The Comminutor

Newsletter of the TSBF Institute of CIAT

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CIAT scientist interacting with farmers in Latin America

Soybean production in Western Kenya

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

Editors:
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Job Kihara and Juliet Ogola

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.

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Preface

The Tropical Soil Biology and Fertility institute of the International Center for Tropical Agriculture (CIAT) has 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 socio-economic processes that regulate soil fertility and optimize the use of organic and inorganic resources available to the land-users. The research approach advocated by TSBF includes both process-level and system-level study of agroecosystems. Process scale research is focused on understanding the biophysical regulation of soil fertility by such mechanisms as decomposition, soil organic matter dynamics and soil biota activities. At the system level research is concerned with assessing the ways in which soil fertility is regulated by the farmer and by both the socio-economic and biophysical environment in which soil management is practiced. Apart from research in Africa, TSBF has extended its activities to farming communities in Latin America. This issue of the *The Comminutor* is dedicated to highlighting key research issues in the Latin America.

Telephone and Fax Numbers changed

Telephone numbers at the TSBF offices in Nairobi have changed from a 6 to 7 digit numbering plan following introduction of new digital telephone exchanges by Telkom Kenya. The initial 5 in all the numbers was dropped and replaced with 72. The new numbers are:

Tel: **254-20-722 4766 (Administration)**
254-20-7224755 (AfNet)
254-20-722 4000 (Operator)

Fax: **254-20-7224763/4**

Research for Development Strategy of Latin American team of TSBF-CIAT

I. Rao, E. Amézquita, M. Ayarza, E. Barrios, M. Rondon and Sanginga N.

Soil fertility degradation has been described as one of the major constraints to food security in developing countries. Despite proposals for a diversity of solutions and the investment of time and resources by a wide range of institutions, it continues to prove a substantially pervasive problem. The rural poor are often trapped in a vicious poverty cycle between land degradation, fuelled by the lack of relevant knowledge or appropriate technologies to generate adequate income and opportunities to overcome land degradation. Intensification and diversification of agricultural production on smallholdings is required to meet the food and income needs of the poor, and this cannot occur without investment in soil fertility. Investing in soil fertility management is necessary to help households mitigate many of the characteristics of poverty, for example by improving the quantity and quality of food, income, and resilience of soil productive capacity to environmental change.

The "integrated soil fertility management" (ISFM) paradigm, which forms an integral part of the "integrated natural resource management" research approach with a focus on appropriate management of the soil resource, is currently adopted by TSBF-CIAT. The ISFM strategy explicitly recognizes the important role of the social, cultural, and economic processes regulating soil fertility management strategies from farm to landscape levels. The ISFM strategy is also broader than "integrated nutrient management" (INM) strategy as it recognizes the need for an appropriate physical, chemical and biological environment for crops to grow optimally, besides a sufficient and timely supply of available nutrients.

Research for development efforts of the Latin American Soils team, since its inception in 1997, have focused on identification of strategic principles, concepts and methods for protecting and improving soil quality through the efficient and sustainable use of soil, water and nutrient resources in crop-pasture-fallow systems in tropical savannas and hillsides agroecosystems. The team has made significant contributions to the mission of CIAT through:

- a concept on the need for building-up an arable layer in savannas to adopt no-till systems;

  a concept of on-farm nutrient recycling to reduce soil erosion and improved food security in hillsides;
- an approach to quantify the potential of arbuscular mycorrhizal fungi to recuperate soil structure;
- an approach for linking soil organic matter fraction to soil phosphorus (P) fraction related to plant available P in the soil;
- options for improved fallow management;
- a decision tree for targeting production systems based on soil texture, slope and depth;
- a tool (GEOSOIL) that allows decision making on land use at different scales (plot, farm, community, municipality, department, country);

- a guide to link local and scientific knowledge about indicators of soil quality;
- three books (Agropastoral Systems; Land management; and Soil Biota);
- publication of research results in over 50 journal articles and 22 book chapters;
- capacity building in soils research through training of over 40 undergraduate and 20 postgraduate and graduate students; and
- an award from CGIAR in 2001 for Outstanding Partnership.

The current TSBF-CIAT (Latin America) team has research for development activities in two major agroecosystems (Tropical Savannas and Hillsides). The reference (benchmark) sites for the team are Colombian Llanos for the savannas, and for the hillsides: Cauca in Colombia, San Dionisio in Nicaragua, and Yoro and Lempira in Honduras. The priority production systems for the team are cereal-legumes-livestock in savannas and Quesungual slash/mulch agroforestry system and cereal-legume-high value cropping systems in hillsides. The team works closely with a consortium on integrated management of soils (MIS) in Central America and is actively contributing to the objectives of CONDESAN in the Andean region and PROCITROPICOS in the savannas, and a BGBD (belowground biodiversity) global network. The integration with these regional and global networks is aimed towards improving rural livelihoods in the tropics through dissemination of soil management tools and technologies, increase in agroecosystem goods and services, capacity building and institutional strengthening.

The main objectives of the TSBF-CIAT team are: (i) to support the livelihoods of people reliant on agriculture by developing profitable, socially-acceptable and resilient agricultural production systems based on ISFM; (ii) to develop sustainable land management in tropical areas through the restoration of degraded lands; and (iii) to build the human and social capital of all TSBF-CIAT stakeholders for research and management on the sustainable use of tropical soils.

The main outcomes of this research for development efforts are: (i) biophysical and socioeconomic processes understood, principles and concepts developed for protecting and improving the health and fertility of soils; (ii) sustainable soil, water, and nutrient management practices developed and tested by applying and integrating local and scientific knowledge of biophysical and social processes; (iii) partnerships built and capacity for improving the health and fertility of soils of all stakeholders enhanced; (iv) improved rural livelihoods through profitable, diverse and intensive agricultural production systems; and (v) sustainable land management for social profitability, with special emphasis on land degradation, developed.

An increased integration with TSBF-Africa team is expected through MIS-AfNet south-south collaboration. Special efforts will be made to increase integration with other CIAT projects IP-5 (forages), IP-1 (beans), PE-3 (communities and watersheds), PE-4 (land management), SN-3 (participatory research), and SN-1 (rural agroenterprises development) in order to integrate soils and production systems research at the plot, farm and landscape scales, and to develop better soil and crop management options and decision support tools for the hillside and savanna farmers to reverse land degradation. Joint activities are in progress with IP-5 (forages) on the potential of tropical grasses to inhibit nitrification and reduce nitrous oxide emission, and the integration of methodologies for simultaneous evaluation

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of tropical legumes for feed and soil improvements; with IP-1 (beans) on the application of molecular tools to study soil microbial biodiversity in our efforts to combine ISFM and "integrated pest management" (IPM) research approaches; and with PE-4 (land management) to improve the relevance of scientific information in hillside environments through understanding of local soil management. TSBF-Latin America team will play a key role in the integration of the three major developmental challenges of CIAT (Improving management of agroecosystems in the tropics; Enhancing rural innovation; and Enhancing and sharing the benefits of agrobiodiversity) in Latin America.

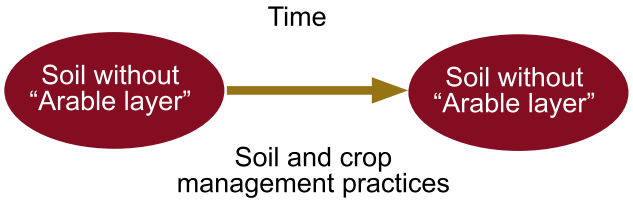
A few highlights from recent work of the Latin American team of TSBF-CIAT are presented.

