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Please mark your calendars

The Government of Morocco is Hosting CGIAR's Annual General Meeting in Marrakech during December 5-8, 2005



Centers Respond to Asian Tsunami

Following the tsunami disaster in the Indian Ocean region, the Future Harvest Centers of the CGIAR moved quickly to lend their expertise to ongoing efforts focusing on relief, assessment, and rebuilding of livelihoods.

Centers close to the disaster areas, especially IWMI and WorldFish Center joined United Nations and local consortia in helping assess the damage. IWMI geographic information system (GIS) experts joined UN relief mapping experts, while researchers from WorldFish collaborated with a consortium of UN and regional agencies to rapidly assess the tsunami's devastating impacts on fishing communities, fishing, and coral reefs. Immediate rehabilitation actions were also taken by IIRRI which sent experts to Indonesia, Malaysia and Sri Lanka to assess problems in saline, coastal soils where rice is grown. IIRRI's 'Rice Knowledge Bank,' has been updated to provide essential information on growing rice in tsunami-affected areas.

The CGIAR Centers are working collectively to assess needs and develop partnerships projects. The first phase involves analyzing the situation and assessing needs to better target relief efforts. The second phase will have more comprehensive partnership projects. IWMI and WorldFish, with assistance from World Agroforestry Centre, CIFOR and ICRISAT will serve as the lead Centers in South Asia and Southeast Asia. A tsunami listserv has been set up to facilitate information-sharing, and websites of participating Centers carry information about mitigation activities.

Centers moved swiftly to work in areas where they have had long-term commitments.

- IWMI conducted a livelihoods-focused rapid needs assessment in the worst hit areas of Hambantota district, where it has been actively working for 15 years through the Ruhuna Benchmark River Basin research activities. IWMI is also planning to assess groundwater salinity in three regions on the eastern coast of Sri Lanka
- IPGRI has adopted Dodanduwa, Sri Lanka, a village that bore the brunt of the tsunami and site of their long-term research on coconuts. Working with a local NGO and the Coconut Research Institute of Sri Lanka, IPGRI will help by bringing lost equipment and assist womens' groups with coconut-based livelihood activities

ICRISAT will support a long-term relief and rehabilitation effort in a cluster of 30 villages on the southeastern coast of India (Tamilnadu and Pondicherry) where nearly 8,000 lives were lost. In an area identified by the M.S. Swaminathan Research Foundation (MSSRF),



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CGIAR Chairman
Ian Johnson

CGIAR Director
Francisco Reifschneider

CGIAR Members

African Development Bank
Arab Fund for Economic and Social Development
Asian Development Bank
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Bangladesh
Belgium
Brazil
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Commission of the European Community
Côte d'Ivoire
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Food and Agriculture Organization
of the United Nations
Ford Foundation
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Inter-American Development Bank
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Peru
Philippines
Portugal
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Romania
Russian Federation
South Africa
Spain
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Switzerland
Syngenta Foundation for Sustainable Agriculture
Syrian Arab Republic
Thailand
Turkey
Uganda
United Kingdom
United Nations Development Programme
United Nations Environment Programme
United States of America
World Bank



Message from the Chairman and Director

Dear Colleague:

We are pleased to present the March 2005 edition of "CGIAR News." An e-version is available at www.cgiar.org

It is clear that 2005 will be the Year for Development. The upcoming U.N. General Assembly will focus on the Millennium Development Goals and call for more concerted actions to achieve them. The UK is leading a major effort for putting development issues—including Africa, aid, trade, and debt relief—at the center of its agenda for its presidency of the Group of Eight in 2005. In March, the Commission on Africa is expected to release its report. This international focus on development offers an excellent opportunity to highlight the importance of agricultural research, strong national and international agricultural research systems, and efficient delivery mechanisms. Under the aegis of the U.N. Millennium Project, Professor Jeffrey Sachs new report, "Investing in Development" has already highlighted this most effectively, and asks the world community to increase support to agricultural research.

Inside the CGIAR, our reform program continues. The Science Council is hard at work on system research priorities. And the Sub-Saharan Africa Task Force will soon present its recommendations on ways in which to improve structural and programmatic alignment. All these activities bode well for the CGIAR as it progresses toward the next phase of reforms. Agriculture is central to development; hence, agricultural issues will likely remain at the front and center of the development agenda and discourse.

This edition covers a range of stories, notably research highlights and impacts achieved by CGIAR Centers. We are pleased to welcome Bob Ziegler, Director General-designate, IRRI. We are especially pleased that Kanayo Nwanze and colleagues at Africa Rice Center (WARDA) have regrouped and re-launched research activities in Cotonou, Benin. In particular, we thank the Governments of Benin and Mali for their strong support to the CGIAR.

On the service delivery side, a new CGIAR contacts database will ensure easier access to expertise and help revamp the process of placing CGIAR nominees on Center Boards. A pilot performance management system will serve as a tool for improved decision-making and managing performance for impact. And the new content and look of the CGIAR website is receiving good reviews, and over 50,000 visitors now browse the website monthly.

Finally, plans for Annual General Meeting 2005 are proceeding well. The Government of Morocco, Hamid Narjisse and colleagues at INRA are looking forward to hosting the meeting in Marrakech, December 5–8, 2005.

Please share this newsletter with interested colleagues—they can receive their own copies (print and e-version) by signing up on the CGIAR website. As always, we welcome comments at cgiaar@cgiar.org

Cordially,

Ian Johnson
CGIAR Chairman

Francisco Reifschneider
CGIAR Director

New Director General for IRRI

Dr. Robert (Bob) Zeigler has been appointed Director General of IRRI. Dr. Zeigler, a US national, is an eminent plant pathologist with more than 20 years experience in agricultural research in the developing world. No stranger to the CGIAR system, he led CIAT's rice program, and was head of IRRI's lowland rice research program.

More recently, Dr. Ziegler was head of the Department of Plant Pathology and

Director of the Plant Biotechnology Center at Kansas State University, before working as Director of the CGIAR Generation Challenge Program based in CIMMYT, Mexico. He starts on April 1, 2005.

"I am especially pleased to be able to appoint as Director General someone who has worked here so successfully," said Dr. Keiji Otsuka, Chairman, IRRI Board of Trustees. 🌱



Robert (Bob) Zeigler

Announcements

Welcome to New Center Board Chairs:

- Uwe Werblow, ILRI, succeeding John Vercoe
- Trond Bjorndal, WorldFish, succeeding Robert Kearney

Welcome to New Board Members:

- Ralph Anthony Fischer, Ermerlinda R. Roman, and Elizabeth Jean Woods join IRRI Board of Trustees.

Honors and Awards:

- Robert E. Kearney, former Board Chair of WorldFish Center, was awarded the Member of the Order of Australia (AM) for his contribution to the sustainable management of fisheries resources and to the development of national and international research programs and policies.
- Stephen J. Hall, Director General of WorldFish Center, was awarded the Public Service Medal (PSM) for outstanding public service when he served as Director of the Australian Institute of Marine Science (AIMS).

- B.B. Singh, IITA, was recognized as a Fellow of the American Society of Agronomy during a ceremony held on November 2, 2004. He was also honored with The Tech Museum Award Trophy for 2004 for applying innovative technologies to improve the human condition.

- Julio Solis, CIP, won the Award for Scientific Investigation from the National Council of Science and Technology, Lima.

