The Comminutor

Newsletter of the TSBF Institute of CIAT

Prepared at TSBF-CIAT Headquarters, PO Box 30677, Nairobi, Kenya

April 2004 • Volume 8 No. 1

CIAT

Centro Internacional de Agricultura Tropical
International centre for Tropical Agriculture

TSBF

Fertility
Soil
Biology

Contents

Staff from collaborating institutions had the opportunity for visiting the field trials (top photo) and for interaction with one another and with farmers working with TSBF-CIAT in western Kenya (bottom photo).

Publisher: Tropical Soil Fertility Institute of CIAT (TSBF-CIAT)

Editors: Andr Bationo, Nteranya Sanginga, Joseph Kimetu, Job Kihara and Juliet Ogola

Technical editor: Kellen Kebaara

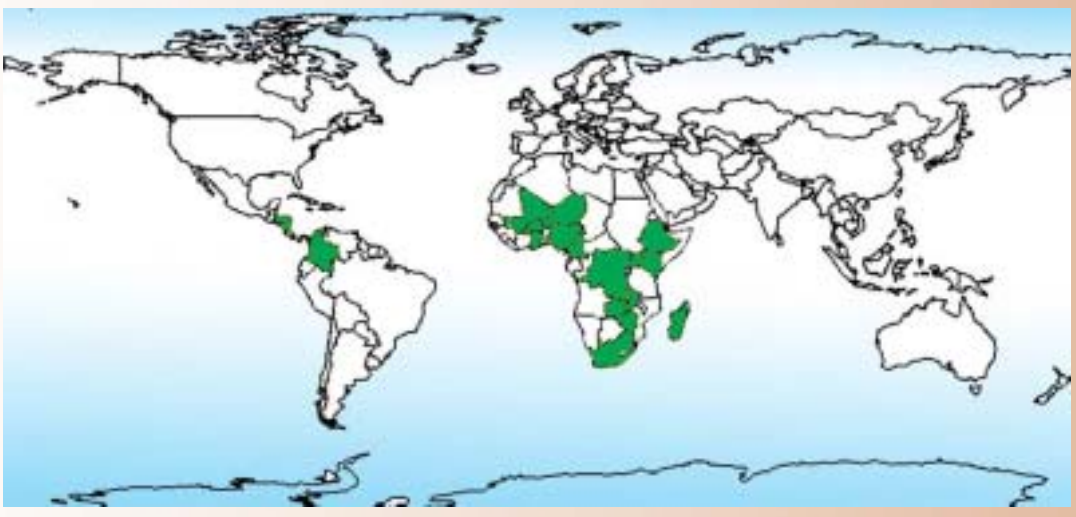
Design and layout: Damary Odanga

TSBF-CIAT is a research programme whose main aim is to contribute to human welfare and environmental conservation in the tropics by developing adoptable and suitable soil management practices that integrate the biological, chemical and socioeconomic processes that regulate soil fertility and optimize the use of organic and inorganic resources to the land users.

TSBF-CIAT
United Nations Avenue, Gigiri
PO Box 30677, Nairobi, Kenya
Tel: (254 20) 524755
Fax: (254 20) 524763
Email: tsbfinfo@cgiar.org
Internet: www.ciat.cgiar.org/tsbf-institute/

Overview of TSBF-CIAT's work

The Tropical Soil Biology and Fertility Institute of the International Center for Tropical Agriculture (TSBF-CIAT) has as its main goal to contribute to human welfare and environmental conservation in the tropics by developing adoptable and suitable soil management practices that integrate the biological, chemical and socioeconomic processes that regulate soil fertility and optimize the use of organic and inorganic resources available to land users. The research approach advocated by TSBF-CIAT includes both process-level and system-level study of agroecosystems. Process research focuses on understanding the biophysical regulation of soil fertility by such mechanisms as decomposition, soil organic matter dynamics and soil biota activities. System-level research is concerned with assessing the ways in which soil fertility is regulated by the farmer and by both the socioeconomic and biophysical environments in which soil management is practised. TSBF-CIAT is adopting a holistic approach to integrated soil fertility management that considers soil conservation, water management, ecosystem services, markets, resilient germplasm and fertilizers, integrated pest management, institutions and policy. In the past 10 years, TSBF-CIAT has extended its activities to Latin America and most parts of west, east and central Africa (see map below) with notable impact on farming communities. Farmer-led research on soil fertility management has been key to TSBF-CIAT activities since the mid-1990s. TSBF, through its social scientists, is actively disseminating to farmers best-bet technologies from field trials in various benchmark sites in more than 22 countries in Africa and Latin America. This issue of *The Comminutor* highlights some results from some of these sites, mainly through pictures.



Countries where TSBF-CIAT activities are located.