Development of an arable layer: A key concept to improve infertile tropical savanna soils

E. Amézquita, I. Rao, E. Barrios, M. Rondon, P. Hoyos, D. Molina, I. Corrales, L. Chavez, M. Rivera and J. Bernal

Many soils from the tropics, even under natural conditions lack appropriate conditions to support sustainable agricultural production. Constraints could be of chemical, biological or physical nature. These conditions get exacerbated when the soils become degraded. A concept that is highly relevant for the better management of infertile tropical soils is that of the "buildup of an arable layer". Improved soil quality is a prerequisite for implementing no-tillage systems on infertile tropical soils. The application of this concept will depend on the prevailing soil constraints and current land use, for example soil compaction and loss of soil structure versus depletion of soil nutrients and the type of crops to be cultivated.

The concept includes tillage practices to overcome physical constraints, an efficient use of amendments and fertilizers to correct chemical constraints and imbalances, and the use of improved tropical forage grasses, green manures and other organic matter inputs such as crop residues, to improve the soil "bio-structure" and biological activity. The use of deep-rooting plants in rotational systems to recover water and nutrients from subsoil is also envisaged in this scheme. The practice of building an arable layer requires a diagnostic phase with identification of major soil constraints and then the implementation of



The construction of an "Arable layer" over time using vertical tillage, chemicalinputs and adapted tropical forage germplasmtillage,chemic alinputs and adapted

appropriate management practices to overcome limitations.

Research conducted in close collaboration with CORPOICA and other partners in the Llanos of Colombia indicate that building up an arable layer in tropical savannas is not only technically feasible but also economically attractive to farmers who are increasingly adopting the strategy. The arable layer concept and practice is an important component of ISFM approach to restore degraded lands. It contributes to an effective use of the belowground biodiversity and enhances the provision of several environmental services from the soil such as improved water quality and carbon sequestration. This concept builds on earlier strategies for the better management of tropical soils. To be functional, however, more attention needs to be given to the driving forces behind farmer decision making and the existing policies for intensifying agriculture on infertile savanna lands.

The combination of factors like the use of genetically adapted materials with high yield potential along with the improvement of the physical, chemical and biological conditions of the soil, results in superior yields of rice, maize and soybean compared with the savanna soil where the concept of arable layer is not applied.

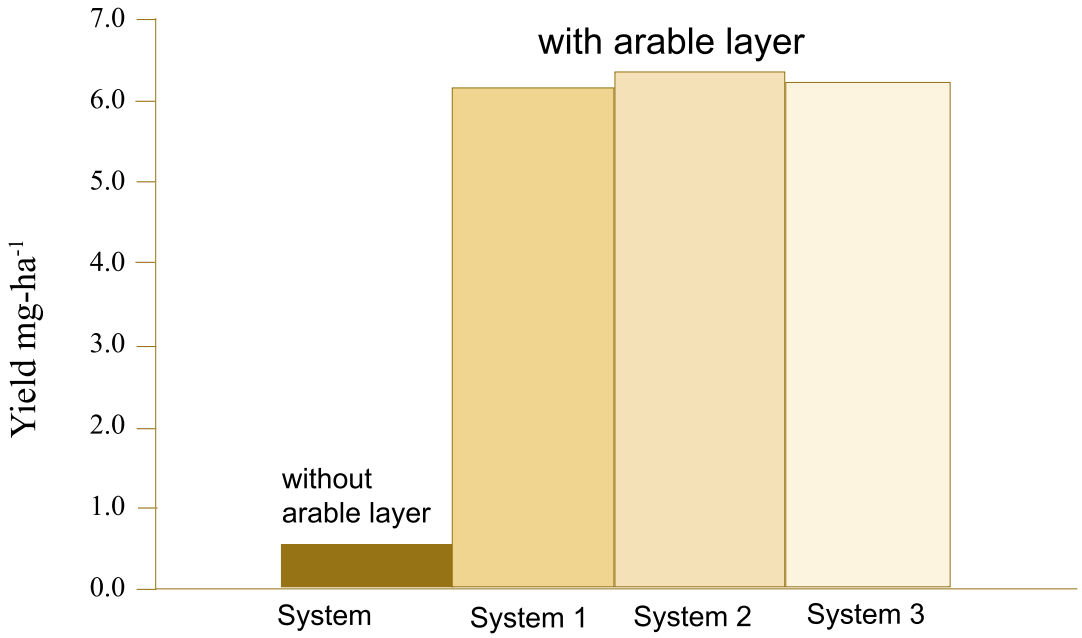
With acid soil adapted varieties and hybrids using the concept of building an "arable layer" it is possible to reach maize yields higher than 5 Mg/ha in Colombian savanna soils

Soybean in rotation with maize during the process of building-up of an "arable layer" with seed yield of more that 2 Mg/ha

The improvement of the physical, chemicals and biological conditions of the soil, in the process of building-up an arable layer, facilitated a better maize root growth which in turn increased yields and help in the maintenance of good soil conditions. Positive correlation was found between root development (root depth) and maize yields. Maximum grain yields occurred at root depths higher than 25 cm.

Higher grain yields were found with cropping systems where the concept of building-up an enable layer was applied. Maize yields varied from 0.25 Mg/ha under

Influence of build up of an arable layer through a Panicum maximum pasture on subsoil root development of maize compared with savanna soil conditions



Cropping systems to build-up an arable layer: System 1: Year 1 (Rice/Rice) + Year 2 (Maize/millet + legumes) Year 3 (Maize); System 2: Year 1 (Rice/Pasture) + Year 2 (Maize/soybean) Year 3 (Maize); System 3: Year 1 (Rice + Pasture + Legume) + Year 2 (Maize/millet + legumes) + Year 3 (Maize)

native savanna without the arable layer versus 6 Mg/ha under different cropping systems with the build up of arable layer.

Productivity gains constitute the principal benefit perceived by those using soil management practices in the well-drained savannas of the Llanos. It is considered that for rapid adoption of arable layer soil management technologies, investment by the Colombian government in improving infrastructure (e.g., roads) is critical.

Assessing the potential of the savannas of Colombia and Venezuela (Llanos) to sequester carbon in soils

M. Rondon, D. Acevedo, R. Hernandez, Y. Rubiano, M. Rivera, E. Amézquita, M. Romero, L. Sarmiento, M. Ayarza, E. Barrios and I. Rao

As a product of a long term investment in research in the Colombian Llanos done by CIAT and CORPOICA over a period of 30 years, and a collaboration with several Institutions in Venezuela, at the end of last year, a study was concluded to estimate the amount of carbon that could be accumulated in soils from the Llanos of the two countries under various scenarios of projected development for the region. The map of current land use in the Colombian Llanos shows that in Colombia, still the dominant land use is native savanna vegetation but improved pastures are increasing markedly. The total area cultivated with crops is still modest in Colombia. This contrasts with the situation in the Venezuelan Llanos where more than half of the area is already being used for pastures, crops and forest plantations.

As a whole, the Llanos, which cover a total area of nearly 50 million hectares, could potentially increase C stocks in soils in the order of 1 Pg C. Establishment of silvopastoral systems were found to be the most beneficial option regarding carbon storages as they combine high carbon uptake in soils by introducing deep rooted grasses and C accumulation in the biomass of trees.