Farewells:

- Emmy Simmons retired in February 2005 after 30 years of public service at USAID
- John Monyo, Assistant Director General for Sustainable Development, FAO and Member, CGIAR Executive Council, retired in February 2005.

In Memoriam:

- Mervat El-Badawi, CGIAR representative from the Arab Fund for Economic and Social Development, passed away in December 2004. Dr. El-Badawi will be missed by her colleagues at ICARDA and in the CGIAR.

Assuring Excellence in CGIAR Centers

The Committee of Board Chairs (CBC) continues to support the training of Center Board Members in board responsibility and governance mechanisms.

In partnership with the London, UK-based Institute of Directors and the CGIAR Secretariat, four orientation programs are planned for early 2005, two each to be held at the Addis campus of ILRI and WorldFish Center in Penang. In 2004, three orientation programs were conducted. When completed, over 70 Board Members will have benefited from this professional training opportunity.

Feedback provided by participants and external reviewers has helped to continuously improve the content of the programs. CBC strongly recommends that both current and new board

members as well as Directors-General attend these orientation programs. We are grateful to Franklin Moore, USAID for reviewing the orientation programs held in Mexico. I invite and urge all Board Members who have not registered for the 2005 programs to please contact your Center Board Secretary to enroll.

The Annual General Meeting in Mexico adopted the first CGIAR Charter. The CBC is proud to have been a full partner in the drafting of the Charter. The Committee is also actively involved in the development of performance indicators. For the CGIAR stakeholders and investors, the adoption of creditable performance indicators represents a laudable milestone for the CGIAR.

Uzo Mokwunye, *CBC Chair*

Accessing Expertise: New CGIAR “Contacts” Database Makes it Easier

In a continuing effort to provide effective, streamlined service, the CGIAR Secretariat unveiled a new “Contacts” database. Now, contact information on the CGIAR roster of experts is only a mouse-click away at <http://cgsec2.cgnnet.com/cgiarcontacts/default.htm>.

The database serves as a portal for accessing expertise and receiving nominations for appointment to Center Boards, external review panels, and other system-level positions. The database is designed to facilitate the new process of selecting CGIAR nominees to serve on Center Boards, and is set up to receive nominations year-round.

CGIAR Members and other interested parties are invited to help populate the database by entering names for Center Boards and other system-level positions.

Nominations: A quick primer

- 1. From the home page of the database, click on “Nominations.”** You will be prompted to log into the database. (If you have not registered, follow the link “register here” on the log in page.)
- 2. From the Nominations page, choose the nomination type** (Center Board, Management or Program review panel,

etc.), and nominee type (new candidate or an existing contact in the database). Click on the drop-down arrow to see if the person you want to nominate is already in the database.) Click ‘Proceed.’

- 3. Fill in all of required fields (marked with an asterisk).** You may also suggest additional references and attach CVs or other documents to the form. Please note that only persons authorized to review potential candidates for Board positions will be able to view confidential information. The candidate's name and contact information will be the only information available to regular users. Click ‘Submit.’
- 4. A nominee can enter his/her own information in the database.** He/she will simply need to register as a user of the database and then enter the nomination.
- 5. If you have problems submitting a nomination or have questions,** please send an email to contacts-nominations@cgiar.org. You may also send information on a nominee to this email address and the information will be entered on your behalf.

Feedback or questions about the database can be sent to contacts-nominations@cgiar.org

Biofortified wheat, one step closer to reality



CGIAR's HarvestPlus Challenge Program is working to reduce micronutrient malnutrition by harnessing the powers of agriculture and nutrition research to breed nutrient dense staple foods.

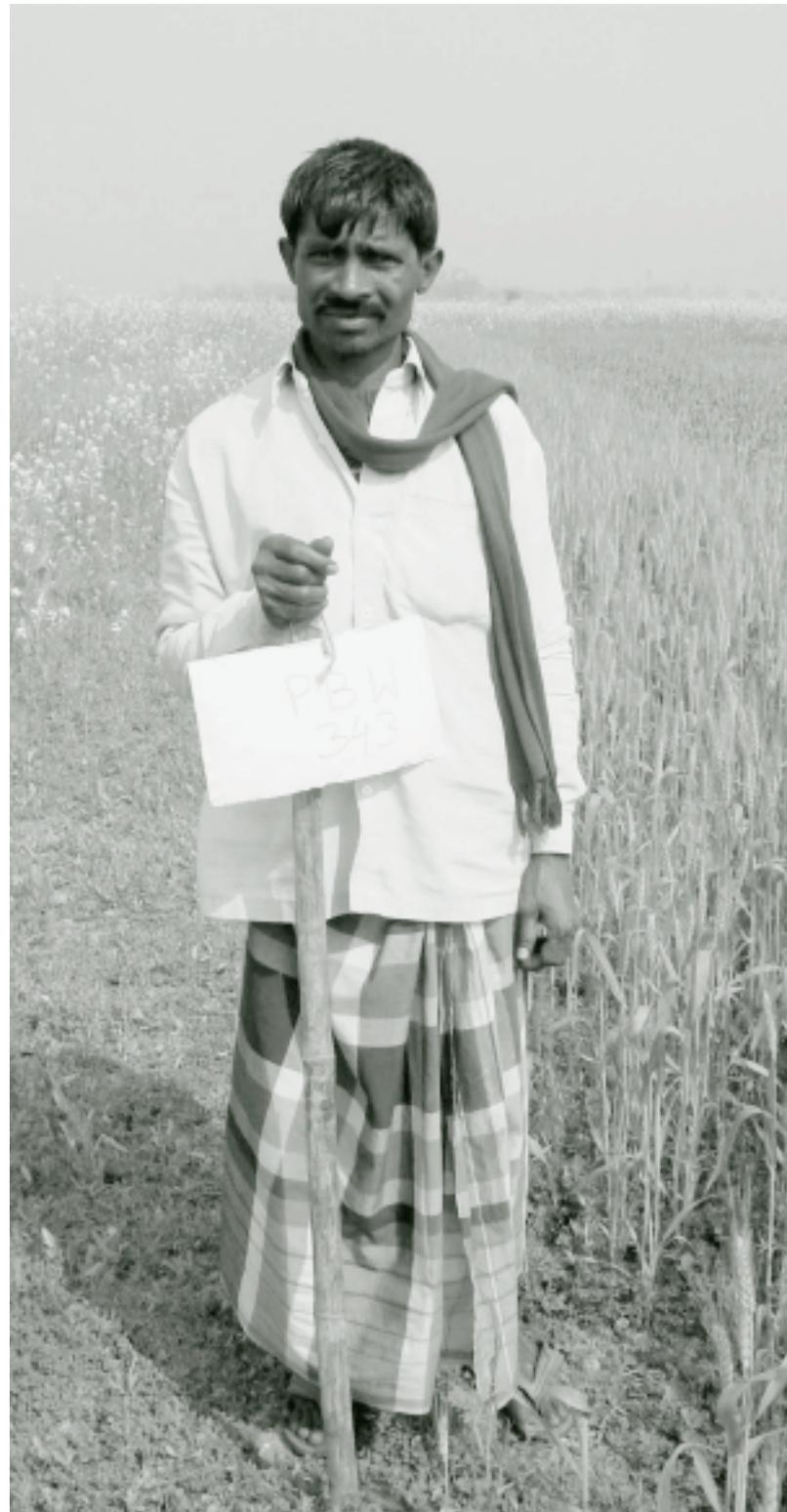
The pathway to success requires researchers to pass four significant milestones: first, when the crop is developed with high levels of nutrients; second, when the varieties have been adapted for the environments where the malnourished reside; third, when the nutrients contained in the crops are 'bioavailable,' that is proven to be effective in reducing human malnutrition, and finally, when the crops are accepted and eaten by those in need.

