

CGIAR NEWS

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH ■ DECEMBER 1999

CGIAR AT THE MILLENNIUM: PREPARING FOR THE FUTURE

The CGIAR reaffirmed its commitment to mobilizing science in the global fight against poverty and hunger during International Centers Week 1999 (ICW99), held at the World Bank in October. Over 400 participants – CGIAR members, scientists, representatives from national research systems, civil society, and the private sector – attended.

ICW99 looked closely at the CGIAR system's programs and projects to determine how well they had contributed to fighting poverty, and to assess how much still needs to be done. This critical examination was undertaken through a number of presentations including:

- the findings of a recent workshop organized by CIAT on the impact of agricultural research on poverty alleviation (see page 8);
- case studies on poverty-related research across the CGIAR centers conducted by the Impact Assessment and Evaluation Group (IAEG)

- accounts of inter-center collaboration to combat poverty; and
- proposals for an anti-poverty agricultural research strategy for Africa, based on consultations with African scientists.

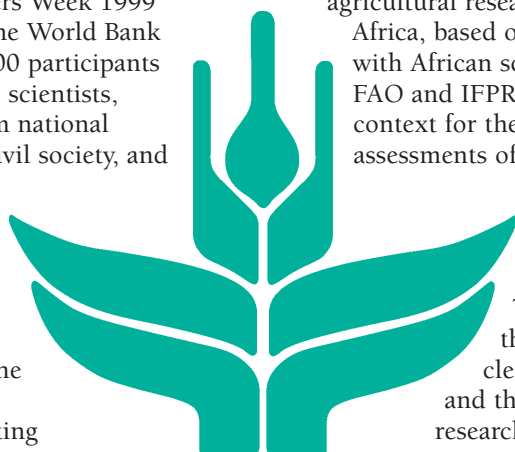
FAO and IFPRI provided the context for these discussions with assessments of the world food

situation, and assessments of possible future developments.

The record showed that progress had clearly been made, and that agricultural research had contributed significantly to development. But the facts also revealed the need for more consistent effort in the future to ensure that international agricultural

research continues to underpin effective anti-poverty strategies in the developing world.

CGIAR Chairman Ismail Serageldin stressed that the CGIAR must evolve if it is to remain a strategic factor in harnessing science to meet the needs of the poor. For maximum effectiveness, he urged the CGIAR to look ahead:



2000

CGIAR CONVENES FORUM ON BIOTECHNOLOGY AND THE POOR

Ensuring Food Security, Protecting the Environment, Reducing Poverty in Developing Countries: Can Biotechnology Help?

was the theme of an international conference convened by the CGIAR and the US National Academy of Sciences at the World Bank in Washington, D.C. on October 21-22, 1999. The conference was a response to the pressing need for an open, inclusive, and participatory debate on potential benefits and risks of biotechnology, one that is grounded in scientific evidence, and concerned with the common good. It attracted a wide range of co-sponsors.**

The CGIAR has been working to ensure that all relevant perspectives are represented in this critical debate, particularly the voices of developing countries. The conference was convened to broaden awareness of how developing countries view biotechnology, their experiences in using it, and their priorities and needs. It also aimed to improve understanding of the scientific evidence regarding risks and policy issues related to biotechnology.

The conference drew more than 400 participants from around the world. They included representatives of national and international research organizations, academics, scientists, non-governmental and community-based organizations, the private sector, development communicators, and the media. Diverse viewpoints – technological, environmental, ethical,

Continued on page 2

Continued on page 10

CGIAR AT THE MILLENNIUM


continued from page 1

"I believe that if we are to address these issues adequately we must think about the future first. Not think from where we are."

As an essential next step, ICW99 launched a strategic exercise to define what it should be doing and producing,

how it should be doing it, and with whom, in the context of the next decade. The visioning exercise will also help to identify the direction and scope of institutional changes needed to deploy the CGIAR's future resources most effectively.

These efforts will be led by the CGIAR Technical Advisory Committee (TAC) and involve the Centers, CGIAR members, and all other stakeholders. TAC will move quickly, and its first

round of proposals will be discussed at the next CGIAR meeting to be held in May 2000. (For more details on the TAC's participatory consultations, see the website: www.cgiar.org) 

WE HAVE MOVED!

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IN THIS ISSUE

- 1 ICW99: CGIAR at the Millennium
- 1 International Biotechnology Conference
- 2 Chairman Serageldin Reconfirmed
- 3 Crawford Lecture
- 3 ICW Honors Winkleman and McCalla
- 4 Scientists Discover What's Choking Lake Victoria
- 6 Farmers and Scientists Transform Hillside Farming
- 7 Jimmy Carter Visits ICRISAT's Groundnut Research
- 8 How Does Research Reduce Poverty?
- 11 The Bilderberg Consensus
- 12 Chairman's Science Awards
- 14 Announcements
 - ICRISAT's New Director General
 - Anthropologist Assumes Lead at CIAT
 - New Deputy DG at IRRI
 - New Bank Rural Development Director

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Serageldin Remains at Head of CGIAR

Ismail Serageldin, the World Bank's Vice President for Special Programs, who began his term as CGIAR Chairman in 1994, will remain at the helm for two more years.