Given current and projected national development plans, it is expected that around 10 million hectares of savannas will be converted into agricultural uses in the next two decades in Colombia and Venezuela and this could result in a net C sequestration in soil in the order of 160 Tg C. Implementation of carbon trading projects through the emerging CDM of the Kyoto protocol aimed at mitigating climate change could help for the advancement of environmentally sound agricultural expansion in the tropical savannas of Colombia and Venezuela.

Potential to capture atmospheric carbon in soils and biomass from different land management alternatives in the Llanos

Land cover	**Accumulated Carbon: t C $ha^{-1}y^{-1}$**			**Potential Value from CERs US$ $ha^{-1}y^{-1}$**
	Soils	**Biomass**	**Total**	
Native savanna	0	0	0	0
No-tillage crops	1	0	1	12
Agroforestry systems	0.5	1.5	2	24
Forest plantations	0.2	2.5	2.7	32
Improved grass-legume pastures	3	0	3	36
Silvopastoral systems	2.5	1.5	4	48

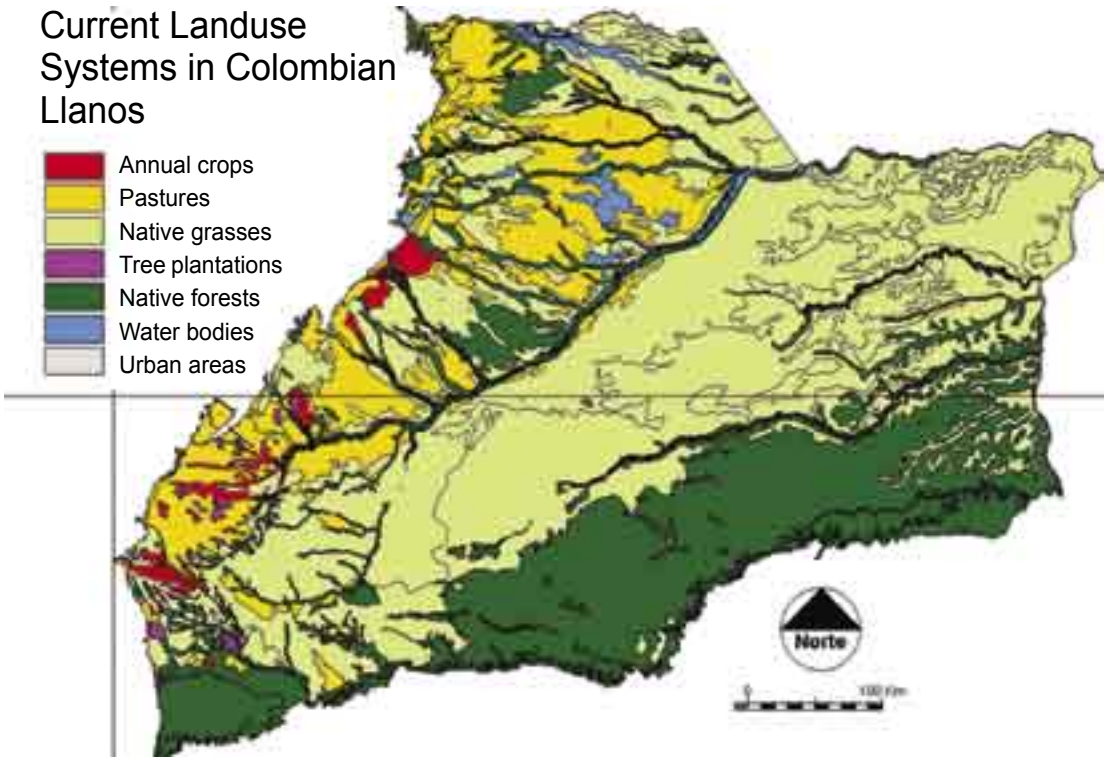
CER = Certificate of emission reduction, the minimum tradable unit on Carbon markets, according to the definitions of the Kyoto protocol.

Integrated Soil Fertility/Pest and Disease Management approaches to address root-rot problems in common beans

E. Barrios, G. Mahuku, J. Navia, L. Cortés, N. Asakawa, C. Jara and J. Quintero

Consensus about societal demands for agricultural sustainability and biodiversity conservation has been reached in the past decade. New approaches to continuing problems, like soil degradation and soil pest and diseases, are then needed in order to achieve agricultural sustainability. Our overall working hypothesis in this study is that combining soil fertility and pest management approaches would provide a unique opportunity to exploit synergies allowing a better control of soil fertility/pest disease limitations to crop productivity than either approach alone.

The management of organic matter is crucial to the activities of the soil biota. Use of green manures can have a multi-faceted beneficial effect on crop productivity arising from (i) protection of the soil from erosion; (ii) increased nutrient cycling; (iii) synchronized nutrient release and uptake by the plants; and (iv) increase in soil biological activity and diversity of microorganisms, which in turn can lead to minimized damage and loss from soil borne pathogens, and increased activity of beneficial microorganisms. However, different sources of green manure can have different effects on the balance between populations of



Land use distribution in tropical savannas (Llanos) of Colombia in 2003.

ISFM/IPDM Experiment

Potential of Green manures to control soil borne phytopathogenic fungi

harmful and beneficial organisms because they have different rates of decomposition and nutrient release as well as different impact on soil moisture and temperature that invariably affects relative population sizes. For this reason, we considered important to evaluate the effect of different sources of green manure on three key functional groups of soil biota: 1) pathogens, 2) microregulators and 3) microsymbionts. We are studying the population dynamics of soil pathogenic fungi (Fusarium, Sclerotium, Macrophomina, Rhizoctonia and Pythium), soil nematodes (discriminated by feeding habit), soil microsymbionts (mycorrhiza, rhizobia) during cultivation of common bean in soils infested with pathogenic fungi. Evaluations were carried out by: a) directly identifying and quantifying different soil biota from functional groups mentioned above and by quantifying growth of external hyphae as a measure of AMF activity and b) indirectly, by evaluating the incidence of disease on susceptible plant genotypes and by plant infection test for determining the native rhizobia symbiotic potential. The relative position of these three groups in the soil food web suggests the potential for soil organic matter management to reduce soil pathogenic fungi populations and incidence in bean plants by change induced in soil moisture and temperature, nutrient availability and interaction with other soil organisms.

A joint experiment was established in CIAT's Santander de Quilichao Research Station, using a plot that has a history of high incidence of root rot pathogens. The plots were planted with a root rot susceptible bean variety A 70. Immediately after planting, the plots were covered with three green manures treatments: (1) rapidly decomposing Tithonia diversifolia (TTH); (2) intermediate rate of decomposition (but greater soil cover due to leaf morphology) by Cratylia argentea (CRA); (3) slow decomposing (Calliandra houstoniana (CAL) at a rate of 6 t ha-1; and (4) control (no green manure added). The experiment was replicated five times. Soil samples (0-10 cm) collected during the cropping season

included at least planting and harvesting time. Samples were collected within rows and between rows, to measure the effect of the rhizosphere of bean plants on the soil biota studied.

Use of green manures can have a multi-faceted beneficial effect on crop productivity and are showing the potential to reduce crop losses from soil borne pathogens (root rots) and to improve the activity of native beneficial microorganisms (non-pathogenic nematodes, mycorrhizae and rhizobia). Following 4 cropping seasons, results reveal that application of Calliandra increased bean yield, reduced the incidence of root rots, increased AMF hyphal lengths and reduced nematode abundance. For treatments receiving Cratylia, minor differences were observed for root rot incidence, yield and nematode abundance, but AMF hyphal lengths were increased when compared to control. Although showing greater AMF hyphal lengths and lower disease incidence, bean yields in plots receiving Tithonia were lower than that obtained in control plots. Further studies are in progress to understand the interactions among soil fertility, soil biota (pathogenic and beneficial), and crop yield.