CIMMYT and the HarvestPlus alliance have successfully achieved the first goal by using conventional plant breeding techniques to biofortify agronomically superior wheat with 100% more zinc and 35% more iron than other popular modern varieties. "We strongly felt that in order to make biofortified wheat attractive to farmers, we needed to breed micronutrients into our latest rust resistant varieties being developed for our target region," said Ivan Ortiz-Monasterio, CIMMYT Agronomist and HarvestPlus Wheat Crop Leader. "We have added micronutrient density to the existing breeding strategy and have biofortified disease resistant wheat in multi-location testing in order to identify potential candidates for release in the Indo-Gangetic Plains. We intend to have modern, disease resistant varieties be the vehicle for getting more micronutrients in the diets of people," Ortiz-Monasterio adds.

It is estimated that over 1.3 billion people in South Asia are at risk for zinc deficiency. For iron, the numbers are similar, so research in this area has great potential. "We have successfully reached the first of many milestones for biofortified wheat," says Howarth Bouis, Director of HarvestPlus. "CIMMYT is to be commended for deciding to add biofortification to the rust resistant breeding strategy that was well underway for the region. Now that they have moved the biofortified wheat out of the experimental fields in Mexico and into the hands of our partners in India and Pakistan for testing, we are one step closer to bringing biofortified wheat to farmers. We have crossed the first hurdle," he emphasized.

In 2005, CIMMYT and HarvestPlus will move to the next phase of development. Further testing involves seeing how the genes associated with enhanced zinc and iron are expressed in different environments, and checking bioavailability of nutrients in the advanced wheat using stable isotopes in controlled nutrition laboratory trials.

For more information, www.harvestplus.org 



Indian farmers with PBW343: target variety for replacement with disease resistant biofortified varieties

From the Science Council Chair

Monitoring, reviewing, and evaluating the quality and relevance of the research done by the Future Harvest Centers was an important part of TAC's and the interim Science Council's responsibilities. Independent assessments are important to promote accountability and transparency and they will continue to play an important role in the work of the Science Council. However, we are proposing significant changes in the way they are undertaken to deal with the shortcomings in the present system. These shortcomings include the following:

First, while External Program and Management Reviews (EPMRs) of individual Centers have been very useful, they have taken too long, cost too much, and they have been done too infrequently. It is not uncommon that an EP MR would take two years from the time the Center begins its preparations until the results of the EP MR are considered by the CGIAR. This is very disruptive for the Center's work and can have a negative effect on the Center's research output. Although the past rule was that an EP MR would be undertaken every five years (in fact the EP MRs used to be called "quinquennial reviews"), recent practice has been to do them every 6–7 years. This is not frequent enough to follow a Center's development and detect potential problems in a timely manner.

Second, there has been little monitoring of action taken or not taken by Centers to implement recommendations by the EP MRs. Typically the Center makes a response to the recommendations and is only asked to report on the action taken, in preparation for the next EP MR several years later.

Third, although Center-commissioned External Reviews (CCERs) of specific aspects of the Center's work were encouraged in the past, they tended to be ad hoc and their quality and utility varied greatly. In most cases, they have not provided the input into the EP MRs that was necessary to assure an effective external review in a reasonable time frame. The Centers are complex institu-

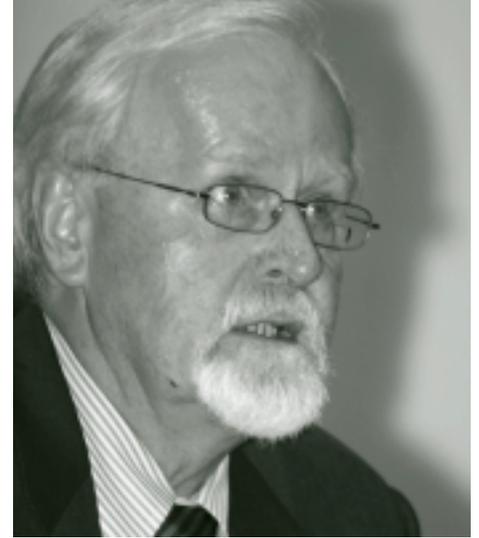
tions and, to be effective, the EP MRs must either be based on credible results from a cohesive set of more limited reviews of specific parts of the Center's work or take more time than the most qualified panel members would be able to put into the effort.

Fourth, since the Board of Trustees is fully responsible for a Center's performance, it should take a greater responsibility for the assessment of the relevance and quality of the research done by the Center. This is not something the board can simply delegate to the EP MR and the Science Council. Only if Center boards and managements and the Science Council work together, will we assure the research relevance and quality we all want.

Fifth, the Science Council is in the process of strengthening the Center Medium-Term Plans (MTPs), the related logframe project descriptions, and the performance measurement approach to better monitor performance and relevance of the completed and proposed research within the context of the new system priorities. One of the changes in the way the Science Council handles MTPs is that we are more specific and forthright (constructively critical) about problems and suggestions for change. I hope future EP MR teams will adopt the same approach in the reports so that the reader does not have to read between the lines to get the message. Confusing politeness with deliberate fuzziness is not helpful.

Taking these factors into account, the Science Council is proposing that more emphasis be placed on self-assessment by the boards and managements of the Centers through:

- Board-endorsed MTPs and logframe project descriptions that clearly identify goals, timelines, output targets, and relationship to system priorities
- Annual reporting of Center self-assessments and accomplishments relative to output targets
- Reporting of action taken in response to EP MR recommendations, and



CGIAR Science Council Chair,
Per Pinstrup-Andersen

- Board-commissioned external reviews that would follow guidelines developed by the Science Council to assist Center management and governance and to provide more useful input into future EP MRs.

Every five years the Science Council would commission an EP MR jointly organized by the Science Council and the CGIAR Secretariat. The EP MR would be based primarily on the results of the Center's self-assessment and the Board-commissioned external reviews with regard to the assessment processes followed, the quality and relevance of the science undertaken by the Center, its contributions to the achievement of the goals of the system priority research, and selected governance and management aspects. By building on results from high-quality self-assessments and CCERs that meet certain standards for credibility, such EP MRs would be more strategic, take less time and be less disruptive for the Centers, while providing the kind of strategic advice needed by donors, Centers, and other stakeholders of the CGIAR.

I hope that by strengthening the monitoring and evaluation process, individual donors and other stakeholders will have less of a need to do their own assessments of Centers and projects. A more cohesive approach with fewer *ad hoc* evaluations will lead to savings in staff time and financial resources, which, together with higher quality and more relevant research, can be converted into more and better research for the benefit of poor people.

Per Pinstrup-Andersen

More fish, more food



In Africa, fish are a vital source of protein for more than 200 million people. But fish catches have been declining while demand continues to increase—so per capita consumption has fallen. Aquaculture has been touted as the Holy Grail of sustainable fish production, but its effectiveness in terms of both yield and farming efficiency had not been conclusive—until now!

