

# Highlights of research activities in Latin America

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

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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*, describes 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](mailto:a.bationo@cgiar.org)