Strengthening regional partnerships to facilitate integrated soil fertility management

Members of the MIS consortium, M. Ayarza, E. Amézqita, E. Barrios, M. Rondon and I. Rao

Local students trained in the evaluation of biological activity of soil under the Quesungual Agroforestry system

Group of farmers that are supporting students conducting their thesis work on Quesungual Agroforestry system

Latin American team of TSBF-CIAT has been supporting partner institutions of the Integrated Management of Soils (MIS) consortium in the development of research and validation proposals. Recent funding from the Water and Food Challenge Program of CGIAR will allow NARS from Honduras and Nicaragua to conduct collaborative research with the Latin American team of TSBF-CIAT on management principles of the Quesungual Agroforestry system and validate the system in hillsides of Nicaragua and Colombia.

Specific workplans for training were discussed during the last planning meeting held in Honduras last February. The plan considers; 1) two Master students from Nicaragua and one PhD student from Colombia on water dynamics in the Quesungual system under the supervision of Dr E. Amézquita; 2) one Master student on gas production by the system under the supervision of Dr M. Rondón and; 3) one PhD student on nutrient dynamics under the supervision of Dr. E. Barrios. Several BSc theses will be supported by the project on aspects dealing with carbon accumulation in the forest biomass, forest inventory in the validation sites in Nicaragua and spatial analysis on potential sites for extrapolation.

TSBF-LA scientists and MIS partners met in Honduras in February 2005 to discuss research and validation activities for the Quesungual project in Honduras, Colombia and Nicaragua The training process is not limited to Masters and PhD students. The process is extended to local students from rural schools in Lempira region on methodologies to assess soil quality.

Validating the potential of the NuMaSS expert system to generate recommendation of N and P fertilization in maize-based systems in hillsides of Honduras

Additionally, members of the consortium are validating the potential of the NuMaSS expert system to generate recommendation of N and P fertilization in maize-based systems in hillsides of Honduras and Nicaragua. This activity is being carried out with the financial and technical support of the USAID-CRSP consortium in collaboration with Professor J. Smyth of the North Carolina State University, Raleigh, USA. Preliminary results indicate the system is able to predict N needs under a wide range of conditions. MIS partners working on the validation of the system will meet in May 2005 to share results and plan additional activities for 2005.

The International Union of Soil Sciences has nominated one of the members of the MIS consortium as the convener for a mega-symposium on methods to assess soil degradation during the next World Congress of Soil Science in 2006. The Latin American team of TSBF-CIAT played a central role in the success of the Latin American Congress of Soil Science in 2004, where one keynote address, five invited talks, thirteen oral presentations and four posters were presented by the team and were well received. As one of the highlights of the Congress, the Latin American Soil science Council, approved at its biannual meeting, the creation of the Latin American network of soil science (LatNet). The network aims at promoting the use of common methodologies across countries and institutions, facilitating information sharing and promoting the development of joint research activities. Members of the Latin American team were selected to coordinate the launching of the network and TSBF-CIAT will host the website of the network.

A national workshop was held at CIAT in Colombia on the topic of indicators of soil quality and land degradation, where the tools developed by the TSBF-Latin America team were exposed to and adopted by a wide range of partners and organizations. The workshop was sponsored by the Ministry of Agriculture and Rural Development from Colombia and was attended by 80 researchers, academicians, farmers and students from twenty institutions from all over the country. Because of the demand from the region, the team intends to plan a second event more likely to take place in Central American hillsides and a third one for the savannas in South America.

Strengthening AfNet: Towards implementation of the Yaoundé symposium recommendations

A. Bationo, N. Sanginga, J. Kihara, B. Waswa and J. Ogola

In May 2004, AfNet held a symposium in Yaoundé, Cameroon on improving human welfare and environmental conservation by empowering farmers to combat soil fertility degradation that was attended by 155 scientists and donor representatives from 32 different countries. A total of 120 papers were presented and will be published in a book by Kluwer Academic Publishers. A few of these papers will also be published in a special issue of Nutrient Cycling in Agroecosystems Journal. During the symposium recommendations were made as a challenge of implementation to enhance AfNets' service delivery. These recommendations focused on the following issues:

A. Capacity Building

Recommendations

1. Revive the Curriculum Support Programme in soil biology and fertility, with a strong focus on encouraging "T-shaped" skills i.e. scientists with multi-disciplinary skills and vision as well as disciplinary expertise
2. Assist members to develop their communication skills with respect to a wide range of partners and stakeholders: other scientists, extension workers, farmers, policy makers, etc
3. Utilise AfNet as a 'self-learning' network structured as a series of 'communities of interest' related to the TSBF themes and approaches
4. Promote and encourage the development of management and leadership skills.
5. Develop 'South-South' linkages for the transfer of knowledge, experience, technology and capacity building with MIS (Latin America), SARNet (India) and others

Progress made

Although AfNet is dominated by biophysical scientists, a special effort has been made to organize trainings in

social science to encourage T-shaped skills. For 2005, one training course on Participatory Research and Scaling Up and a second one on Gender Analysis are under preparation in addition to a biophysical one on Decision Support System for Agro-forestry Transfer (DSSAT).

A proposal was submitted to the African Development Bank (ADB) for the development of the soil biology and fertility curriculum as recommended. Also, a proposal between AfNet and MIS Consortium has been prepared and is under review to strengthen south-south linkages with Latin-America.