WorldFish Center researchers have pioneered the use of Integrated Aquaculture-Agriculture (IAA) technologies, systems of farming that support the recycling of nutrients by growing fish alongside conventional cropping regimes. In Malawi, WorldFish has been undertaking the basic field research and helping to implement these IAA technologies since the mid-1980s in cooperation with Department of Fisheries. When WorldFish began its research and on-farm trials in 1986, the total number of fish farmers in the country was only 400. Today there are more than 4,000. The spread of IAA technology has seen the country's aquaculture production increase by 22% a year from 1996 to 2001.

On a national level, total annual fish production from all fish-ponds combined has increased more than ten times, from 90 to more than 1,000 tons per year. The impact at community level has been just as promising. Results are impressive. Farm productivity in Malawi has increased by 10 percent, farm income rose by 28 percent, technical efficiency of farming improved by almost 50 percent and per capita fish consumption increased 160 percent. It has also improved the sustainability and health of farms by reducing nitrogen losses.

A major reason for the project's success has been its inclusive and participatory approach. Instead of using a "top-down" approach to technology dissemination, the project engaged directly with farmers, utilizing their resource base and recognizing the various constraints they faced. The return on investment is a handsome 15 percent.

These results from Malawi are extremely positive, and aquaculture is well on the way to reaching its potential here. The new IAA technologies are being adopted by Cameroon, Mozambique and Zambia. More fish = more food and higher incomes for poor people. 🌱



Fish farmers in Malawi

Club del Moko: A campaign to save plantain

Smallholder farmers in Colombia have been working side by side with international and national agricultural scientists and extension agents for the past three years to save their plantain stands from bacterial wilt—a collaborative campaign against moko, a plantain disease.

Among the more promising weapons in the emerging moko-management arsenal is a biopesticide that does double duty as an organic fertilizer. The liquid, called a “lixivium,” is produced inexpensively on-farm by composting plantain residues, specifically the hanging, spine-like shafts called rachises from which the flowers and fruit protrude. This is the part of the plant that farmers routinely discard after harvest.

“We wanted to give the farmers simple, easy-to-use solutions because they don’t like complex technology,” says Silverio González, Director, National Federation of Plantain Producers of Colombia (FEDEPLATANO) and the chief designer of the composting system. “Our members prefer to solve problems using their own local resources, so they do not have to spend too much money.”

The FEDEPLATANO project was one of three winners in the 2004 Innovation Marketplace, a competition and exhibition held during the Annual General Meeting 2004 designed to strengthen CGIAR partnerships with civil society organizations.

Club del Moko

FEDEPLATANO is one of several public and private stakeholder groups that form the Club del Moko, a broad alliance working on *R. solanacearum* diagnostics and the design and testing of disease-control measures. Other key alliance members include CIAT, the Colombian Institute for Agriculture and Livestock (Instituto Colombiano Agropecuario, ICA), the Colombian Corporation for Agricultural Research (Corporación Colombiana de Investigación Agropecuaria, CORPOICA), and IPGRI’s International Network for the Improvement of Banana and Plantain (INIBAP).

Several years ago, as the moko problem steadily worsened, farmers approached ICA and other institutions for help. Producers were also worried about the ill effects of continuously applying Formol (formaldehyde) on human health and the environment, one of the recommended pesticides for killing bacteria in the soil. The economic repercussions also concerned them since Formol’s high toxicity rendered the soil lifeless, thus undermining production of other crops such as coffee, cassava and maize.

All the while, the researchers and farmers were tracking the expansion of the moko epidemic. Their projections were alarming. “We suspected it would take only 2 years to destroy 27,000 hectares of plantain in Quindío Department alone,” recalls González.

Collaborative Research: CIAT’s Role

Elizabeth Alvarez, a CIAT plant pathologist with long experience in farmer participatory research, sketches the background of CIAT’s involvement. “In the hope of finding a solution to the moko epidemic, the farmers decided to approach CIAT for help. The reason they didn’t come to us earlier was that they thought we worked only on beans, cassava, rice, and forages. That was true a long time ago; my mandate, for example, was cassava diseases. But then we ended up helping out a group of flower growers who had a mildew problem. So the directors of CIAT allowed us to begin helping clients outside our traditional set of crops, on a demand-driven basis.”

The collaborative project, operating under the Club del Moko umbrella, has made considerable progress:

- Using molecular markers, Alvarez and her colleagues identified 68 strains of *R. solanacearum* bacteria. These were isolated from samples of plant tissues, soil, water, and insects with a view to establishing the pathogen’s genetic diversity. CIAT collaborated with CORPOICA to study the genetic diversity of the pathogen in Colombia’s Eastern Plains (Llanos Orientales). However, being able to detect the bacteria not only under lab conditions but also on-farm is essential. Accurate on-farm diagnostic tools were given priority in the next stage of research.



- In Quindío about 50 farmers have been building, testing, using, and in some instances adapting the FEDEPLATANO composter design. Apart from the cost of materials (roughly US\$75) to shelter the 20-square-meter composting area and collect the rachis lixivium, the main farmer investment is labor. FEDEPLATANO supplies farmers with a small quantity of compost starter, a liquid inoculum developed by González

Local benefits, global recognition

To date, Club del Moko has provided four major benefits to farmers. First, disease-control methods now cover 4,000 hectares in Quindí, dramatically reducing disease incidence and crop losses. Second, local plantain growers have made the rural environment safer by eliminating the use of Formol (formaldehyde) and other chemical pesticides. Third, reduced reliance on agrochemicals has helped farmers cut their production costs. Finally, the Club has enhanced local capacity for rural learning and innovation with more than 1,000 farmers participating in the research and technology validation work, and several thousand more farmers and agricultural technicians being trained in moko control.

CGIAR News thanks Gerry Toomey, Science Writer, Green Ink Publishing Services Ltd., UK, for contributing this story. 🌱

Slow Rusting: A Long-Lasting Example of Applied Science

Leaf rust attacks on wheat are a major problem, adversely affecting the incomes of poor farmers all over the world. A new study shows that over the past several decades, every dollar invested in CIMMYT's wheat genetic improvement has generated at least 27 times its value in benefits to developing country farmers.

Spring bread wheat covers about two-thirds of the developing world's wheat area, and almost 80 percent of that area was sown to CIMMYT-related semidwarf varieties in 1997. Leaf rust, caused by the fungus *Puccinia triticina*, is the most widespread biotic stress. The economic impact of CIMMYT's efforts to develop leaf rust-resistant spring bread wheat varieties during 1973–97 was 5.36 billion (in 1990 adjusted US dollars) based solely on estimates of the value of grain farmers would have lost through use of susceptible varieties. To this conservative figure, one could add the significant economic, health, and environmental benefits of applying fewer fungicides on developing world wheat crops.

"CIMMYT investments leverage global partnerships with national research programs, advanced research institutes, and civil

society organizations," says Ravi P. Singh, CIMMYT wheat pathologist who leads the effort on rust research. He has successfully applied the concept of more durable, multi-gene resistance. "Rapidly mutating pathogens can overcome crop resistance based on a single gene in a few years," Singh explains. "CIMMYT and partners have developed high-yielding and highly resistant wheats with combinations of four or five minor genes. Rust still affects the crop, but so slowly that it has little or no effect on yield."