The Chairman of the CGIAR is appointed by the World Bank President in consultation with the Group. The extension of Serageldin's chairmanship was endorsed by acclamation at ICW99 in response to a submission from the CGIAR Consultative Council, based on a proposal from the World Bank's senior management.

In accepting the extension, Mr. Serageldin said: The Chairman of the CGIAR holds office at the pleasure of the Bank President. But the Chairman requires the confidence and trust of this body as well if the CGIAR system is to function effectively and with a true sense of purpose. I appreciate the confidence that Mr. Wolfensohn and you have placed in me. I accept that as a sacred trust and pledge to you that I will continue to carry out my responsibilities with the same dedication, the same belief in the values of the CGIAR, that I brought to the table when I assumed duties as Chairman in January 1994."

Mr. Serageldin will divide his time equally between the CGIAR and World Bank assignments.



Ismail Serageldin

World Bank

Crawford Lecture: Expert on Rural Poverty Addresses CGIAR

Dr. Michael Lipton – expert on rural poverty in developing countries – presented an address on agricultural development and poverty reduction as part of activities surrounding ICW99.

Dr. Lipton presented the annual Sir John Crawford Memorial Lecture on October 28, at the World Bank, H Street Auditorium, 1912 G Street NW, Washington, DC. His speech was entitled, *Reviving the stalled thrust toward global poverty reduction: Are genetically modified crops a need, a threat, or an irrelevance?* The full text will be published by the CGIAR Secretariat in January, 2000.

Dr. Lipton is Research Professor of Economics at the Poverty Research Unit, Sussex University, England. He was a co-author of the Nuffield Council on Bioethics report, *Genetically Modified Crops: the Ethical and Social Issues* (London, 1999).

He has authored numerous books and scholarly papers including *Why Poor People Stay Poor: Urban Bias and World Development* (1977, revised 1987); *New Seeds and Poor People* (with Richard Longhurst, 1989); *Successes in Anti-poverty* (1998); and *Poverty and Policy*, with Martin Ravallion, in the *Handbook of Development Economics* (1995).

Dr. Lipton's distinguished career includes research in Bangladesh, India, Sri Lanka, Botswana, Sierra Leone and South Africa and Sri Lanka. In

1988-90, he directed the Consumption and Nutrition Research Program at the CGIAR's

International Food Policy Research Institute (IFPRI). He is currently working on "2000-related" analytical reviews of poverty reduction for the Food and Agriculture Organization, the International Fund for Agricultural Development, and the World Bank.



Dr. Michael Lipton

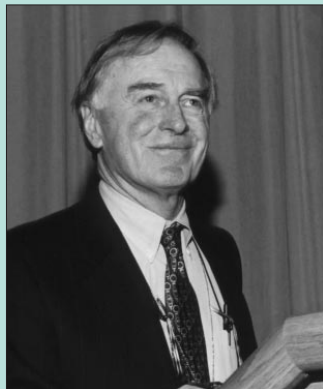
World Bank

ICW Honors Winkleman and McCalla

The CGIAR said a special farewell to two trusted friends of long standing during ICW – Don Winkelman and Alex McCalla. The Group adopted two resolutions recording its appreciation of their many contributions to the effectiveness of the CGIAR.

They read:

The CGIAR records its appreciation of the outstanding service to the CGIAR system of Donald L. Winkelman, through his strong commitment to the mission of the CGIAR system, his contributions to the development of the CGIAR research agenda, his leadership as Chairman of the Technical Advisory Committee and as Director General of CIMMYT, and his



Donald L. Winkelman

World Bank

role as an international spokesman for the CGIAR Centers. The CGIAR offers him warm felicitations and good wishes for the future.

The CGIAR unanimously resolved to honor and felicitate Alexander F. McCalla for his steadfast commitment to the mission and goals

of the CGIAR, and his outstanding contributions for over two decades to its effectiveness and impact. The CGIAR appreciates the exemplary manner in which he carried out a wide range of responsibilities including leadership of the Technical Advisory Committee, service as a cosponsor representing the World Bank, and chair-



Alexander F. McCalla and Ismail Serageldin

World Bank

manship of the Finance Committee. The CGIAR offers him warm good wishes for the future, and looks forward to his continuing role as a member of the CGIAR family.

SCIENTISTS DISCOVER WHAT'S CHOKING LAKE VICTORIA

NEWS FROM FUTURE HARVEST:

ICRAF Uses Satellite Technology to Locate Deadly Nutrients

In early November, Future Harvest and ICRAF jointly announced the discovery of a source of the pollution that is killing the world's second-largest freshwater lake and the chief reservoir of the Nile River. Using remote-sensing technology, scientists from ICRAF mapped the sources of excess nutrients entering the lake. These nutrients feed a carpet of water hyacinth that is rapidly choking the life out of the lake. The discovery has important implications for pollution abatement in other polluted lakes throughout the developing world.