B. Concepts and Process Studies

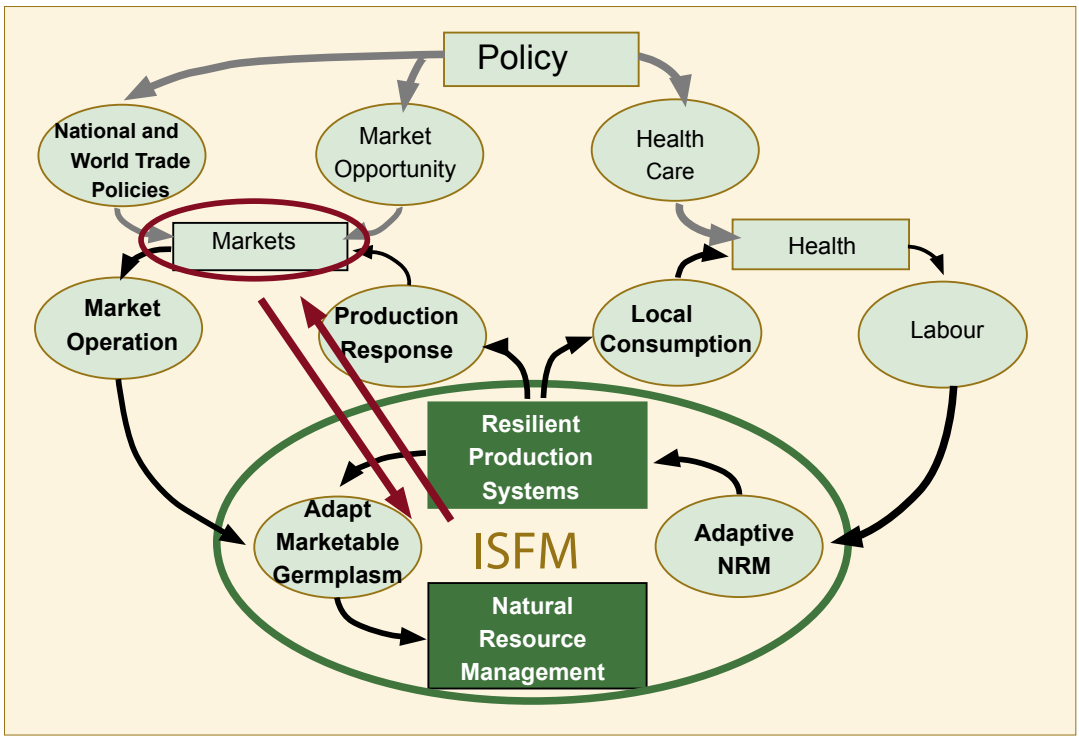
Recommendations

6. Embrace the opportunities for 'market-led ISFM' by linking TSBF's capacity for ISFM result generation with the complementary development-orientated expertise of other networks, institutes and NGOs
7. Develop a hypothesis-driven conceptual framework for the adaptive and market-led end of TSBF's work
8. Using partnerships, the conceptual framework and the 'success stories' of ISFM adoption to initiate pilot studies on market-led ISFM.
9. Ensure the "I" in ISFM is used in integrating water, germplasm and pest interactions in soil nutrient research
10. Include all capitals - Social, Human etc - with Natural Resource capital in models

Progress made

There are about 80 sites of network trials in different agro-ecological zones distributed

AfNet Bench mark sites in Africa



The processes and components of Integrated Soil Fertility Management (ISFM)

in East, South, Central and West Africa regions that are now increasingly addressing adaptive research in addition to the basic focus. In these trials, we have adopted the new paradigm of Integrated Soil Fertility Management (ISFM) which is a holistic approach to soil fertility research that embraces the full range of driving factors and consequences of soil degradation – biological, chemical, physical, social, economic, and political.

In addition to the present AfNet projects, other proposals have been developed and sent to Norway, CIDA, Syngenta and ADB and all these projects address the markets.

C. Scaling Up

Recommendations

11. Engage policy makers from the beginning to the end
12. Form institutional partnerships that link the private sector, the public sector, the farmer and the civil society
13. Integrate Impact Assessment into projects from the beginning.
14. Analyze success stories (warrantage, microdose, soybean multipurpose grain legumes etc…..) for opportunities to test elsewhere.

Progress made

AfNet is presently scaling up results of a micro-dosing project to more communities in West Africa. Also, in the Desert Margins Programme (DMP), a second phase has been approved that focuses exclusively on scaling up of water harvesting technologies tested in the first phase. The project targets six countries. In addition, there are three ADB/CORAF projects in which AfNet is a partner and these projects will mainly be disseminating technologies related to water harvesting, phosphate rock and micro-dosing. One more project with CTA has been developed that aims to transfer best bet soil fertility technologies to farmers employing a range of scaling up tools such as farmer field schools (FFS) and brochures interpreted in local languages.

Maize response to INM technologies in Western Kenya: In the foreground is a crop of maize showing N deficiency symptoms and stunted growth while in the background is a health crop

D. Institutional Links

Recommendations

15. Improve links with sub-regional bodies (ASARECA, CORAF, FARA, SAFGRAD…..).
16. Develop regional teams capable of contributing to the Sub-Saharan Africa Challenge Programme.
17. Contribute to the African International Nitrogen Initiative.
18. Improve synergies with other networks (SWMNET, AISSA etc)

Progress made

The selection of the new AfNet Scientific Steering Committee was made to ensure geographical representation of all the sub-regions and one of their tasks is to consolidate multi-disciplinary regional team building and interact with Sub-Regional Organizations. Special efforts have been made to link AfNet with other networks such as SWMnet of ASARECA and AISSA of IFDC. AfNet is also having an active role in SSACP. There are also discussions to have AfNet hosted by FARA.

E. Others

Recommendations

19. Form a professional association for scientists working in land productivity.
20. Exploit funding opportunities with national and bilateral budgets as well as multi-lateral donors.

New Projects

1. African Network for Soil Biology and Fertility- Andre Bationo

Integrated Soil Fertility Management in the Tropics: From knowledge to implementation, supported by The Rockefeller Foundation

TSBF-CIAT's goals under the new strategy are:

- To reduce hunger and poverty in the tropics through scientific research leading to new technologies and knowledge (CIAT Goal and Mission; Millennium Development Goal 1)
- Ensure environmental sustainability through research on the biology and fertility of tropical soils, targeted interventions, building scientific capability and contributions to policy (adapted from Millennium Development Goal 7)
- Strengthen national and international capacity to manage tropical ecosystems sustainably for human well-being, with a particular focus on soil, biodiversity and primary production (adapted from Millennium Ecosystem Assessment)

To achieve these goals, the following objectives will be pursued:

- To improve the livelihoods of people reliant on agriculture by developing profitable, socially-acceptable and resilient agricultural production systems based on ISFM
- To develop sustainable land management (SLM) practices in tropical areas while reversing land degradation
- To build the human and social capital of all TSBF-CIAT stakeholders for research and management on the sustainable use of tropical soils

Combining Water Harvesting Techniques and Nutrient Management to Sustain Food Production in the Dry Lands of West Africa, supported by CORAF/ WECARD

Objectives:

Overall objective: To transfer water harvesting and nutrient management technologies to increase food production in the dry lands of West Africa.

Specific objectives:

1. To refine and demonstrate the combined use of water harvesting technologies and integrated nutrient management to enhance food production at selected benchmark sites.
2. To enhance adoption of systems that optimize interactions between water and nutrients through farmer participatory approaches
3. Build human and institutional capacity within local communities and their partners (NARS, NGO, extension services, and private sector) to implement support to smallholder agricultural intensification and to ensure continuity after the project ends

Area targeted:
Niger, Sénégal, Burkina Faso & Mali

Partners:
- AfNet/TSBF-CIAT
- Centre d'Etude Régional pour l'Amélioration de l'Adaptation la Sécheresse (CERAAS/ISRA), Sénégal
- Institut de l'Environnement et de Recherches Agricoles (INERA), Ouagadougou/Burkina Faso
- Institut National de Recherches Agronomiques du Niger (INRAN), Niamey/Niger
- Institut d'Economie Rurale (IER), Mali
- Groupement Nabonswendé de Tougouri, Burkina
- Entente des Groupements Associés de Toubacouta (EGAT), Senegal
- Caritas-Kaolack/Senegal
- Projet Intrants/Niger

Fertilizer micro-dosing and drought tolerant varieties for small farmer prosperity in the Sahel, supported by CORAF/WECARD

Goal:
This project aims to double crop production and increase farm incomes by 30% through the adoption of fertilizer micro-dosing and drought tolerant varieties and better farmer-based cooperative organizations.

Specific objectives:
1. To demonstrate and enhance adoption of the fertilizer micro-dosing and drought tolerant varieties' technologies for improving productivity
2. To establish sustainable community-based farmer organizations in the targeted regions to provide market access to credit, other inputs, and output markets
3. To assist in human resource development through technical training
4. To promote policy and investment options that ensure optimal use of natural resources at the landscape scale

Area targeted:
Niger, Burkina Faso & Senegal

Partners:
- African Network for Soil Biology of the Tropical Soil Biology and Fertility, Institute of CIAT (AfNet), Nairobi/Kenya
- International Crops Research Institute for Semi Arid Tropics (ICRISAT), Sahelian Centre, Niamey/Niger
- Institut de l'Environnement et de Recherches Agricoles (INERA), Ouagadougou/Burkina Faso
- Institut National de Recherches Agronomiques du Niger (INRAN), Niamey/Niger
- Hunger Project/Burkina Faso
- Groupe d'Action pour le Développement Communautaire (GADEC), Tambacounda / Senegal
- Union des Groupements Paysans de Mekhe (UGPM/ Senegal)
- Projet Intrants/Niger

Promoting use of Indigenous Phosphate Rock for Soil Fertility "Recapitalization" in Tropical Africa supported by CORAF/WECARD

General Objective:
To transfer optimal approaches for the use of indigenous phosphate rocks to restore and maintain the productivity of the soils, improve agricultural production and food security, reduce poverty and promote overall well-being of the communities.