Global Rust Initiative

Building on strong science, partnerships, and its large collection of global wheat diversity (CIMMYT holds over 175,000 seed collections in its genebank), CIMMYT is launching a global initiative to counter the effects of a new, eastern Africa race of stem rust (*Puccinia graminis*) that can attack most commercial wheats in the world. Fundraising for the pioneering initiative is being led by Norman Borlaug, Nobel Peace Laureate. 🌱

New IRRI-CIMMYT alliance

A new IRRI-CIMMYT alliance aimed at boosting international efforts to fight poverty and strengthen food security in the developing world has been formed. It focuses on harnessing science to provide the world's millions of poor farmers with improved access to new, more productive maize, rice, and wheat technologies.

Because all three crops are cereals, IRRI and CIMMYT believe that research into their sustainable development and use can be much better coordinated through a stronger alliance. At a January meeting in Shanghai, the two boards identified four research priorities:

- Intensive crop production systems in Asia (specifically, rice-wheat and rice-maize) and research on crop and resource management, crop genetic improvement, and socioeconomics
- Cereals information units for researchers and partners working on genetic improvement and the management of cropping systems involving the three staples
- Training and knowledge banks for the three crops that would take advantage of modern technologies to provide training events, the development of learning materials and education methods, distance learning, Web-based knowledge systems, library services, and logistical support
- Climate change research directed at both mitigating and adapting the three crops to global changes that are affecting temperature, water, and other factors having crucial effects on them.

To further maximize operational efficiency, the IRRI-CIMMYT alliance will also share a range of support services including services related to management and regulatory affairs for intellectual property rights and biosafety, information and communication technologies, public awareness, scientific publishing, library services, and external auditing. There is also good potential for sharing the country offices in developing nations such as Bangladesh, China, India, Iran, and Nepal.

Further, the IRRI-CIMMYT Alliance agreed to develop a unified governance and management system commensurate with these shared activities. Working groups made up of staff members from both centers will be formed immediately to draft implementation plans for the four priority programs in consultation with stakeholders.

IRRI and CIMMYT were the first and second centers formed in what became the Consultative Group on International Agricultural Research (CGIAR). They are the world's leading research and training institutes for rice, wheat, and maize. The three staples provide 60 percent of global food needs annually, and cover more than 70 percent of the planet's productive cropping land.

Keijiro Otsuka, Chairman of the IRRI Board of Trustees, and Alexander McCalla, Chairman of CIMMYT Board of Trustees said the new alliance will contribute significantly to international efforts to achieve the Millennium Development Goals because of the important roles maize, rice, and wheat play in agriculture and livelihoods of poor people. 🌱

Local farmers join hands with CIP to conserve native potato varieties



CIP's Director General, Hubert Zandstra (center) and Alejandro Argumedo (left), Director of the Association for Nature and the Sustainable Development (ANDES), the group that has assumed the representation of the six rural communities that form the Potato Park.

In a landmark development, local farming communities in Peru signed an agreement with CIP to protect the genetic diversity of the region's many potato varieties and the rights of the indigenous people to control access to these local genetic resources.

Under the scheme, CIP scientists and local farmers are working together to establish domesticated varieties and wild potato relatives from CIP's germplasm collection in a 'Potato Park,' located in Pisac, in the Sacred Valley of the Incas, in Cuzco. Six rural communities live in the park which is spread over 12,000 hectares between 3400 and 4500 meters above sea level. Administered by the local people themselves, the park also provides food for the communities. The initiative is an example of local conservation and sustainable use of the agrobiodiversity at its best.

Farmers in Peru cultivate more than 2000 varieties of native potatoes, most of which are not sold commercially. They are the result of a process of natural selection and of arduous domestication with ancestral technologies that date back to pre-Inca times. That local knowledge is precisely what the framework of the agreement is intended to protect, by keeping the control of genetic resources with the local people.

"Biological diversity is best rooted in its natural environment and managed by indigenous peoples who know it best," says Alejandro Argumedo, associate director of the Association for Nature and Sustainable Development (ANDES), the group that has assumed the representation of the six rural communities that form the Potato Park. He believes that the agreement could serve as a model for other indigenous communities.

The initiative has been widely reported in international media. For example, *New Scientist* wrote, "Deals like this one prevent multinational seed companies patenting traditional varieties of crops to exploit their native genes. This practice has sometimes forced communities to pay fees for growing seeds they originally bred." The Inter Press Service News Agency noted that several policy analysts and civil society campaigners are pushing for similar initiatives at meetings of the Convention on Biological Diversity and World Intellectual Property Organisation.

The agreement serves as a prime example of practical applications that support the Biological Diversity convention and FAO's International Treaty on Plant Genetic Resources for Food and Agriculture. 🌱

New CGIAR Web Site Launched

The CGIAR web site (www.cgiar.org) has been revamped. Based on 18 months of user feedback and web use statistics, the content was updated and repackaged so as to improve navigation and enhance user friendliness. New content includes:

- Story of the month focusing on Center scientific achievements and impact
- Newsroom for media and communications professionals
- CGIAR image-based factoid presentation
- Interactive components on the Welcome Page, such as a “Tell us About Yourself” questionnaire, and a “Test your Knowledge” quiz
- New information on genebanks and databases
- Restricted area for CGIAR Members
- “CGIAR in Action” in Afghanistan, Colombia, Kenya, with more to follow



Check out our new look at www.cgiar.org

If you have bookmarked pages from the old site, we suggest you modify your “Favorites” page as the site structure has changed.

As always, feedback is welcome. Please send your comments to cgiaar@cgiar.org 🌱

CGIAR Launches Pilot Performance Measurement System

Worldwide there is a growing trend toward greater accountability, transparency, performance and service delivery in private and public sector organizations. As a strategic knowledge-for-development alliance, CGIAR is following suit with a custom-designed performance measurement (PM) system to fit its unique business context. The indicators chosen are grouped into eight performance elements (see Box).

The PM system was developed by an Executive Council working group, with inputs from CGIAR Centers, Center Boards, Science Council, Members, Secretariat and System Office units. The system is based largely on self-assessment by Centers and is being piloted using 2004 data. The initiative is a work in progress and the system will be enhanced as we learn from the pilot program.

The PM system is expected to serve as a tool for improved decision-making and managing performance for impact. 🌱

Dimensions of the new CGIAR Performance Measurement System

Results

- Outputs
- Outcomes
- Impacts
- Stakeholder Perceptions

Potential to Perform

- Quality of Research and Managerial Staff
- Quality and Relevance of Programs
- Institutional Health
- Financial Health

New Forage Grass benefits from Public-Private Partnership

One of Mexico's most dynamic private seed companies—Papalotla Group—is demonstrating the right way to use valuable plant genetic resources for both private gain and public benefit.

Several years ago the company entered into a strategic alliance with CIAT for marketing seed of the world's first commercial hybrid of *Brachiaria* grass. Under the agreement, CIAT retains intellectual property rights over the hybrid, while Papalotla is authorized to produce and sell it, under the varietal name 'Mulato,' until 2010.

"The icing on the cake is that under agreements with Papalotla, both CIAT and national research institutes in all the countries where Mulato is marketed receive royalties," comments Carlos Lascano, who leads CIAT's forage research. "This helps cover the costs of our research."

Based on three *Brachiaria* species, Mulato and other new *Brachiaria* hybrids are the product of nearly 20 years of conventional plant breeding at CIAT. The strong appeal of the new grass for farmers lies in its vigorous productivity, tolerance to drought, and high forage quality. The work has been supported by the Colombian Government, while the Government of Japan has financed complementary work on the conservation of forage genetic resources.