Future Harvest promoted the discovery as part of its efforts to draw media attention to the links between food and environmental issues and to promote groundbreaking research at the CGIAR Centers. The discovery was widely covered in the world media, including the Associated Press, Reuters, Agence France Presse, El Pais, Africa News Online, and the Environmental News Network. Forthcoming stories will appear on CNN and in Paris Match.

While studying soil types around the lake, ICRAF scientists discovered a plume of sediments causing eutrophication – the process by which a body of water becomes enriched with dissolved nutrients that stimulate the growth of aquatic plants. Satellite images revealed that the nutrients were not deriving solely from agricultural runoff but from low-lying, deforested “riparian” zones and other areas surrounding the lake.

“We noticed a dramatic plume of nitrogen- and phosphorous-rich

sediments that are feeding the water hyacinth. This is one of the major causes for Lake Victoria's environmental demise,” said Pedro Sanchez, Director General of ICRAF. “It surprised us to be able to apply land technology to lake water, and it led us in a new direction in terms of diagnosing Lake Victoria's environmental problems.”

Extending over 27,000 square miles, Lake Victoria is Africa's largest lake, and second in the world only to North America's Lake Superior. Bordered by



Kenya, Uganda, and Tanzania, the Lake Region is one of the world's most populated areas. Lake Victoria serves as a source of employment for some 30 million people, and it generates sizeable tourism revenues and supports many types of wildlife.

The lake has been slowly dying over the last decade because of an oversupply of nutrients and untreated sewage that have led to massive fish kills, toxic algae blooms, and the rampant spread of the aggressive floating weed – water hyacinth. The hyacinth starves fish and plankton of oxygen and sunlight and reduces the diversity of important aquatic plants. Hyacinth also blocks waterway traffic, restricting trade between already isolated regions. Finally, the hyacinth causes lake

water to stagnate, making the shoreline a breeding ground for mosquitoes that spread malaria and snails that provide a host to bilharzia, a human parasite that attacks the liver, lungs, and eyes.

“These factors have spelled the end of the lakeside economy – grounding fishermen's boats and depleting fish stocks,” said Sanchez. “As the economy continues to dry up, men are vacating villages in search of jobs, often leaving behind women and children who face severe poverty, disease, and malnutrition.”

ICRAF's research is helping scientists to better understand the role of the swampy, valley areas that surround the lake. When healthy, these riparian areas serve as a filtering system between the rivers that flow down from the hillsides and the lake. Their covering of brush, trees, reeds, and other vegetation helps them to serve as “sinks” where nutrients settle instead of flowing freely into the lake. When these areas are denuded, water flows over them – taking with it nutrient-rich sediments and other pollution.

“Scientists never suspected that the riparian areas played such a key role in preventing the pollution and the takeover of the water hyacinth,” said Anne-Marie Izac, Director of Research at ICRAF. “They are an essential place to start in restoring the health of the lake and water system. Tree planting in strategic places will help stave off the death of the lake by preventing further sediment runoff.”

The research has helped to focus strategies for saving the lake, possibly helping cash-strapped countries to take action within their means.

“The solution is simple, inexpensive, and targeted,” said Mr. Sanchez. “It involves reintroducing trees in the riparian areas at the mouths of the three rivers that are most to blame for carrying



ICRAF

main contributing factor for the runoff into the lake.”

A new project funded by the Swedish International Development Agency (SIDA), ICRAF, and the Kenyan Ministry of Agriculture will extend the use of satellite imagery to identify other priority watersheds and local hot spots in Kenya and in the other countries bordering the lake. ICRAF plans other activities to catalyze cross-frontier collaboration. ICRAF is also joining an international effort with various partners, including the Kenyan government, the United States Agency for International Development, and the Lake Victoria Environment Management Program (funded by World Bank and the European Union) to combine efforts on agriculture, fisheries, water transport, and health issues around the lake. 🌿

large sediment deposits.” Reintroducing trees into the landscape will also help disrupt the breeding of mosquitoes and snails, resulting in improved human health in the region.

Satellite technology is able to identify the source of sediments through an “analytical spectrometry method,” whereby each soil type has a unique signature or fingerprint. These spectral signatures are characterized through a color-coding system. The color of the plume – greenish-yellow – indicates that the sediments are made mostly of a soil type, Nitisols, mixed with another soil type, Acrisols. These soils come from gullies caused by soil and water erosion on agricultural land, on the human and livestock paths through those lands, and in riparian zones where vegetation has been removed.