Specific Objectives:
1. To synthesis results of past Phosphate rock research
2. To demonstrate alternative options of direct application of PR such as the dry

mixtures to improve both the short-term and long-term P-supplying power of soils for different crops

3. To demonstrate alternative options of direct application of PR compacted materials with water-soluble phosphate fertilizers to improve both the short-term and long-term P-supplying power of soils for different crops
4. To scale up the utilization of phosphate rocks (PR), dry mixtures and compacted materials of different reactivities in specific cropping systems and agro-ecological zones

Area targeted:

Togo, Burkina-Faso, Mali & Niger

Partners:

- AfNet TSBF/CIAT
- INRAN (Niger)
- INERA (Burkina Faso)
- ICRISAT (Niger)

Desert Margins Project (DMP) Phase II, supported by GEF and United Nations Environmental Programme

Funding for The Desert Margins Project (DMP) was approved for the second phase of two years.

Objectives:

1. To undertake Ecological Monitoring and Assessment for improved understanding of ecosystem status and dynamics with regard to loss of biodiversity
2. To develop and implement strategies for conservation, restoration and sustainable use of degraded agro-ecosystems
3. To develop sub-regional, national and local capacity building in sustainable natural resource management
4. To identify, test and promote alternative livelihood systems for sustainable utilization of natural resources
5. To formulate sound policy intervention/ guidelines for sustainable resource use

Area targeted:

Burkina Faso, Botswana, Kenya, Mali, Namibia, Niger, Senegal & Zimbabwe

Enhancing rainwater and nutrient use efficiency for improved crop productivity, farm income and rural livelihoods in the Volta Basin, supported by the Water and Food Challenge Program (CPW&F)

Objectives:

1. To develop, evaluate and adapt, in partnership with farmers, integrated technology options that improve water and nutrient use efficiency and increase crop yields in the Volta Basin
2. To develop and validate methodologies, approaches and modern tools (GIS, models, farmer participatory approaches) for evaluating and promoting promising water, nutrient and crop management technology options
3. To improve market opportunities for small holder farmers and pastoralists, identify and assess market institutional innovations that provide incentives for the adoption of improved water, nutrient and crop management technologies that benefit different categories of farmers, especially women and other marginalized groups of farmers
4. To build the capacities of farmers and rural communities to make effective demands to research and development organizations, and influence policies that promote the adoption of sustainable water and nutrient use technologies
5. To promote and scale up and out 'best bet' crop, water, and nutrient management strategies in the Volta Basin through more efficient information and methodology dissemination mechanisms

Partners:

- The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
- Centro International de Agricultura Tropical (CIAT)
- Tropical Soil Biology Fertility Institute of CIAT (TSBF-CIAT)
- The United Nations University (UNU)
- The Center for Development Research (ZEF)
- The Semi-Arid Food Grain Research and Development (SAFGRAD)
- Savanna Agricultural Research Institute (SARI), Ghana
- Institut de l' Environnement et de Recherches Agricoles (INERA), Burkina

Area targeted:

Ghana, Burkina Faso, Togo, Côte d'Ivoire, Mali & Benin

Participatory Approaches to Research and Scaling Up: An African Soil Biology and Fertility Network (AfNet) Training Workshop, Nairobi, Kenya, supported by CTA

Goal:

To develop the capacity of The African Network for Soil Biology and Fertility (AfNet) member scientists as far as their knowledge and skill level of Farmer Participatory Research (FPR) & Scaling Up (SU) approaches are concerned and to enhance their ability to apply the FPR & SU approaches in their Research and Development work.

Workshop for the development of a country proposal on legume research in Uganda, Kampala, Uganda, supported by the Rockefeller Foundation

Objective:

To synthesize the work on legumes, identify research gaps and opportunities and prepare a proposal for a legume network research in Uganda.

Publishing the proceedings of the African Network for Soil Biology and Fertility Network (AfNet) International Symposium held in Yaoundé, Cameroon, May 17-21, 2004 funds from the Rockefeller Foundation

Objectives:

a. Publish the proceedings of this symposium

- The papers which were presented during the symposium will be peer reviewed and published by the Kluwer Publishers as a special issue and the excellent papers will be published in Nutrient Cycling in Agroecosystems Journal

b. Disseminate the proceedings to all AfNet members and other researchers within and outside the African continent

- The published hard copies and CD copies will be mailed to all AfNet members by ordinary mail or by currier
- The proceedings will also be published in the internet through five main websites

2. Integrated Soil Fertility Management (ISFM) - Bernard Vanlauwe

Enhancing the resilience of agro-ecosystems in Central Africa: a strategy to revitalize agriculture through the integration of natural resource management coupled to resilient germplasm and marketing approaches (2005 – 2008), supported by the Belgian Directorate General for Development Cooperation.

Objectives:

- To establish research priorities and identify researchable issues, constraints, opportunities, and develop realistic action plans for rebuilding agricultural research for development
- To evaluate the role of markets in the management of the natural resource base, as affected by farmer resource endowment and gender, and in the health status of vulnerable groups
- To create impact on the nutrition and health of vulnerable groups (e.g., HIV/ malaria) and communities at large
- To establish the mechanisms of adaptation and stress-tolerance for legumes and quantify the contribution of stress-tolerant germplasm to the resilience of agro-ecosystems
- To establish the mechanisms of enhanced yield stability when combining organic and inorganic sources of nutrients
- To quantify the multiple win (food security/health, income, environment) potential of site-specific, best-bet NRM interventions
- To guide the early adoption of best-bet interventions beyond the action sites, identify the root causes for successes and failures of best-bet interventions beyond these sites, and develop strategies for scaling out legume-based technologies and innovations,
- To initiate coordinated service provision to assist farmers groups and other stakeholders to diversify their cropping patterns and undertake marketing activities
- To strengthen partnerships for NRM by reviving the capacity of the major stakeholders and monitoring their mind-set changes
- To reconstruct the knowledge base on natural resource management in the mandate areas and revive the research capacity in the development and evaluation of NRM technologies

Area targeted:

- West and Eastern DR Congo, Rwanda & Western Kenya

Partners:

- Institut National des Etudes et de la Recherche Agricole (INERA), DR Congo
- Plate-forme Diobass au Kivu (NGO), DR Congo
- Institut des Sciences Agronomiques de Rwanda (ISAR), Rwanda
- World Vision (NGO), Rwanda
- Catholic University of Leuven, Belgium

A strategy for reviving the vital breadbasket of the Democratic Republic of Congo through Integrated soil fertility management coupled to resilient germplasm in cassava-based systems (2005-2009), supported by the Flemish Inter-University Council

Objectives:

1. Farming system domains identified and characterized for developing BNMS (Characterization)
2. New knowledge obtained on soil processes (e.g., recapitalization of depleted soils, improved nutrient use efficiency) for the efficient design of management practices that enhance soil productivity in cassava-based systems (New knowledge)
3. Appropriate field management practices based on BNMS for cassava-based systems developed and tested on farmers' fields (Management practices)
4. BNMS technologies for cassava-based systems validated and adapted on farm in benchmark areas (Adaptation and adoption)
5. Capability of NARS to undertake BNMS research enhanced (Capacity building)

Area targeted:

• West and East DR Congo

Collaborators:

- Faculté des Sciences Agronomiques, Université de Kinshasa, Kinshasa, DR Congo
- Faculté de Sciences Agronomiques, Universite Catholique de Bukavu, Bukavu, DR Congo
- Faculty of Agricultural and Applied Biological Sciences, Universiteit Gent, Belgium
- Laboratory for Soil and Water Management, Faculty of Agricultural and Applied Biological Sciences, Katholieke Universiteit Leuven, Belgium

Exploring the multiple potentials of soybeans in enhancing rural livelihoods and small industry in East Africa (2004 – 2007), supported by the Rockefeller Foundation

Objectives:

1. To inventory and evaluate past research and development efforts aimed at enhancing soybean production, marketing, and utilization in East Africa
2. To determine the agro-ecological potential (temperature, rainfall, nodulation status, etc) for production of dual-purpose soybean in East Africa
3. To delineate the potential markets for soybean for home consumption and community-based processing in the target agro-ecozones, and for large-scale processing at the national scale
4. To evaluate ex-ante the competitiveness of soybean and the potential contributions that soybean could make to rural livelihoods and the natural resource base in East Africa
5. To outline measures that are necessary to achieve successful and widespread uptake of soybean-based cropping system and processing technologies (e.g., extension services capacity, marketing strategies, access to credit)
6. To backstop development initiatives aimed at enhancing rural livelihoods through adoption of soybean in cropping systems

Area targeted:
- Kenya, Uganda & Tanzania

Collaborators:
- Kenyatta University, Nairobi, Kenya
- Makerere University, Kampala, Uganda
- National Agricultural Research Organization, Kampala, Uganda
- Salien Research Institute, Arusha, Tanzania
- University of Florida, USA
- CIAT Land use project
- CIMMYT Economics program

The interaction between resource quality and aggregate turnover controls ecosystem nitrogen and carbon cycling (2004-2007), supported by the National Science Foundation, USA

The project aims at unraveling how interactions among organic resource quality, mineral N inputs and rate of soil aggregate turnover control C and N cycling in natural and agroecosystems across different soil textures and climatic zones. It will work around a conceptual combination of the aggregate turnover model of Six et al. and the Decision Support System for Organic N management of Palm et al. and investigate how organic resource quality affects C and N turnover and cycling for various soil textures and climates.

Objectives:
1. To elucidate the linkage among organic resource quality, organic plus mineral resource additions and aggregate turnover
2. To determine how this linkage controls C cycling and the use efficiency of N derived from both organic and mineral resources
3. To determine how this linkage varies across soil textures and climates

Global Hypothesis: Organic and mineral resource management significantly affect the balance between C and N stabilization through aggregate formation and C and N release following aggregate breakdown, thus affecting system-wide N use efficiency and C sequestration

H1: High quality organic and mineral N resources increase the rate of macroaggregate turnover compared to low quality organic resources

H2: The intermediate macroaggregate turnover induced by combining medium quality organic resources and mineral N optimizes N use and enhances C sequestration

H3: The linkage between organic plus mineral resource additions and aggregate turnover is universal, but the optimum mixture of resources will shift from high to low quality residues with increasing sand content and drier climate

Collaborators:
- Soil Research Institute, Kumasi, Ghana (Contact: E Yeboah)

- Kenyatta University, Nairobi, Kenya (Contact: D Mugendi)

- University of Zimbabwe, Harare, Zimbabwe (Contact: P Mapfumo)

- University of California, Davis, USA (Contact: J Six)

SCUAF 5: Soil Changes Under Agroforestry

A new and improved Version 5 of the SCUAF computer model, Soil Changes Under AgroForestry, is now available. SCUAF5 can also be applied to agriculture and forestry, allowing comparisons between different systems of land use and management. The model predicts the effects on soils of specified land use systems under given environmental conditions. The User specifies:

- Physical Environment (Climate, Soil, etc.)
- Land Use System (trees, crops, inputs, outputs, management)
- Initial Soil Conditions
- Initial Rates of Plant Growth
- Rates of Operation of Soil-Plant Processes
- Feedback Effects of Soil Changes on Plant Growth

The primary basis for description of the land use system is the proportions of trees and crops in each year. Also taken into account are additions (fertilizer, etc.), harvest, and prunings. A cutyear, when the tree component is wholly or partly removed, can be included. Values of all variables are displayed to the user; there is a set of default values for each environment, which can be replaced by values from field trials.

The model simulates and outputs changes in soil conditions (carbon, nitrogen, phosphorus), rates of erosion, and the effects of these on plant growth and harvest. It can be used to investigate erosion, land degradation, nutrient cycling (including competition between trees and crops), carbon sequestration (plant and soil), and sustainability.

SCUAF can be used in research and in education. In research, an important application is to explore the results of different scenarios for land management. In education, it teaches an understanding of soil-plant systems, nutrient cycling, and the effects of erosion.

A major advantage of SCUAF is its ease of operation. A training course is not needed! It can be operated by anyone familiar with soil-plant systems.

SCUAF was developed by Anthony Young and Peter Muraya of ICRAF (now the World Agroforestry Centre). Version 5 was programmed by Oscar Cacho of the University of New England, with support from ACIAR. The above introduction is based on *www.land-resources.com* (select SCUAF), and the program can be downloaded from the linked University of New England site,www.une.edu.au/febl/Economics/carbon/scuaf.html

Awards

Andre Bationo, the AfNet Co-ordinator was awarded the CIAT Outstanding Principal Staff Achievement Award for 2004 by the CIAT board in Cali in December 2004. TSBF recognizes the role played by Andre in research that aims at improving soil fertility for African poor farmers. On behalf of the entire TSBF team, we wish to congratulate Andre for this tremendous accomplishment.

New Publications

Ramakrishnan P.S. et al. 2005. 'One Sun Two Worlds: An ecological Journey". UNESCO, New Delhi. 286 pp. ISBN 81-204-1649-X.

For the last several years, UNESCO-New Delhi Office, under its Man and the Biosphere (MAB) Programme, has been working with the primary objective of linking biophysical understanding of ecosystem/landscape level processes with the human dimensions of the problem, in the area of natural resource management with concerns for sustainable livelihood/ development and rural/traditional societies. Prof. Ramakrishnan as an expert in 'knowledge systems', as related to natural resource management, has lead a team in collaboration with the Centre for Environmental Education to present in this book a dialogue between the two knowledge systems - the 'Traditional Knowledge' (TK) represented by a villager with a rich experiential traditional knowledge heritage, and the 'Formal Knowledge' represented by a scientist with technical knowledge in the area of natural resource management. This book represents and important effort to create awareness towards linking ecology, economics and ethics for sustainable management of natural resources with concerns for development. Recognizing that an appropriate mix of the "traditional" and the "formal" knowledge-system based technologies forms the basis of this book to demonstrate a variety of ways in which such a linkage could ensure conservation with development.