Integrated soil fertility management in practice in western Kenya

B Vanlauwe, E Rotich, R Okalebo, A Bationo, J Mukalama, I Ekise, J Ndufa and G Cadisch

TSBF-CIAT and its partners are working in western Kenya to develop, evaluate and disseminate integrated soil fertility management practices in which legumes are a prominent component. A substantial part of this work (figure 1) is implemented through PhD projects co-supervised by Cornell University, Wageningen University and TSBF-CIAT. A field trip by scientists from TSBF-CIAT, the Rockefeller Foundation, Kenya Forestry Research Institute (KEFRI), Moi University, Cornell University and Wageningen University to some of the research sites on 10–11 November 2003 examined the progress in these activities, discussed the way forward and gave a representative of one of the major investors, J Lynam of the Rockefeller Foundation, the opportunity to see firsthand the work on the ground.

The field trip kicked of with an introductory session in which the visitors were welcomed by the director of KEFRI-Maseno, Dr M Gichora.

B Vanlauwe then highlighted the scope of the field trip, followed by individual presentations by the PhD candidates (D Amudavi, M Kamau, J

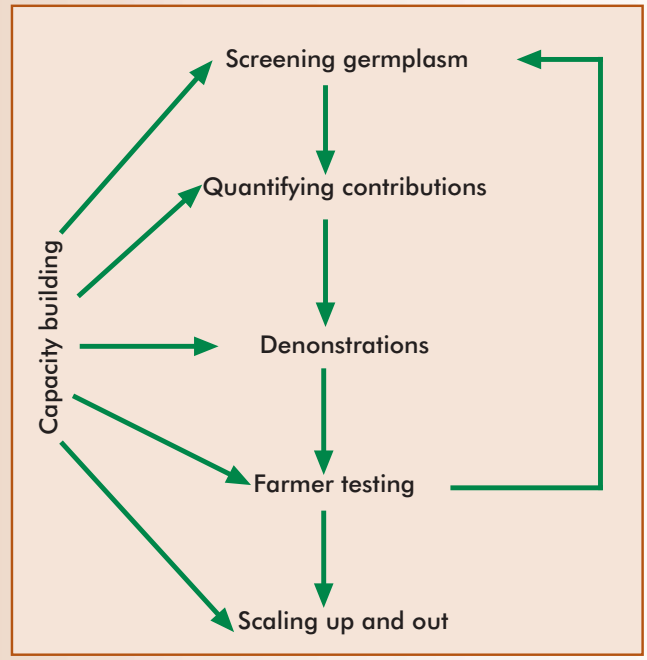
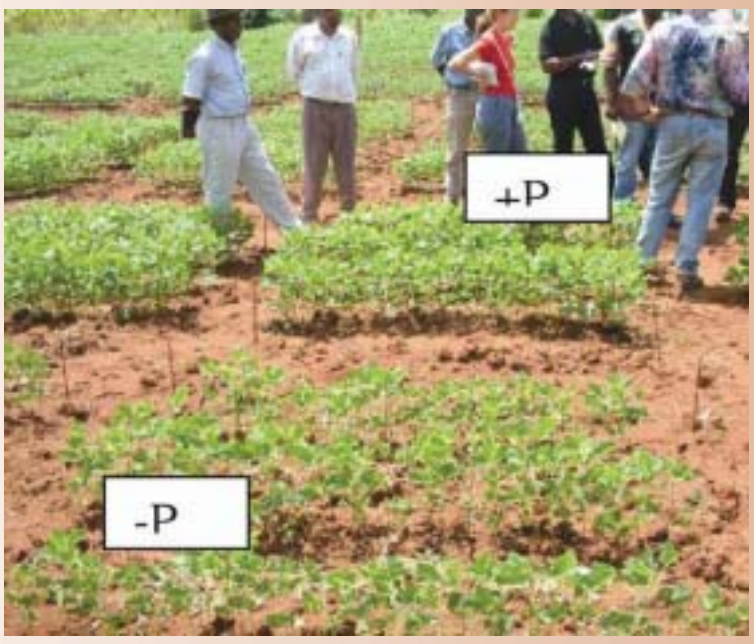


Figure 1: Components of the research process for integrating legumes into cropping systems.

Kapkiyai, J Ojiem, and T Owoiyo), describing the objectives, major activities and target sites of their projects. After these presentations, A Bationo, J Ndufa, A Pell, J Ramisch and B Vanlauwe gave an overview of the projects they were managing in western Kenya. The team then proceeded to the field sites. The various stops were organized to show the phases of the research and development process.