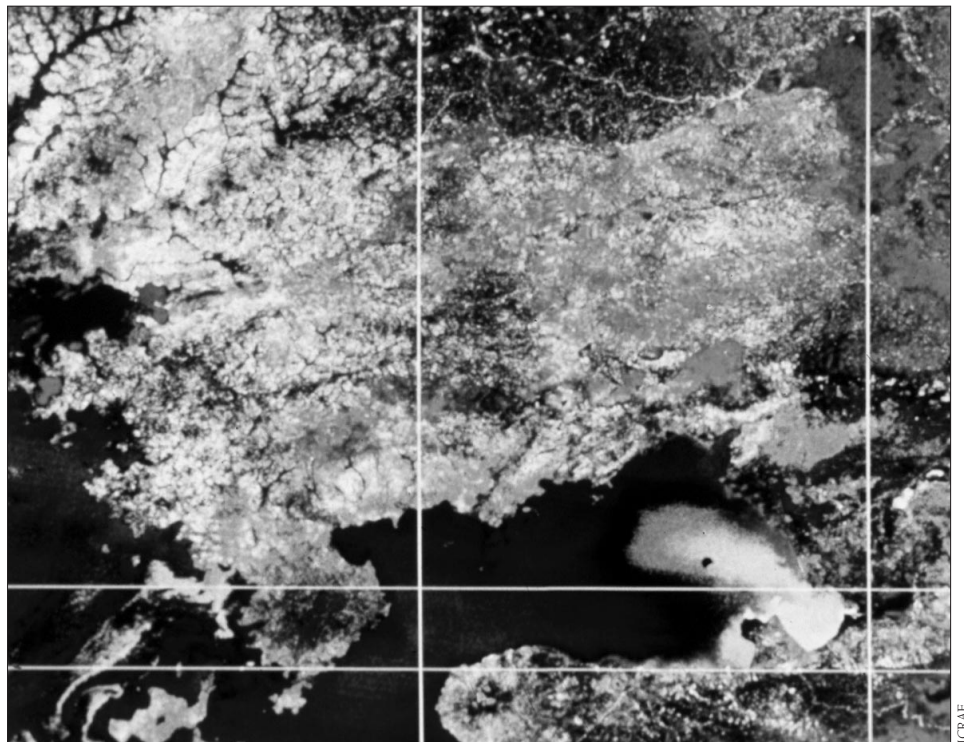
The scientists have now tested the particles from the area where the plume appeared. Not surprisingly, the plume was located near the points where each of the three key rivers flow into the lake. By sampling the soils just above the confluence of the rivers, the scientists have narrowed the problem by finding which parts of the valley system produce the most nutrients.

The source of the sediments has been debated for years. A recent World Bank report argued that they were deposited from the atmosphere following forest burning and wind erosion, while other

researchers believed they arrived mainly from agricultural runoff. Livestock, which trek to the lake every day to water, were also implicated because they move nutrients into the lake.

“These were all back-of-the-envelope theories based on information in Europe and in the United States,” explained Ms. Izac. “Today’s conclusions indicate that farmers’ agricultural practices are not the

Satellite images (below) have accelerated pollution research



ICRAF

FARMERS AND SCIENTISTS TRANSFORM HILLSIDE AGRICULTURE

Goal is Boosting Incomes and Preventing Eco-disasters

More than half a billion people live and farm on the tropical hillsides of Latin America, Africa and Asia. This important and diverse ecosystem covers some 5 million square miles, or 9 percent of the Earth's landmass, and contain 50 percent of the world's tropical forests and 20 percent of the world's fresh water. Yet each year nearly 10,000 square miles of tropical forests and 13 billion tons of topsoil are lost, according to a new study released jointly by the CGIAR and Future Harvest.

The consequences of this environmental degradation on tropical hillsides are visible on TV news nightly, from the mudslides that hit rural Mexico this October, to the devastation that Hurricane Mitch brought to Central America in 1998, killing 12,000 people. But CGIAR scientists and farmers are now transforming hillside agriculture to both increase income for farmers and to halt this massive hillside erosion and deforestation.

"We need a way to bring together and distribute the knowledge that these isolated farmers have gathered over hundreds of years and combine that with the latest agricultural technology for hillsides," explained Ismail Serageldin, CGIAR Chairman. "That's why communications are key to any successful development effort. We want to end the isolation of these farmers and their families and assist them to enter the global economy of the 21st century."

About 40 percent of the people in hillside regions live in absolute poverty. This poverty has caused widespread hunger, and has led to political and criminal violence and drug trafficking in South America, Mexico and Southeast Asia.

"The conditions of tropical hillside poverty and violence are also causing a mass exodus of the poor to cities around the world, increasing urban congestion, crime and disease," says Jacqueline Ashby, Ph.D., research director at the International Center for Tropical Agriculture (CIAT, for its initials in Spanish) and chief author of a new report: *Farmers' Knowledge Meets Formal Science: A People-Centered Strategy For Combating*

Poverty and Environmental Destruction in Tropical Hillsides.

Hurricane Mitch destroyed 70 percent of the crops in Honduras and Nicaragua, killed some 12,000 people, and left three million people homeless. Much of this destruction derived from the erosion across much of Central America, the result of hundreds of years of hillside agriculture. The soil, largely



stripped of the trees and native plants protected, couldn't absorb the huge amounts of rainfall from the hurricane. A similar situation took place in Mexico, when mudslides brought on by heavy rain killed between 300 and 600 people.