Releasing Mulato for demonstration purposes in 2000, Papalotla marketed some 20 tons of seed in Mexico during 2003. By 2004, the company had extended sales of the hybrid to seven other Latin American countries. Total sales reached 193 tons, enough to plant 48,000 hectares. That same year Papalotla expanded beyond Latin America by starting commercial production of Mulato in Thailand. There, some 1,800 small farmers have planted about 1,500 hectares of the hybrid to produce an estimated 185 tons of seed. With expanding seed supplies, Papalotla hopes to break into the potentially huge Asian market for animal forages.

Few seed companies can afford to make the kind of investment in long-term research that led to Mulato's development. "CIAT had a good product from their research, while we had the means of commercializing it," says Eduardo Stern, Papalotla's Director General.

Papalotla's investment in marketing Mulato translates into significant economic and environmental benefits through enhanced livestock production and recuperation of degraded pasturelands. 🌱

IFPRI Unveils State of Biotech Crop Research in Developing Countries

If you think that private companies dominate biotech crop research in developing countries, think again. The facts are different.

New research by IFPRI found that public institutions in developing countries are conducting groundbreaking biotech crop research, debunking the myth that multinational corporations control global development of this technology. Often this research draws upon indigenous plant varieties to cultivate improved crops for local use by small-scale farmers.

This groundbreaking report assesses the state of biotech crop research, types of genes being used, and the biosafety and regulatory challenges facing developing countries.

"Developing countries are often unwilling or unable to test commercial genetically modified (GM) crops because of national policies or regulatory systems that are not prepared to grant approval for general use," said Joel Cohen, IFPRI Senior Research Fellow and author of the report. Researchers in industrialized and developing countries need to work together to provide science-based information for decision makers, so that they can enhance the clarity of regulatory policies and procedures."

The study, featured in the January issue of *Nature Biotechnology*, documents transgenic research on 45 different crops—including cotton, corn, cacao, and cassava—in 15 developing countries. At this point, most of these crops remain in development and out of farmers' hands. The reason? Most developing countries lack the knowledge, capacity, and funding to develop and comply with biosafety regulatory requirements.

According to the study, the need to overcome these challenges is critical for the advancement of this technology in the developing world. GM crops hold the potential to reduce the need for pesticides, improve drought tolerance and resistance to saline soils, and even increase the nutritional value of staple foods.

The report stresses the need for improved information-sharing among developing countries, and calls for increases in small-scale, confined field trials to test crops and receive farmer feedback.

For more information, including the article in "Nature Biotechnology," click www.ifpri.org/medialbiotech20050106.htm. 🌱

Young Japanese Researchers benefit from Japan-CGIAR Fellowship Program

The new Japan-CGIAR Fellowship Program is off to a flying start. Eleven Fellows were selected and have been spending between 6–8 weeks each at CGIAR Centers, gaining valuable research experience in real world settings. Launched in 2004, this knowledge-sharing activity is supported by the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) and administered by JIRCAS.

“This program was extremely successful for me because I could have fruitful discussions with scientists who have abundant experiences in dryland agriculture,” said Tomoe Inoue, Fellow, who successfully completed a research project at ICARDA. Fellows were most appreciative of the support and hospitality extended to them by Center staff, and in their completion



Shinji Mizuno, 2004 Fellow (front row, third from right) poses with IRRI colleagues.

reports, Fellows felt that the opportunities to interact with local people and farmers were priceless.

Building on this success, the 2005 Japan-CGIAR Fellowship Program has been launched. Ten Fellows will be selected to conduct research at CGIAR Centers, another example of the strong and mutually-beneficial partnership CGIAR enjoys with Japan. 🌱

Centers Respond to Asian Tsunami (continued)

significant damage has occurred to production of groundnut, pulses, and paddy crops as well as sweet potato, jasmine, mango, and cashew. Salinity levels have increased substantially and MSSRF has sought ICRISAT's help in strengthening village knowledge centers with capacity-building programs and generating natural resource management and crop production advice for local farmers.

A first meeting was held at CIFOR in January to plan long-term action. Sixty-four participants attended, and recommended a local “site-based” response to concentrate on two sites, namely, Sri Lanka (coordinated by IWMI) and in Aceh, Indonesia (coordinated by World Agroforestry Centre).

The second response is the development of systemwide proposals for work across the two sub-regions. One proposal, led by the Consortium on Spatial Information, will assess the impact of the tsunami on livelihoods using Centers' combined knowledge, databases, remote sensing and GIS expertise.

Another proposal at the system-wide level involves several Centers that have developed a joint concept note, “Turning Disaster into Opportunity: New directions for coastal communities for a better and more sustainable future.” The paper urges rehabilitation efforts embrace the entire landscape—from sea to upland forests—and look at the bigger picture for development using the sustainable livelihoods and integrated natural resource management approaches.

The Centers and their partners are exploring location-specific livelihood options for the devastated people of the region. In addition to rice farming, other livelihood options include sweet

potato production (e.g. using varieties that produce yields in 60 days and are known for early colonization of damaged land after the Mount Pinatubo eruption and in the rebuilding of East Timor). CIP has started rapid multiplication of advanced, salt-tolerant clones and seed collections for shipment to affected areas in Aceh and eastern Sri Lanka.

Coconuts, bananas and other trees that are the mainstays of coastal food systems have been adversely affected. The COGENT network for coconuts as well as the INIBAP network for bananas, both coordinated by IPGRI, will assess the impacts and identify appropriate strategies that can be used in rehabilitation efforts.

From a forestry perspective, CIFOR is drawing on its research into the 1990s Asian financial crisis, when almost 80 million people were living below the poverty line. Research shows that forests played a key “safety net” role in providing many people in rural areas with livelihood assistance and subsistence needs and hopes to build local research capacity by involving students from Aceh and local universities in reconstruction activities.

A recovery and improvement program for Aceh livestock by the Indonesian Center for Animal Research and Development (ICARD), Sungei Putih Goat Research Center, ILRI and CIAT will help establish improved feed resources and re-build goat, poultry and sheep production systems. Urban and peri-urban farming will be aided by drawing on the expertise of the ‘Urban Harvest’ program.

As the Indian Ocean region starts to rebuild its coastal life, the CGIAR Centers have committed to bringing their collective expertise to the massive task ahead. 🌱

Controlling Sunn Pest in Wheat, Naturally: ICARDA Shows the Way



Wheat spikes damaged by Sunn Pest feeding. Even low-scale damage can ruin the bread-making quality of wheat.

Traditional methods of controlling Sunn Pest (*Eurygaster integriceps*) infestations in wheat rely on expensive insecticides. Farmers in the Central and West Asia (CWANA) region spend more than \$40 million each year on insecticides in affected areas. Insecticides are also environmentally harmful and often ineffective because the pests develop resistance quickly. ICARDA scientists collaborating with National Agricultural Research Systems in the region; the University of Vermont, and CABI Bioscience, UK have found naturally-occurring fungi that work as biological insecticides. The fungal spores lodge in the insect, then kill it by blocking vital life support systems.

After a spring in cereal fields, the Sunn Pest moves to nearby foothills to spend the summer, fall and winter, so this is where the ICARDA scientists and their partners concentrated their search for insect specimens infected by fungi. Trips to Kazakhstan, Kyrgyzstan, Syria, Turkey, and Uzbekistan resulted in the world's largest collection of fungi strains isolated from infected Sunn Pest specimens. Pathogenicity trials revealed that several isolates of *Beauveria bassiana* were effective, killing the insect within 10 days.