Screening soybean varieties in Emunyonyi

Several dual-purpose promiscuous soybean varieties (TGX 1831-32E, TGX 1895-4F, TGX 1893-7F, TGX 1889-12F, TGX 1895-6F, TGX 1869-31E and TGX 1830-20E) are being screened in Emunyonyi, Vihiga District, for the effect of phosphorus fertilizer on their nodulation, biomass production and grain yield. These varieties were bred at the International Institute of Tropical Agriculture (IITA), Nigeria, for promiscuous nodulation (that is, to nodulate with indigenous Rhizobia, avoiding the need for inoculation) and for low nitrogen harvest index (that is, to leave a net amount of nitrogen in the soil that can benefit subsequent cereals). Preliminary results show that most of these varieties retain their promiscuous nodulation characteristics and about half of them produce a substantially larger amount of biomass while retaining high grain yield, than do local varieties (Ex-Barton and J499) at most sites screened in Kenya. This, however, is true only with phosphorus fertilizer although there are differences between lines for tolerance to low phosphorus levels.

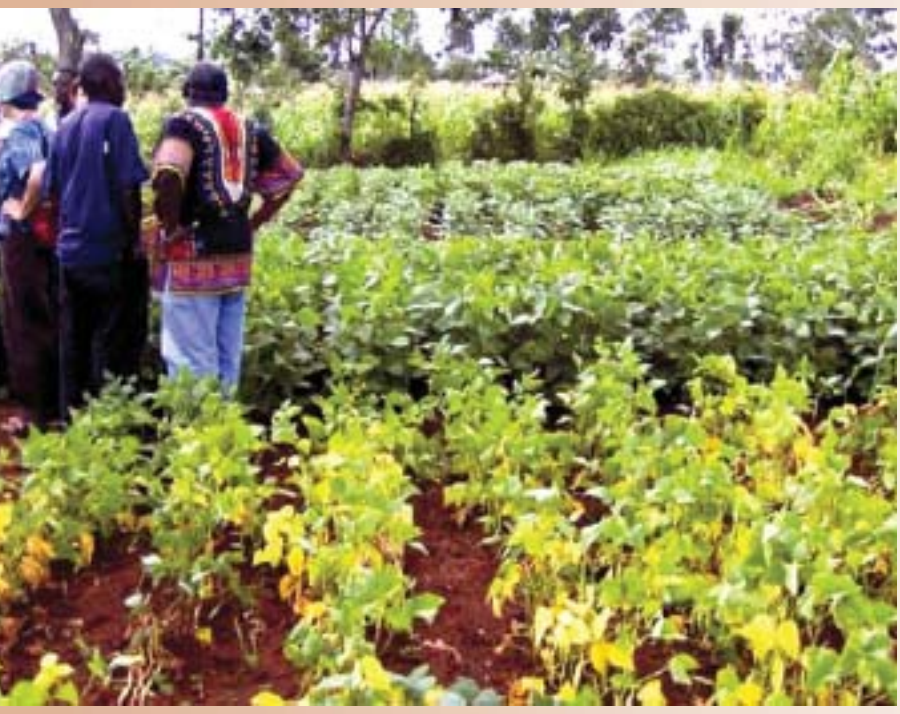


Dual purpose soybean varieties show a strong response to phosphorus in Emuhaya, Vihiga District, but the response varies from variety to variety.

Quantifying the contribution of legumes to a following cereal in Vihiga, Kakamega and Bondo districts

Screening trials last season identified various best-bet legume varieties including various soybean varieties, pigeon pea, groundnut, beans, lablab and

mucuna currently grown on 18 farmers' fields in Vihiga, Kakamega and Bondo districts in western Kenya to quantify their contribution to a subsequent maize crop. In terms of biomass production, crotalaria, mucuna and soybean did the best.



A study in western Kenya is assessing the contribution of various best-bet legumes to a subsequent maize crop

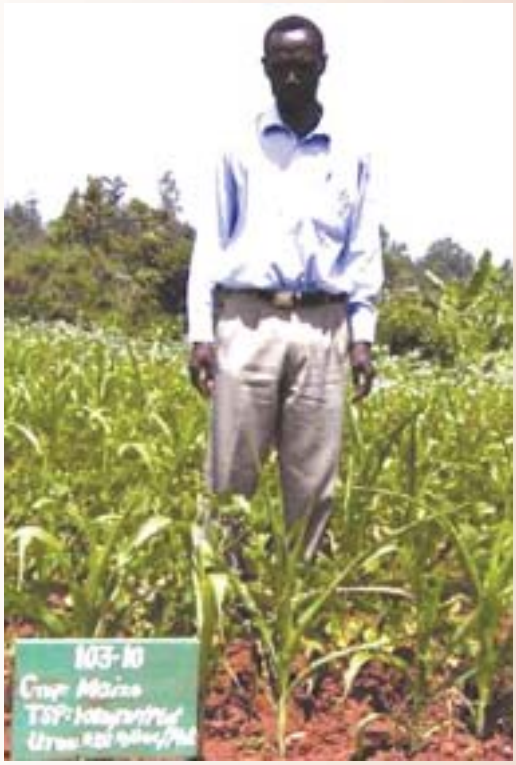
Quantifying the contribution of tillage and rotations to crop production and soil fertility status in Nyabeda