"Hurricane Mitch provided Central America and the rest of the world with an unforgettable lesson in the interdependence of town and country," the CIAT report says. "City dwellers who lost their homes and livelihoods together with small farmers whose land and crops were washed away were left wondering whether anything can be done to make the region less vulnerable to such disasters."

CGIAR scientists began working in 1993 to bring the latest scientific advances to bear on this neglected environment. The Center's collaborative work with farmers, non-government organizations (NGOs) and national institutions has resulted in a novel program of "integrated research with a landscape perspective," which is being tested at three hillside sites in tropical Latin America.

Under this approach, local researchers and development specialists work with rural communities to carry out the following five steps:

- Devise computer-based, geographic information systems (GIS) that simplify the tasks of monitoring agricultural land use and choosing alternative courses of action at the regional, national, and local levels.

- Train poor farmers to develop and test solutions to problems in agriculture and to disseminate them in rural communities, with only modest assistance from the outside.
- Design and create grassroots organizations that can orchestrate efforts (involving rural communities and the institutions that serve them) to combat poverty and improve the management of natural resources in hillside watersheds.
- Establish networks of local experimental sites, where scientists, farmers, and development specialists can work jointly to develop and evaluate a wide range of alternative technologies for agricultural production and natural resource conservation.
- Develop simple but reliable tools that enable local communities and institutions to collect and manage the information they need for making decisions and planning initiatives that promote local development and environmental conservation.

CIAT scientists are forming local agricultural research committees and community watershed associations to work with farmers and local specialists in several countries of Latin America. These grassroots organizations serve as a catalyst, providing farmers with advice and credit, and often improved seed.

Poor farmers on tropical hillsides suffer from low and stagnant incomes, limited opportunities for employment, low agricultural productivity, poor access to education and health services, and a lack of political power and institutional support.

"The plight of hillside communities is also amplified by environmental damage," the report says. About 60 percent of the hillside area in Central America and the Andean Zone shows signs of serious soil erosion. Hurricane Mitch was the worst natural disaster to hit Central America in this century, and the agricultural sector of Honduras and Nicaragua took the brunt of it. The storm destroyed up to 70 percent of the countries' basic food crops.

In addition, the storm caused heavy damage to the natural resources that underpin agriculture. In many places Hurricane Mitch caused massive soil erosion, exposing subsoil and rocks and severely damaging the land's



Jimmy Carter Visits ICRISAT's Groundnut Research

productive capacity. Siltation of rivers also jeopardized water supplies for irrigation and energy generation.

Agriculture accounts for nearly 30 percent of the gross domestic product in Honduras and more than 25 percent in Nicaragua. The hurricane wiped out about 80 percent of the commercial crops grown in Honduras and Nicaragua for sale abroad. Also, rice, cotton, tobacco, sugar cane, sesame seed, pineapples, cantaloupes, honeydew, and other fruits and vegetables were badly damaged.

The research behind this new approach was pioneered in 1993 in Cabuyal River watershed, located in Colombia's southwestern Cauca Department. It drew upon many years of field work aimed at improving crop varieties and farming practices for the region. It also built on more recent efforts to develop and introduce methods for farmer participatory research.

By 1995 the integrated approach was sufficiently advanced for further testing and refinement at sites in other countries where CIAT had a long history of collaborative research on staple crops. The Center and its local research partners first applied the approach at two more locations in Central America: first in the watershed of the Tascalapa River in Honduras' Yoro Department and more recently in the watershed of the Calico River in Nicaragua's Matagalpa Department.

Partners then replicated the approach in three more locations and with CIAT, trained over 1000 professionals from over 400 municipal government, NGO and community organizations. These institutions are introducing elements of the approach into their own programs in watersheds and municipalities elsewhere in Central America as a result of action plans formulated during the training.

"The approach is now set for wider application, in tropical America and beyond," explained Dr. Ashby. "With sufficient funds, municipal governments and communities can set up committees and watershed organizations to improve the livelihood of poor people through better land management. This approach can help poor people in tropical hillsides throughout Africa, Asia, and the rest of Latin America and the Caribbean."

For more, see: www.cgiar.org and www.futureharvest.org 

Former U.S. President and Future Harvest Ambassador Jimmy Carter wished ICRISAT good luck for its research on groundnut (peanut) after his visit to an ICRISAT demonstration plot at Selingue, a village near Bamako, Mali on 16 October 1999.

"I've spent all my life with groundnut," Mr. Carter told Dr. Farid Waliyar, ICRISAT Plant Pathologist. Dr. Waliyar, who is based at ICRISAT's Bamako Research Location, briefly described the Institute's activities, particularly relating to groundnut research and development in West and Central Africa.



Posters specially developed for the occasion highlighted the significance of groundnut in the region, which accounts for three-fourths of the total groundnut production of Africa. Dr. Waliyar said that the crop was particularly important for women farmers because it is a valuable source of protein as well as cash income.