Researchers are now evaluating the isolates for their efficacy and determining the most effective way of using these fungi for the management of Sunn Pest. Using the insect-killing fungi has an added advantage because they are specific to Sunn Pest and environment-friendly. It will be used in concert with natural enemies, cultural methods, and other strategies in a comprehensive integrated pest management (IPM) program to mitigate the impact of this pest.

In July 2004, ICARDA hosted the Second International Conference on Sunn Pest where over 130 participants from 23 countries discussed the socioeconomics of Sunn Pest, integrated management strategies, including chemical, biological and host resistance options; and the biology and ecology of the insect.

Wheat productivity in CWANA region is only 1.5 t/ha, compared with the world average of 5 t/ha. Sunn Pest is a leading cause of low yields, affecting about 15 million hectares of wheat annually, and crop losses can reach 100 percent. It damages crops by feeding on leaves, stems, and grains, and injecting chemicals that cause the grain's gluten to break down. If as little as 2–3% of the grain in a crop has been affected, the entire lot of grain becomes unsuitable for baking. 🌾

Fighting a mighty foe: Marker-assisted breeding to the rescue

Downy mildew is a disease caused by the fungus, *Sclerospora graminicola*. Once infected, pearl millet plants are stunted, grain formation fails, and the plants die spelling misery for thousands of poor farmers who rely on this hardy crop for food, income, and nutrition security. In years when disease attacks were severe, over 30 percent of millet harvests were lost.

Now pearl millet farmers in the semi-arid states of Haryana and Rajasthan, India, need not fear this disease thanks to HHB 67-2, a new pearl millet hybrid that is resistant to downy mildew (DM) disease. The variety was jointly developed by ICRISAT in partnership with Haryana Agricultural University (HAU).

“This significant breakthrough is a result of ICRISAT’s cutting edge scientific research and effective partnerships,” says William Dar, Director General, ICRISAT. “The new hybrid brings additional benefits to farmers, even while retaining the desirable qualities of earlier popular hybrids.”

The new hybrid HHB 67-2 is an improved version of the popular pearl millet hybrid HHB 67, which again was a result of collaborative research between ICRISAT and HAU. Tom Hash, ICRISAT scientist said that the new hybrid is the culmination

of over 15 years of dedicated work, generously supported by the UK Department for International Development (DfID).

ICRISAT used marker-assisted and conventional breeding techniques to improve resistance in the parental lines of the original hybrid. The gene for downy mildew resistance was added to the male parent, H 77/833-2, through marker-assisted breeding using ICRISAT elite parent ICMP 451 as the resistance gene donor. An HAU doctoral student, working closely with the ICRISAT team, conducted the marker-assisted backcross breeding work. The gene for downy mildew resistance was added to the female parent, 843A/B, from ICRISAT line ICML 22 through conventional backcross breeding. Finally, the All India Coordinated Pearl Millet Improvement Project (AICP-MIP) field-tested the new hybrid at various locations over the past three rainy seasons.

By using advanced molecular marker-assisted selection techniques, the male parent for HHB 67-2 was developed in one-third the time required for the developing the female parent by conventional methods. By identifying and marking the gene responsible for DM resistance in ICMP 451, breeders were able to check whether the gene had transferred to the next generation in the progeny of crosses between ICMP 451 and the male parent of HHB 67. The advantage of using

molecular marker technology is that gene presence can be tested even while the next generation is a seedling, saving precious breeding time. In conventional breeding, the presence of a gene can be verified only after the plant grows to maturity and seed from an individual plant is sown to screen for the DM resistant character.

ICRISAT has produced breeder seed of the parental lines of HHB 67-2, which can now be used to multiply the hybrid, and this will be supplied to seed multiplication agencies. Thanks to these cooperative efforts, farmers are getting respite from a mighty foe. 🌿

Haryana farmers in field trials of the new hybrid HHB 67-2.



Pork and sweetpotato, please

The facts are simple: Pigs are efficient converters of food into meat, and they like sweetpotato. Pork is an extremely important source of protein in Asia, especially China and Vietnam. Most of it comes from backyard pig producers, who grow sweetpotato for use as feed. However, pig nutrition on small farms is generally poor and the animals suffer serious deficiencies in protein, especially lysine and methanine.

In an innovative program, agricultural research institutions in Asia are collaborating with CIP and ILRI to improve small-holder sweetpotato-pig systems. Pioneered by CIP in Vietnam in the mid-1990s, this effort has successfully developed new sweetpotato varieties, methods to prepare and store feed as silage, and provided farmer training in crop and animal husbandry. The net impact of these efforts was increased incomes on small farms and a more abundant food supply.

“Significant gains in productivity in small-holder pig production are possible with a modest investments in research and extension services,” says Keith Fuglie, leader of CIP’s Impact

Enhancement Division. For example, silage consisting of sweetpotato roots and foliage can be kept as high quality feed for up to six months. It does not need to be cooked to make it palatable to the animals, and the same amount of feed produces more meat. This work as been supported by Asian Development Bank and ACIAR.

CIP and ILRI researchers and their partners in national programs in China, Vietnam and Indonesia are also developing farmer extension models to show how best to use the new methods and varieties.

“Before, I did not use much of the sweet potato, particularly the vines. Then I heard that sweet potato roots and vines could be preserved as silage,” said Liang Quang Song of Tainle village, Sichuan province, China. “After attending the training course, I learned how to make good silage. Now I can use all the roots and vines I produce for my pigs.”

Such testimony is proof of the win-win opportunities generated by knowledge partnerships. 🌱

Using sweet potato as animal feed has produced significant gains in production in China.



Paying People to Protect the Environment?



Bolivia: paying upland farmers to protect downstream water supplies from being polluted by animals is one example of a community service payment.

Development specialists are becoming increasingly interested in the "Payments for Environmental Services (PES)" concept as a way of protecting the environment while reducing poverty.

With support from the Swiss Development Agency, two CIFOR researchers, Sven Wunder and Nina Robertson, are looking at applying the PES concept in Bolivia, and are cautiously optimistic about its future.

A PES scheme is an arrangement where a well-defined environmental service or service-resource is "bought" by beneficiaries of the service from local service providers. For example, a city council downstream from a major water source may pay people living upstream not to cut down the trees near the river, so that water quality is maintained. In effect, the environmental service providers are paid for not using the forest in ways that would jeopardize the environmental service.

According to Wunder, it is a fairly straightforward concept, "But in Bolivia, we found none of (the schemes) actually conformed fully to the definition. What we did find were a lot of initiatives where some but not all of the definition's conditions were met." Wunder says that sometimes external donors make the

payment, not the intended service users, or the PES is linked to non-environmental services such as tourism.

The reason the Bolivian schemes do not fully conform with generally accepted PES principles is partly because environmental service payments is still a very new idea. "People take environmental services for granted, so the notion of suddenly paying for them is hard to swallow. PES schemes require mutual trust ... and an institutional framework to facilitate that," adds Wunder.

Also, many people are skeptical about market-based incentives. According to Robertson, PES is sometimes seen "as part of a larger neo-liberal economic paradigm being implemented in developing countries to their disadvantage. For example, paying for watershed protection is sometimes erroneously equated with water privatization."