A trial in Nyabeda, Siaya District, is investigating the impact of tillage (conventional and minimum tillage), crop residue management and the cropping system (legume rotation, legume intercrop or continuous maize) on crop yield, soil fertility and water use. The treatments showed varying resistance to stress from drought, which was prevalent at the time of the visit. Plots that had received conventional tilling and had crop residues retained showed little stress from drought, but maize yields in treatments with minimum tillage and from which crop residues had been removed were strongly affected by the lack of rain.

Demonstrating best-bet rotations in Emunyonyi and Muyafwa

In Emunyonyi, Vihiga District, various integrated soil fertility management options based on legume rotations and biomass transfer are demonstrated to farming communities as part of the farmers' field school initiative. The legumes selected by the farmers' group to be included were mucuna, yellow grams and soybean. With phosphorus, mucuna and soybean had the same residual effects on maize at the Emunyonyi site.

A similar set of demonstrations has been initiated in Muyafwa, Busia District, with the 'Umoja ni Nguvu' farmers' research group. This group was formed recently and is driven by the desire to improve the community's livelihoods.



These demonstrations also deal with legume rotation and biomass transfer. Biomass transfer demonstrations focus on the effects of applying organic resources of different qualities. High quality residues such as *Tithionia diversifolia* leaves resulted in the best maize crop yield, while medium to low quality biomass such as maize stover or low quality manure only marginally affected maize growth. The impact of phosphorus varied among the demonstration sites.

Farmers testing best-bet legumes in Yala

Farmers in Yala, Vihiga District, are exposed to various ways of managing striga and soil fertility decline through targeted use of fertilizer, improved maize varieties (like IR) and farm diversification in the framework of a project supported by the Department for International Development (DfID), UK. An important component of this project is the provision of credit for agricultural inputs through the Sustainable Community-based Input Credit Scheme (SCOBICS). Credit (for example in the form of fertilizer and seeds) is extended to groups comprising at least 20 farmers. The interest rate is 20%, of which 10% is returned to the project for administering the farmers' groups. There are strong links between the DfID project and Wedco, a credit provider operating in western Kenya, to ensure sustainability of

Maize and bean yields are higher after soybean (top) than after maize (bottom) in Emunyonyi, Vihiga District.

the scheme after termination of the project. Diversification is achieved through the introduction of best-bet legumes such as soybean, groundnut or crotalaria along with maize, the staple crop in most of western Kenya. The farmers are now testing some of these legumes on their own. There is a lot of interest in soybean, since the farmers appreciate its ability to provide food and cash and to improve the soil. The farmers sell the soybean crop in Kisumu, but they cannot meet the current demand.

Mr James Owino, a farmer in Yala in Vihiga District, has expanded the area he dedicates to soybean from a small plot to a large section of his farm. He is currently bulking Nyala and TGX-1448-2E varieties.

Scaling up the credit scheme for farm inputs

The SCOBICS credit scheme is in the process merging with Wedco, a microfinance organization operating in western Kenya, to ensure the scheme's sustainability. Farmers have been trained on credit management. Since farmers in the areas where SCOBICS does not operate have similar problems as those affecting farmers that SCOBICS is helping—such as the lack of phosphorus or improved seed–it was considered appropriate to expand the credit scheme to the areas where TSBF-CIAT is operating, namely Emanyonyi in Vihiga District and Muyafwa in Busia District. This is to be implemented in the next phase.

Farmers testing best-bet soybean varieties in Muyafwa

Farmers in Muyafwa, Busia District, are growing improved soybean varieties (TGX 1831-32E, TGX 1895-4F, TGX 1893-7F, TGX 1889-12F and TGX 1895-6F) on their own initiative, preferring to plant maize and bananas in the soybean plots instead of growing it as a monocrop. Farmers basically produce for the market, with a small portion for home consumption. One of their major constraints to crop production is lack of credit.

Muyafwa in Busia District farmers are organized around farmer research groups for more effective dissemination of information. These groups interact with other farmers through activities such as field days and cross-site visits. One of the tools for disseminating knowledge about improved soil management is songs and poems. Songs and poems have been written about the management of nitrogen, phosphorus and striga and the use of organic resources.

A farmer in Muyafwa, Busia District, has incorporated maize into his soybean field, as maize is the major food security crop in the area.

Farmers from Emunyonyi, Vihiga District, have composed songs about the various options for enhancing nitrogen status of the soil, specifically mentioning the use of soybean, tithonia and tephrosia.