Mr. Carter was accompanied by his wife, Rosalynn. The other members of the delegation included Government Officials of Mali, Yohei Sasakawa, President of Nippon Foundation, Jim Erwin, International Director of Lions Club, and Marcel Galiba, Director of Sasakawa-Global 2000 (SG 2000) operations in Mali, Burkina Faso, and Benin.

The visit to the demonstration plot was arranged as part of a workshop on "Food Chain in sub-Saharan Africa: from the Farm to the Market," organized by Nippon Foundation-SG 2000 at Bamako. The objective was to identify opportunities that would help African smallholder farmers to improve their incomes.

As the moving spirit behind the SG 2000 program, Mr. Carter was one of the prominent participants of the workshop. The SG 2000 program was created in 1986, when the Carter Center and the Sasakawa Association for Africa joined forces in an

effort to make Africa self-sufficient and prevent famines in the continent. Nobel laureate Norman Borlaug heads the program.

Ayako Sono, Chairperson of Nippon Foundation and Yohei Sasakawa as well as several African leaders, including Nicephore Soglo, former President of Benin and Amadou Toure, former President of Mali, attended the workshop which was inaugurated by Alpha Oumar Konare, President of Mali. Olusegun Obasanjo, President of Nigeria and Norman Borlaug who could not attend sent their best wishes.

Analyzing the close links between poverty and war, Mr. Carter stressed the need for increased agricultural production and better infrastructure in the region in his opening address at the workshop. He was optimistic that smallholder farmers could now have brighter prospects, as the technologies to overcome constraints to



agricultural production were available.

Before their departure from Selingue, Mr. and Mrs. Carter received brochures published by ICRISAT, its partners, and Future Harvest. Appreciating the opportunity to explain ICRISAT's new research thrusts to Mr. Carter, Dr. Waliyar said, "It's the fulfillment of a dream. It has been my long-cherished wish to invite Mr. Carter to see our groundnut research activities at ICRISAT."

HOW DOES RESEARCH REDUCE POVERTY?

CGIAR Workshop Analyzes the Connections

The plight of the world's billion-plus poor weighs heavily on the minds of development specialists. Why, they ask, does poverty continue to reign in so many places, despite enormous social, economic, and technological advances. What more can be done to open pathways out of poverty?

In September 1999, some 175 economists, agricultural researchers, and development experts gathered at San José, Costa Rica, to conduct a rigorous examination of these questions. The organizers (CIAT, CATIE*, and IICA**) commissioned more than 20 papers for the workshop, and more than 80 researchers shared their results.

Below are the key findings, based upon an analysis prepared in October by Douglas Pachico, CIAT's director for Strategic Planning and Impact Assessment, and presented during the opening session of the CGIAR's annual meetings in Washington, D.C.

How Does Agricultural Research Reduce Poverty?

The poor sustain themselves through many different livelihoods. They are small farmers, herders, city dwellers, and landless farm laborers. They are disproportionately old or very young, and the majority are women. Most of the benefits of research reach the poor through four main avenues:

1. Raising farm income and jobs

Research improves farm income by offering technological innovations that boost agricultural productivity. Strong evidence points to massive productivity increases during recent decades in impoverished areas.

The best-known examples are the widespread adoption of modern rice and wheat varieties. But other cases include virus-free sweet potatoes for poor farmers in hillside areas of China, livestock technologies in sub-Saharan Africa, and new cassava

varieties in Nigeria. Though small farmers sometimes adopt new technologies more slowly than large producers, large numbers of small farmers have adopted and benefited.

Higher farm incomes made possible by improved technologies have enabled rural people to seize new opportunities. In Asia, for example, families that adopted modern rice varieties have provided an education for their children, who have then obtained



IRRI

better paying jobs off the farm. Far from locking rural people into poverty on small farms, agricultural research has helped many of them find an exit.

Research has also benefited landless workers, who are among the poorest of the poor, through job creation in a more productive agriculture. Many farm laborers have migrated to more favored regions where farmers have taken up new varieties. Future work opportunities in agriculture will most likely come more from the production of high-value commodities (such as fruits, vegetables, and livestock) and from value-added processing of a wide range of tropical products.

2. Lowering food prices in the marketplace

One of the greatest benefits of agricultural research in developing countries has been

cheaper food, made possible by more efficient crop production. This has especially helped the poor, since they spend much of their income on food. Lower food prices alone, however, cannot lift people out of poverty. Increased incomes have far more impact in reducing the numbers of poor.

As markets become more global, moreover, agricultural innovation at the national level has less effect on local food prices, especially in urban areas that are well connected to world markets. However, in isolated areas, these production gains can still help the poor by making food cheaper.

3. Providing pathways out of poverty

The rural poor pursue different "pathways out of poverty," and research helps these people find a way forward. In many households, agricultural production is frequently the responsibility of women, who benefit from innovations in the production of staple foods and from labor-saving devices. They also gain opportunities from

research on small agroenterprise development.