Nevertheless, the two researchers are optimistic. If the international development community is willing to experiment with PES activities and help increase public awareness about PES, such schemes may yet offer a win-win solution. 🌱

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Fighting drought with Information

Addakal and its surrounding villages in Andhra Pradesh, India are predominantly agrarian. Farmers here work in a harsh, semi-arid environment cultivating groundnut, sunflower and vegetables and rearing cattle for their livelihoods. Frequent droughts and lack of access to information has led to low crop yields for several years in a row.

While the villagers have no control over when drought occurs, they can cope with it better with the right information and preparedness. Enter the Virtual Academy for the Semi-Arid Tropics (VASAT), an informal and virtual information, communication and capacity building coalition that aims to empower vulnerable rural communities to cope with drought. Established by ICRISAT and its partners in 2003, VASAT links rural farm communities with researchers, intermediaries and markets through an interface of information and communication technology (ICT) and open-distance learning (ODL) methods. It is a project of the ICT-KM program of the CGIAR. ICRISAT implements the project in partnership with ILRI and IWMI with a host of national and international organizations.

ICRISAT set up a pilot information hub with low-cost Internet connectivity in Addakal, partnering with Andhra Pradesh Rural Livelihoods Program (APRLP). Information on agriculture and livestock issues is provided to the farmers through the VASAT website. A 4,200-member federation of microcredit societies managed by rural women operates this hub which caters to about 15,000 people. Multi-disciplinary experts from the VASAT coalition provide timely information.

"With the experts providing us information through VASAT, we are confident that we can minimize the ill effects of drought," says Ms. Sushma, Facilitator, Addakal. About 1,000 villagers have so far accessed the localized training module on *Coping with Drought*.

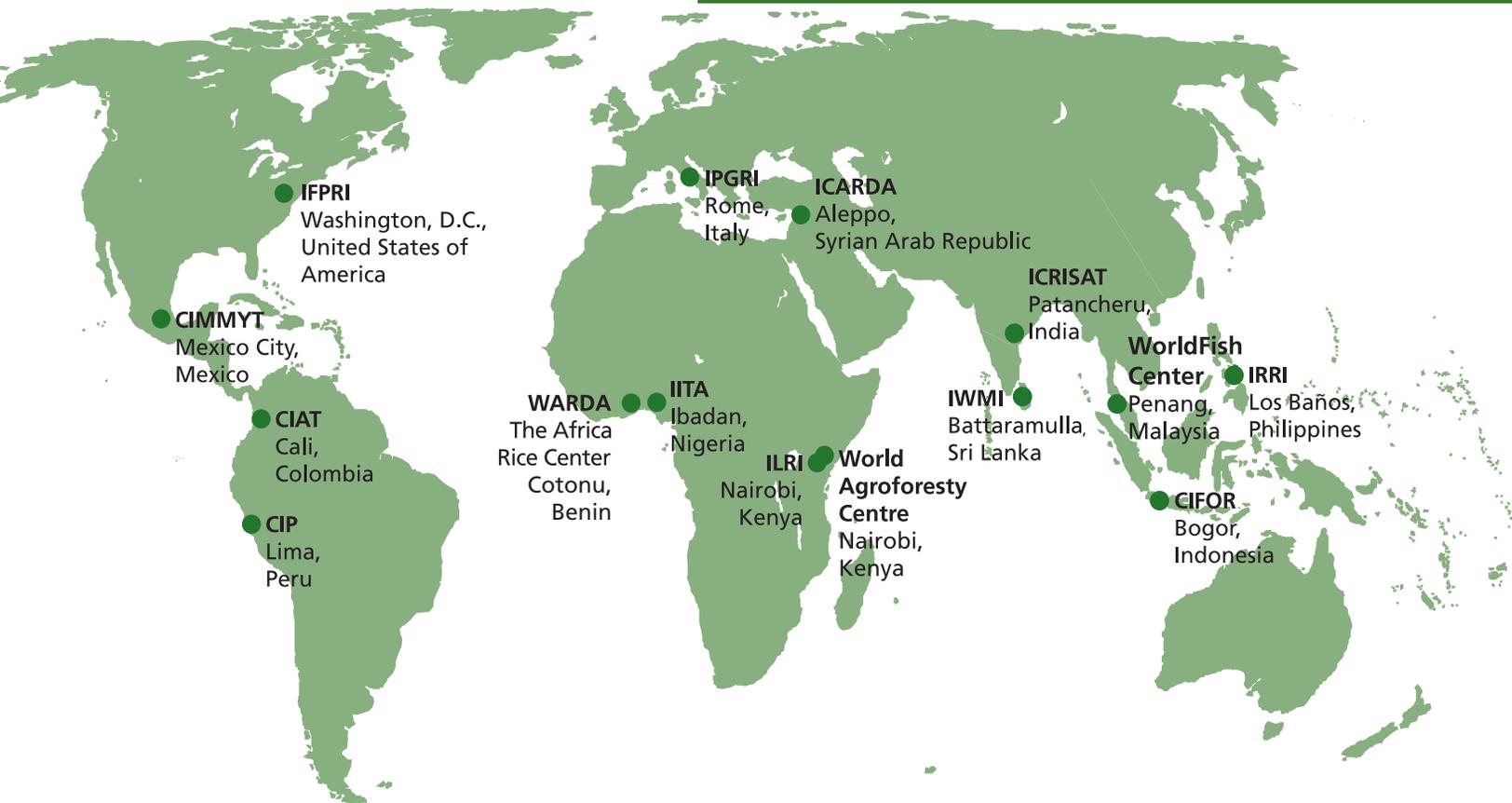
Says Sharadamma, a woman-farmer from Moosapeta, "I have learnt that droughts are here to stay. And that we need to face it whether we like it or not. But relevant information can make a big difference in coping with droughts."

The situation is not much different in the semi-arid regions of West and Central Africa where VASAT is also active. A VASAT pilot hub in Niamey, Niger is partnering with local federation of farmers operating a solar-powered, low frequency community FM radio station. Radio Kahé caters to 4,000 villagers in a 20-kilometer radius. As the village chief of Gabi puts it: "Everybody is doing agriculture nowadays and it is the starting point for wealth."

VASAT's blends top-down approaches to development communication with a bottom-up approach that stresses the need for improved communication in rural areas. The advantages of this approach were visible in fishing hamlets struck by the recent tsunami: village communities used local communication channels to alert people about adverse weather, thereby helping save lives. Local NGOs have approached VASAT partners for help in the form of timely information and technical support to rebuild livelihoods in tsunami-affected areas. 🌱



Villagers participate in informal training sessions with VASAT team.



CGIAR-supported Future Harvest Centers

Africa Rice Center (WARDA)
www.warda.org

International Center for Tropical Agriculture (CIAT)
www.ciat.cgiar.org

Center for International Forestry Research (CIFOR)
www.cifor.org

International Maize and Wheat Improvement Center (CIMMYT)
www.cimmyt.org

International Potato Center (CIP)
www.cipotato.org

International Center for Agricultural Research in the Dry Areas (ICARDA)
www.icarda.org

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
www.icrisat.org

International Food Policy Research Institute (IFPRI)
www.ifpri.org

International Institute of Tropical Agriculture (IITA)
www.iita.org

International Livestock Research Institute (ILRI)
www.ilri.org

International Plant Genetic Resources Institute (IPGRI)
www.ipgri.org

International Rice Research Institute (IRRI)
www.irri.org

International Water Management Institute (IWMI)
www.iwmi.cgiar.org

World Agroforestry Centre (ICRAF)
www.worldagroforestrycentre.org

WorldFish Center
www.worldfishcenter.org