Scaling up and out phase

Scaling up ISFM options through farmer-to-farmer interaction in Vihiga and Busia districts

In both Emunyonyi in Vihiga District and

Supporting farmers' research activities: the folk ecology project in western Kenya

Joshua Ramisch

Farmer-led research on soil fertility management has been a key approach in TSBF-CIAT activities since the mid-1990s (figure 2). In 2001 farmers in four communities in western Kenya (Bukhalalire and Muyafwa in Busia District, Akites in Teso District and Ebusiloli in Vihiga District) decided to organize their research groups into farmer field schools (FFS) through which they meet at a central place twice a week with one of the days committed to field visits and the other to discussion and brainstorming. These research groups began as part of a project funded by the

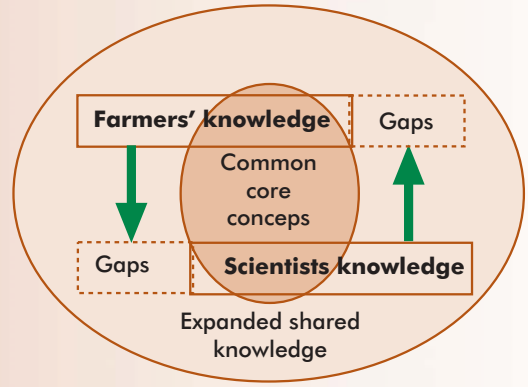
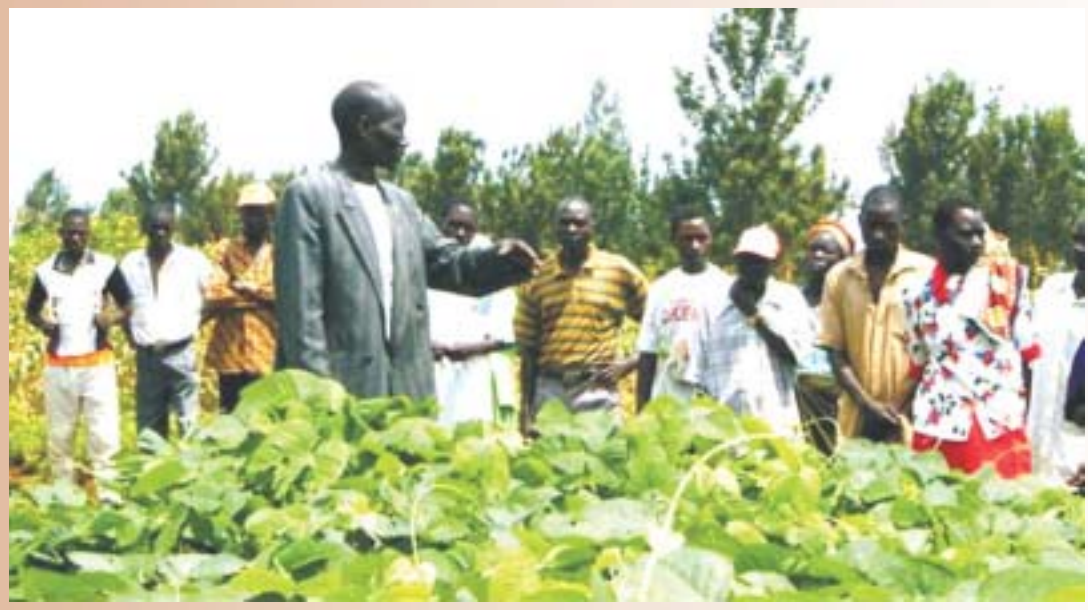


Figure 2: The principle of the folk ecology project is to have farmers and scientists enrich each others knowledge on soil fertility.

International Development Research Centre (IDRC) on community-based learning and innovation in soil fertility management. The research activities began in 2001 concentrating on enriching the local knowledge on soil ecology (informally known as 'folk ecology') and building capacity to experiment and demonstrate ISFM concepts.



Field days provide the opportunity for local farmers and visitors to talk about new approaches and their successes and challenges. This group is visiting a legume-cereal rotation plot that was part of the Muyafwa farmers' groups' 2003 experiments.

Planning and analysis of experiments are done collectively. Newcomers have many opportunities to learn from longer term participants both formally and informally.

Initially all the four FFS wanted to test and demonstrate to other farmers the different fertilizing effects of organic materials of different qualities. High, medium and low quality organic materials, based on the classification of the TSBF organic resource database (ORD), were applied to test plots, together with inorganic inputs of nitrogen on its own or nitrogen with phosphorus. Some plots did not receive inorganic inputs. The sites, which were managed collectively by each FFS, generated considerable interest and debate. This exercise provided many farmers with their first opportunity to appreciate the benefits provided by different organic materials. It also highlighted the important role that inorganic inputs can play in combating the phosphorus deficiency of local soils.