Leaving the countryside is another important pathway out of rural poverty. Agricultural research contributes to an easier transition from village to urban life at least indirectly, by raising farm incomes, creating jobs, and thus enabling farm families to educate their children. A prosperous agriculture, by fueling growth in other sectors, helps create a more favorable economic climate for migrants seeking work.

4. Fueling economic growth

Agricultural research does not reach all of the poor, many point out, and some of its benefits are siphoned off by the well-to-do. But research clearly improves the returns to credit programs, land reform, extension,



infrastructure improvement, and other rural investments, and thus is a vital component of integrated strategies for reducing poverty.

Poverty and Environmental Degradation

Do the rural poor live primarily where conditions for agriculture are harsh? Is rural poverty a driving force behind environmental degradation in the tropics?

The overall picture is quite clear. In India, 65 percent of the rural poor live in marginal environments. Most of the rural poor in China are concentrated in remote upland areas. Clearly, many rural poor also live in favorable environments. But if research concentrates exclusively on such areas, it bypasses the majority of the poor.

Many studies show that rice and wheat research has had a greater impact in favorable areas. Yet, a recent study of a wider array of crops in India found that research in rainfed environments gave higher marginal rates of return than in irrigated environments and did more to reduce poverty. Similarly, in dry areas of West Asia research has yielded attractive returns. To reduce poverty, research must cater to both classes of environments.

Cross-country analysis finds no relationship between poverty and soil erosion. But in local-level studies, the link appears to hold. In Honduras, one study found that poor farmers practice sustainable soil management less often than their wealthier neighbors.

The “livelihood strategies” of poor farmers determine whether or not they degrade natural resources. Many farmers invest in resource improvement to raise their incomes. But others mine resources before exiting agriculture. Or they allow resources to degrade until conservation seems necessary or worthwhile.

Overall, the evidence suggests that poverty is not the main driving force behind environmental degradation in the tropics. The rich control more natural resources than the poor and often destroy them. The poor can regenerate degraded land, and this has been shown to improve livelihoods in places where resource destruction is tightly

linked to poverty. Such places present the CGIAR centers and partners with opportunities to confront poverty and environmental destruction at the same time.

A Greater Impact on Poverty

Can agricultural research be targeted specifically to reduce poverty? Can it effectively accomplish multiple goals?

Many research organizations have given high priority to crops that are grown and consumed mainly by the poor, and they have targeted regions where large numbers of poor people live. Yet, empirical evidence cited by suggests that this research has not always registered high gains in reducing poverty.

Participatory research methods can improve the design of technology for poor farmers, as illustrated in maize variety development in Mexico. Generally, researchers can bring their work more in line with the needs of poor farmers by actively involving them and giving them a voice in the activities of research organizations.

The record of impact demonstrates that the increased agricultural productivity made possible by research has had substantial impact in reducing poverty. Moreover, many poor farmers have succeeded in improving their management of natural resources in addition to raising productivity.


Tremendous Potential

The prospects for continued impact from agricultural research on the food security, poverty, and environmental fronts have never been better. CGIAR centers, together with their research partners, have accumulated a huge stock of “social capital” in the form of networks and other partnerships. With this capital, they are generating a wider array of useful products than ever before.

These include improved crop germplasm for marginal and favorable environments as well as methods and information that help intensify crop and livestock production; protect water, forests, soil, and aquatic resources; strengthen

national and local organizations; and improve government policies. Each of these products represents a potentially lucrative investment in better livelihoods for the poor.

Critics claim that many poor people have not received their fair share of the research benefits and that some of these have actually gone to the rich. Such criticisms should serve agricultural researchers as a constant reminder that their work can be better targeted and better managed.

The shortcomings of research should not divert attention from the impressive record of success. On the strength of that record, agricultural research must play a central role during the next century in paying society's huge debt to the 1.3 billion people living in absolute poverty. 

Note: Selected papers presented at the international workshop “Assessing the Impact of Agricultural Research on Poverty Alleviation” will be published in April 2001 in the journal Food Policy. Most of the other papers will be available soon on CIAT's Web site (<http://www.ciat.cgiar.org>). (Email: d.pachico@cgiar.org)

*CATIE, Centro Agronómico Tropical de Investigación y Enseñanza (Center for Research and Higher Education in Tropical Agriculture)

**IICA, Instituto Interamericano de Cooperación para la Agricultura (Inter-American Institute for Cooperation in Agriculture)

BIOTECHNOLOGY

Continued from page 1

economic and social – were actively sought so that linkages could be explored, and the elements of a consensus could emerge, one directed specifically toward the needs of small farmers and consumers of developing countries.

From the parallel regional sessions, the following important points emerged:

- A great deal of biotechnology research and applications are being carried out in developing countries. India, China, Brazil have already sizeable investments in biotechnology.
- There is a belief that the tools of biotechnology do have something to offer in meeting their needs, although those needs differ from country to country.
- There have been some solid success stories.
- Constraints include lack of awareness about the extent of either risks or benefits; lack of critical mass in terms of personnel and infrastructure support; dealing with intellectual property management issues; and difficulties in regulatory aspects, particularly on biosafety issues.