New Staff at TSBF

Jonas Chianu

TSBF wishes to welcome Jonas N. Chianu, an agricultural economist, from Nigeria. Jonas joined TSBF-CIAT as a Senior Research Fellow (Socio-economics) in January 2005. He undertook his studies at the following institutions: B. Agric (Agricultural Economics) from the University of Nigeria, Nsukka, Nigeria (1984); MSc (Agricultural Economics) from the University of Ibadan, Ibadan, Nigeria (1991); MSc (Agricultural Development) from Wye College, University of London (1994); and PhD (Agricultural Economics) from the University of Ibadan, Ibadan, Nigeria (2000). Data analysis for his PhD was done at Christian-Albretch's University in Kiel, Germany, funded by the German Academic Exchange (DAAD). Jonas has worked in various capacities (Research Assistant, Research Associate, Deputy Project Coordinator, Consultant, etc.) at the International Institute of Tropical Agriculture (IITA) between 1987 and 2001. He served as a Japan Society for the Promotion of Science (JSPS) Postdoctoral Research Fellow with the International Rural Development, Division of Natural Resources Economics, Graduate School of Agriculture, Kyoto University, Kyoto, Japan from November 2001 to November 2003. He was a consultant to IITA from April to December 2004 and worked on IITA's project on 'Improving rural livelihoods in Southern African countries (Malawi, Mozambique, Tanzania, and Zambia) and Cowpea sub-sector analysis in Nigeria.

While at TSBF Jonas will manage on a day-to-day basis the project on 'Exploring the multiple potentials of soybeans in enhancing rural livelihoods and small industry in East Africa'. His main responsibilities will include (i) to take inventory and evaluate past research and development efforts aimed at enhancing soybean production, marketing, and utilization in East Africa, (ii) to delineate the potential markets for soybean for home consumption and community-based processing in the target agro-ecozones, and for large-scale processing at the national scale, (iii) to evaluate ex-ante the competitiveness of soybean and the potential contributions that soybean could make to rural livelihoods and the natural resource base, and (iv) to outline measures that are necessary to achieve successful and widespread uptake of soybean-based cropping systems and processing technologies. His specific duties include:

- Liaise regularly with the various national and international partners to ensure proper implementation of the various project activities
- Compile a database of stakeholders interested in soybean production and marketing for the African region
- Report achievements and progress on a yearly basis to both the donor organization and TSBF-CIAT
- Backstop socio-economic activities in other projects managed by TSBF
- Assist in capacity building related to socio-economics and marketing within the African Network of TSBF, AfNet
- Liaise with other projects and institutions working on market-led integrated soil fertility management with respect to data and information exchange

Jonas is married to Justina N. Chianu and have four children (two daughters and two sons): Chizoba, Joy Chianu (9); Chukwuemeka, Jonas (Jnr) Chianu (7), Kenechi, Shalom Chianu (5); and Chigozirije, Francis Chianu (1).

Didier Lesueur

Didier Lesueur, Soil Microbiologist and Senior Research Fellow, joined TSBF Institute of CIAT, Nairobi, Kenya in September 2004 from the Forest Dept of CIRAD (Unit of Research entitled “Ecosystem of Plantation”).

Didier was born in France where he grew up. He developed his PhD in Soil Microbiology/ Plant Interactions in the Forest Department of CIRAD (International Centre of Cooperation in Agronomical Research for the Development) in collaboration with the University Pierre & Marie Curie (Paris VI). He obtained in October 1992, a permanent post in the same Forest Dept of CIRAD as soil Microbiologist and he worked for 3 years in the common Laboratory of Biotechnology and Tropical Forest Symbiosis (BSFT) of IRD/CIRAD/ University of Paris VII in Nogent/Marne (France). His research centred around the effect of limiting factors such as nutrient deficiencies (iron) and acidity on the establishment and the functioning of the nitrogen-fixing symbiosis. He started also a new activity on the microsymbionts associated to tree legumes such as Calliandra calothyrsus, Leuceana sp. and Gliricidia sepium in Kenya and in Reunion Island. Didier has also worked at the Forest Dept of CIRAD in Senegal in the IRD Laboratory of Microbiology of Tropical Soil, now called Common Laboratory of Microbiology (IRD/University of Dakar/ISRA) where his objectives were to strengthen the field work on the inoculation of tree legumes with selected microsymbionts. He worked there for 8 years and developed a strong regional collaboration with soil microbiologist from West Africa (Mali, Ivory Coast, Burkina Faso, Niger, Mauritania, Cameroon and Senegal) through several projects. A strong and long collaboration was initiated in the same time with Kenya, and more especially with the Kenyan Forestry Research Institute (KEFRI) through other projects funded by European Commission (he leaded one of them).

His objectives at TSBF will be 1) to investigate the role of soil microbial communities in nutrient cycling in agro-forest system such as Acacia senegal and other multipurpose trees; 2) characterization and function determination of below ground microorganism in especially those responsible for Biological Nitrogen Fixation (BNF); 3) Development and transfer of techniques for soil microbial communities studies; 4) strengthen the capacity building and training of MSc and PhD students in areas of soil microbiology. For supporting these activities, several proposals are in progress and a Soil Functioning Microbiology Lab will be set up in the TSBF Institute of CIAT in Nairobi, Kenya before the end of this year.

Ritu Verma

Dr. Ritu Verma, Social Scientist and Senior Research Fellow at the TSBF Institute of CIAT, Nairobi, Kenya.

Ritu was born in New Delhi, grew up in Canada and has lived in the Philippines, USA, England, China, Nepal, Kenya and Madagascar. She developed her PhD in Anthropology at the School of Oriental and African Studies at the University of London. She also has an M.A. in International Affairs/International Development from the Norman Paterson School of International Affairs at Carleton University, and a P.Eng. in Civil Engineering from McGill University. Her hobbies are rock climbing, hiking, yoga and photography.

Boaz Waswa

Boaz Waswa joined AfNet coordination unit as a research assistant in March 2005. Waswa has a Masters degree in Environmental Studies (Agroforestry and Rural Development) from Kenyatta University. He undertook his master's studies with TSBF in the TSBF-KU-KARI Rockefeller Foundation funded project: The Sense of SOM. He also has a Bachelor of Environmental Studies degree from Kenyatta University. After completion of his studies, Waswa has served as a field facilitator in the TSBF supported Soil Fertility Gradient (SFG) Project and the Soya Beans Project. His responsibilities with AfNet will be to assist in proposal development and presentation to donors, literature review, book and report writing, organizing workshops and training, preparing the TSBF-CIAT newsletter, *The Comminutor*, and preparing the AfNet brochure.

Important events

- **Training workshop:** Farmer Participatory Research and Scaling Up, *Nairobi, 19th to 30th September 2005*. Contact Andre Bationo and Ritu Verma of TSBF

- **Training workshop:** Decision Support System for Agro-technology Transfer (DSSAT), *Accra, Ghana 23rd to 29th October 2005*. Contact Andre Bationo

- **Gender Analysis Training- Addis Ababa Ethiopia:** *Co-organized by AfNet and International Institute for Rural Reconstruction (IIRR)*. Contact Andre Bationo and Ritu Verma of TSBF

- **The Third World Congress on Conservation Agriculture** will be held from 3rd to 7th October 2005 in Nairobi.

- **Combating Soil Degradation to Enhance Food Security in Africa:** The Role of Nuclear Techniques in Developing Improved Soil, Water and Nutrient Management Practices that will be held in Nairobi Kenya on 10th to 13th October. You can find the announcement for the meeting and the forms in this link ***http://www-pub.iaea.org/MTCD/meetings/meetings2005.asp.*** C ontact Andre Bationo of TSBF