One of the concerns raised about the resource-quality experiments was that 'high' quality materials are scarce at the local level. Most farmers also consider biomass transfer approaches to be extremely labour-demanding, even if they improve crop yields dramatically. The subsequent FFS learning activities, therefore, have sought to test and demonstrate the potential of more attractive technologies, such as multiple-purpose legumes in rotations and local manure of improved quality.

The round of FFS activities completed in 2003 was the most diverse yet. More than 200 farmers tested a wide range of legumes, including soybean, yellow grams, groundnuts and mucuna. The aftereffects on maize and bean crops were carefully monitored and the most promising varieties of soybean were bulked by the field schools for their members and new groups to plant in 2004.

Research work with TSBF-CIAT in eastern Kenya

Daniel Mugendi, Boaz Waswa and Monica Mucheru

In 2000, collaborative research on potential of integrated nutrient management for soil fertility improvement in the smallholder farms of eastern Kenya involving the Kenya Agricultural Research Institute (KARI), the Kenya Forestry Research Institute (KEFRI), TSBF-CIAT, Kenyatta University and the World Agroforestry Centre (ICRAF) was started in Chuka, Meru South District, Kenya. This project, consisting of 13 soil fertility improvement technologies to be compared with farmers' practice (no input), was set up at Kirege Primary School and demonstrated the use of sole or combined organic and inorganic resources as nutrient sources as well as growing legumes cover crops. During subsequent field days, farmers were asked to evaluate the performance of the technologies and adopt on their farms any that they preferred.

Legumes form a major component of the diet of people in the eastern part of Kenya. In an on-station experiment at the KARI Regional Research Centre in Embu, researchers are evaluating different bean varieties to recommend appropriate farmer management practices for high yield production.

The major findings from this project show that leafy tree biomass from *Leucaena leucocephala, Calliandra calothyrsus* and *Tithonia diversifolia* was effective in reducing the rate of soil fertility decline and in improving maize yield. Integration of organic and inorganic nutrients produced better yields than the farmers' practice. Farmers had expressed interest in trying out the soil fertility improvement technologies, and by the 2002/2003 short rains some 206 of them

were practising these approaches on their farms.

The project is also showing resource-poor, smallholder farmers how to produce improved fruit trees (mangoes and bananas) for increased food production and income generation. All these activities are implemented with financial support from the Rockefeller Foundation.

Farmers in Kirege location are modifying the hedgerows on their farms by planting multiple hedgerow species together. This farmer has planted a hedgerow of calliandra and napier grass. This helps to alleviate the problems of organic resource scarcity and to provide additional high quality fodder for livestock.

(Above) Grafted mango varieties such as Van Dyke have gained popularity in Chuka and Machanga areas of eastern Kenya for their high yields and early maturity.

(Right) In addition to soil fertility improvement research, alternative food crops such as bananas are grown in the experiment at Kirege Primary School as a way to diversify the means to achieve self-sufficiency in food production.

Farmers have reported better crop performance with application of manures than with no inputs. The maize plot in the background received manure inputs, while the one in the foreground was a control.

AfNet in West Africa

A Bationo, J Kihara, J Kimetu, A Abdou and B Kaya

In August 2003, staff of the coordination office of the African Network for Soil Biology and Fertility (AfNet) visited the network's trials in Burkina Faso, Côte d'Ivoire, Ghana, Niger and Togo. The trials visited were in Ayoum, Kwadaso and Sataso in Ghana; Davie in Togo; Farakoba in Burkina Faso; and Sadore, Karabedji, Gobery, Gaya and Banizoumbou in Niger. Most of these trials were initiated in 2002 with financial assistance from the Rockefeller Foundation. The main aim of the trials is to strengthen AfNet's capacity to combat soil nutrient depletion in West Africa. The other countries involved in this research are Cameroon, Mali, Nigeria and Senegal. Some of the observations from the visit are highlighted here.

Legume-cereal rotations in Burkina Faso

There is great potential for improving food production through rotations of legumes and cereals. In Burkina Faso,

This sorghum-groundnut rotation in Burkina Faso produces better crop than continuous sorghum cropping (inset).

rotating sorghum with groundnut has increased yield of the sorghum, which benefits from the nitrogen-fixing ability of the groundnut. This has proved superior to the farmers' practice of continuous growing of sorghum.

