Eastern and Central Africa
ECABREN	Eastern and Central Africa Bean Research Network
EIAR	Ethiopian Institute of Agricultural Research
ERI	Enabling Rural Innovation
FARA	Forum for Agricultural Research in Africa
FOFIFA-NBRP	Centre National de la Recherche Appliquée au Développement Rural – National Bean Research Programme (Madagascar)
FPR	farmer participatory research
IFAD	International Fund for Agricultural Development
INADES	Institut Africain pour le Développement Economique et Social
IPDM	integrated pest and disease management
IPM	integrated pest management
IRAD	Institut de Recherche Agricole le Développement (Cameroon)
ISAR	Institut des Sciences Agronomiques du Rwanda
ISFM	integrated soil fertility management
MAC	medium altitude climbers
NARS	national agricultural research systems
NARIS	national agricultural research institutes
NBRPs	national bean research programmes

NGOs	non-governmental organisations
NRM	natural resources management
NPK	Nitrogen-Phosphorus-Potassium (Fertiliser)
NUA	Andean nutrition (Spanish acronym)
OFSP	orange flesh sweet potato
PABRA	Pan-Africa Bean Research Alliance
PCR	polymerase chain reaction
PD	participatory diagnosis
PLWHA	people living with HIV/AIDs
PM&E	participatory monitoring and evaluation
PMR	participatory market research
PPB	participatory plant breeding
ppm	parts per million
PROLINNOVA	Promoting Local Innovation (NGO)
PVS	participatory variety selection
QPM	quality protein maize
R4D	research for development
SABRN	Southern Africa Bean Research Network
SACCOS	Savings and Credit Co-Operatives (Self Help Development International)
SADC	Southern African Development Community
SAHA	Sahan'Asa Hampandrosoana ny Ambanivohitra (Madagascar) – rural development programme funded by SDC
SCAR	sequence characterised amplified region
SDC	Swiss Development Cooperation
SSA	seed security assessment
TIP	Traditional Irrigation and Environmental Development Programme
WCA	West and Central Africa
WECABREN	West and Central Africa Bean Research Network

327

ISSN 1997-8677



Pan-Africa Bean Research Alliance (PABRA)

Kawanda Agricultural Research Institute

P.O. Box 6247

Kampala, Uganda

Contact: Robin Buruchara

tel +256 414 567670/567259

fax +256 414 567635

email r.buruchara@cgiar.org

www.pabra.org