Optimum nitrogen and phosphorus management in legume-cereal rotations

Although the combined application of organic resources and mineral inputs form the technical backbone of the integrated soil fertility management approach, procuring sufficient amounts of organic matter of the desired quality is very often a problem farmers face. In-situ production of organic matter is an attractive alternative to technologies promoting the harvesting of organic resources from sites within or outside the farm. In addition to long-term trials at Farakoba in Burkina Faso and Karabedji in Niger, experiments were established at Zaria in Nigeria, Kumasi in Ghana and Davie in Togo to assess the contribution of herbaceous and grain legumes to nitrogen supply and, where relevant, the impact on the overall yield of using phosphorus during certain phases of the rotation. Sorghum and millet yields in on-farm and on-station trials in Burkina Faso and Niger have tremendously been improved through either rotation or intercropping. Herbaceous or green manure legumes usually leave

Rotating a few rows of millet with cowpea every season (like in 'mbili-mbili' intercropping) has improved yields in farmers' fields in Karabedji, Niger.

substantial amounts of nitrogen in the soil, but when they are left to grow to maturity, harvesting their seeds may substantially reduce the net nitrogen input into the soil. 'Traditional grain legume germplasm has a large nitrogen harvest index, indicating that even though a significant part of the nitrogen taken in by the legume is certainly fixed from the atmosphere, more nitrogen is taken away during grain harvest, resulting in a negative net nitrogen input. However, dual-purpose germplasm is now available, for example for cowpea and soybean, that produces substantial amounts of haulms in addition to grains and has a relatively low nitrogen harvest index. In Burkina Faso, cowpea has been shown to supply nutrients to the succeeding sorghum crop as well as acting as a source of cash for farmers. The farmer is usually advised to grow up to one hectare of pure cowpea for rotation with cereal crops.

Besides fixing nitrogen, certain legumes are also known to access the not-so-easily available phosphorus pools, alter the soil pest spectrum or improve soil biological properties. These benefits are often considered as non-nitrogen benefits.

Combining water-harvesting techniques and integrated nutrient management

In Mali, an experiment to investigate the effect of ridge tillage along contour lines is being carried out by AfNet in collaboration with the Institut d'Economie Rurale (IER) and the ICRAF Sahel Programme. The trial was set up in 2003 at Siribougou, a rural village about 35 km west of Ségou. The main research hypothesis being tested is that combining water-harvesting techniques with effective nutrient

Planting cowpea (in the foreground) as a cash crop is becoming popular in West Africa.

management will result in higher efficiency of resources and increased profitability of the investment in water harvesting.

Results have shown that using ridges reduced runoff by about 20-40 percent, in addition to providing a deeper wetting front (from 1.2 to 2 metres). Other benefits with ridging included increasing soil water content from 10 to 30 percent and pearl millet yield by 30 percent with water harvesting alone and 50 percent with water harvesting and mineral fertilizers.

Water harvesting using ridges has beneficial effects on crop production, as shown in this study in Siribougou, Mali.

Highlights of research activities in Latin America

Crop rotation and ley pasture systems on the acid soil savannas of South America

Edmundo Barrios

Intensifying agricultural production on the acid soil savannas of South America (mainly Oxisols) is hindered by the lack of diversity in crop germplasm with tolerance to acidity, poor soil fertility and the high vulnerability of crop production to the soil's physical, chemical and biological degradation. Using high levels of input and monocropping are considered unsustainable, since they may result in deterioration of soil properties as well as escalation of pest and disease problems. Traditional grazing systems on native savanna species have very low productivity. Though they require investment in inputs for establishment, making them unattractive to grazers, improved legume-based pastures have been shown to improve the soil resource

Native savanna grass species have very low productivity.

Legume-based pastures (Brachiaria brizanta *CIAT26110 and* Arachis pintai *CIAT18744 have been shown to be a good alternative to the poorly productive savanna species.*

An agropastoral system incorporating maize and a brachiaria hybrid, CIAT36061 Mulato, in Colombian savannas.

base in Latin America. This has been one of the research agendas of TSBF-CIAT in Honduras, Nicaragua and Columbia. Other alternatives being tried by TSBF-CIAT in this region include establishing pastures in association with maize or rice (agropastoral systems) and rotations with grain legumes or green manures. Systems such as these may attenuate or reverse the deleterious effects of monocultures while permitting intensified agricultural production.

Dual-purpose live barriers systems

The use of plants as live barriers has been successful in controlling erosion on hillside areas worldwide. However, adoption of this technology has been limited by the perceived problems of the large time and effort requirements needed to establish the barriers, without them providing other apparent benefits than erosion control. In the Colombian savannas,

Sugarcane used as a live barrier help in erosion control in the Colombian savannas

dual-purpose live barriers aim at providing an economic incentive to farmers in addition to reducing the soil lost through erosion.

The strategic combination and interaction of two types of barriers allows the increase of their productivity, generating the economic incentive (for example in the case of sugarcane) and at the same time reducing soil and nutrient loss through soil retention and nutrient recycling (for tithonia).

Slash-and-mulch agroforestry systems

The quesungual slash-and-mulch agroforestry system (QSMAS) has been the basis of a successful development strategy promoted by the FAO-Lempira Project for improving rural livelihoods in the Lempira Department, previously the poorest region in Honduras. Understanding the functional basis of QSMAS is part of collaborative research activities between TSBF-CIAT's Latin American programme and FAO. This alternative to the traditional slash-and-burn agriculture strongly builds on local knowledge and has been an important option to achieve food security by resource poor farmers in the region. Unlike other agroforestry systems tested in subhumid tropics with long dry seasons, where crops and trees coexist under intense competition for water, farmers recognize that QSMAS has the remarkable feature of increasing the soil's water-holding capacity and availability of water in the soil. The increased soil

Soybean is grown under no-till management on Colombian savanna soils following the construction of an 'arable layer'.

Maize is a common crop in the quesungual system.

water availability period has been associated with the drastic reduction in crop losses under this system.

Enabling rural innovation in Africa

P Sanginga, C Chitsike, R Best, R Delve, S Kaaria, R Kirkby

A report, *Enabling rural innovation: integrating farmer participatory research and participatory market research*, desribes a novel approach to participatory research (PR)— 'enabling rural innovation' (ERI)— being applied in eastern and southern Africa. This involves a partnership between research and development organizations that links small-scale farmers to markets to improve food security and income, and fosters better natural resource management. ERI is a mutual learning approach for empowering rural communities and providing an enabling environment to access and generate technical and market information for improving decision-making and capacity to innovate, experiment, access market opportunities and sustainably manage natural resources. More specifically, it links farmer participatory research (FPR), market-opportunity identification and development of technologies for integrated soil and

nutrient management, with a focus on women and the poor. This report describes lessons from and challenges in implementing this approach among farmers' groups in pilot sites in Uganda, Malawi and Tanzania.

Details on the conceptual framework of ERI are provided in the ERI strategy document, *The resource-to-consumption framework as a strategy for enabling rural innovation (ERI),* available from Juliet Ogola (j.ogola@cgiar.org).

Training workshop on farmer participatory research for AfNet members

To strengthen farmer participatory research within AfNet, a training workshop on 'Participatory Approaches to Research and Scaling Up' was held in Arusha, Tanzania, 28 September–10 October 2003 for AfNet members. A total of 29 participants from West Africa (Nigeria, Togo, Benin, Mali, Burkina Faso, Ghana, Niger and Senegal), East Africa (Ethiopia, Kenya, Uganda and Tanzania) and southern Africa (Zambia and Zimbabwe) attended the course.

The objectives of this workshop were

- To sensitize and familiarize AfNet scientists with the concepts and practice FPR and scaling up
- To build capacity through providing knowledge and enhancing skill levels of network member scientists in FPR approaches
- To build and support teams at the benchmark sites in two agroecological regions —West Africa and East and Central Africa — to improve soil management, food production and incomes of poor farmers by bringing together many elements at the level of farmers as decision makers
- To enhance information and communication capabilities of AfNet member scientists for better transfer of research outputs
- To promote contact and exchange of experience among AfNet member scientists

A full copy of the report of the workshop is available from Juliet Ogola (j.ogola@cgiar.org).

Upcoming events

Below-ground Biodiversity Advisory Committee meeting, 2004

The first meeting of the project advisory committee of the Conservation and Management of Below-ground Biodiversity Project will be held in Nairobi later this year. This committee was established to provide an objective evaluation of the project's performance and to guide the project on a number of strategic issues and on implementation. More information is available from Dr Peter Okoth at p.okoth@cgiar.org

AfNet symposium

Improving human welfare and environmental conservation by empowering farmers to combat soil fertility degradation

AfNet will hold an international symposium 17–21 May 2004 in Yaoundé, Cameroon, under the auspices of the Ministry of Scientific and Technical Research of Cameroon and the Forum for Agricultural Research in Africa (FARA). This symposium will be an important step in the Comprehensive Africa Agriculture Development Programme (CAADP) process. CAADP, a child of the New Partnership for Africa's Development (NEPAD), was conceived in recognition of the fact that agriculture-led development was fundamental to fighting hunger, reducing poverty, generating economic growth and opening the way to expand exports. CAADP aims to extend the area under sustainable land utilization, develop reliable water control systems and improve infrastructure and market access, thereby improving national and regional food security, underpinned by agricultural research and technology dissemination and adoption. The symposium has three objectives:

- To review recent research achievements on integrated soil fertility management (ISFM) and ecosystem services
- To develop strategies for scaling up soil fertility-enhancing technologies
- To increase stakeholder awareness of new initiatives in natural resource management, including integrated agricultural research for development

The symposium will bring together key researchers, policy makers and natural resource management practitioners to review the state of the knowledge on soil fertility management and to identify solutions to land degradation and soil fertility depletion.

For more details contact Dr André Bationo at a.bationo@cgiar.org