Plenary sessions raised the following key points:

- Transparent, science-based frameworks are needed to assess risks; risk management


procedures must be in place.

- Potential allergy risks can now be assessed with protocols in place in several countries; but, independent regulatory systems for food safety must enjoy a high degree of public trust.
- There is a need to assess the long-term socio-economic impact of biotechnology; both positive and negative impacts should be monitored.
- CGIAR must be very clear about the ethical position from which it makes decision in carrying out its research.
- Public and private sector roles are changing. Two critical roles were seen for the CGIAR: protector of the interests of the poor; and bridge-builder in biotechnology partnerships.
- Reaffirmation that IP management is a critical issue in many countries.
- Communicating about biotechnology is perception management, not just handing out information but engaging in dialogue. Trust is the key element to pursue in addressing public perceptions.

Specific suggestions emerged on areas of activity and issues where the CGIAR centers could play a useful role in the future. These included: 1) facilitating the gathering and sharing of information; 2) identifying problems and priority setting; 3) supporting national capacity

building; 4) ensuring compliance with agreed biosafety standards; 5) managing intellectual property; 6) strengthening the efforts to develop and implement specific public/private sector partnerships; and 7) regular, systematic communication with stakeholders on biotechnology issues.

Many of the participants provided a positive feedback about the conference and believed that it achieved its key objectives. The conference proceedings are being edited and will be published early in 2000.

The CGIAR will continue to be a key facilitator of this dialogue. Clearly, such science-based discussions are critical in guiding the strategies of the international agricultural research centers of the CGIAR as they mobilize, in collaboration with their partners, cutting-edge science to combat poverty, hunger, and environmental degradation in the developing world. 

** Cosponsors included the Biotechnology Industry Organization, Food and Agriculture Organization, Global Forum on Agricultural Research, International Council for Science, International Fund for Agricultural Development, Third World Academy of Sciences, UN Development Programme, UN Educational, Scientific and Cultural Organization, UN Environment Programme, UN Industrial Development Organization, and Union of Concerned Scientists.

Voices from the Conference

"Does molecular biology have a role to play? Yes, it does. It is not the silver bullet, but it does have a role to play. There can be a partnership, between the North and the South, in benefiting from this quantum leap in research." – **BONGIWE NJOBE-MBULI, DIRECTOR GENERAL, DEPARTMENT OF AGRICULTURE, SOUTH AFRICA**

"Condemning biotechnology for its potential risks without considering the alternative risks of prolonging human misery caused by hunger, malnutrition and child death is as unwise and unethical as blindly pursuing this technology without the necessary biosafety." – **PER PINSTRUP-ANDERSEN, DIRECTOR GENERAL, INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE**

"We need to recognize that biotechnology is one tool in our arsenal for feeding the world in the future. It's a solution, but it isn't without its problems. We can't afford to ignore the potential of biotechnology." – **ALEXANDER F. MCCALLA, DIRECTOR, RURAL DEVELOPMENT, THE WORLD BANK**

"If agriculture is to attract young people in developing or industrialized countries, it must be both intellectually satisfying and economically rewarding. This is where the new opportunities will arise, of eco-jobs or eco-farming or precision farming, using everything in a precise way." – **M.S. SWAMINATHAN, FATHER OF INDIA'S "GREEN REVOLUTION," AND RECIPIENT OF THE WORLD FOOD PRIZE, 1987**

"Keeping in view the large population my country has to feed as we move into the next century, [biotechnology] is the science which is going to offer us nutritional, health, environment, ecological, and livelihood security." – **MANJU SHARMA, SECRETARY TO INDIA'S DEPARTMENT OF BIOTECHNOLOGY**

"We need to rethink research and development priorities. Do we really need to use biotechnology to further intensify agriculture? And we need to develop better crops with real, and I mean demonstrable and sustainable benefits because if the public is going to have confidence in biotechnology, we really need to be able to go out and say here is a crop that has a real environmental benefit." – **BRIAN JOHNSON, BRITISH STATUTORY NATURE CONSERVATION AGENCIES, UK**

"Biotechnology will soon play a major role in crop improvement ... areas planted to cultivars developed by using biotechnology will increase steadily in the years to come. Biotechnology will contribute greatly to food production and food security in the coming years." – **QIFA ZHANG, PROFESSOR AND DEAN, HUAZHONG AGRICULTURAL UNIVERSITY, CHINA**

"Bargaining power in intellectual property favors those who are producers of proprietary knowledge, not its users. Stronger intellectual property rights may actually slow the overall pace of innovation and increase the knowledge gap between North and South, rich and poor." – **HOPE SHANDS, DIRECTOR OF RESEARCH, RAFI INTERNATIONAL**



THE BILDERBERG CONSENSUS: INTEGRATED NATURAL RESOURCES MANAGEMENT IN THE CGIAR

In September 1999, specialists in integrated natural resources management (INRM) met at the Bilderberg Hotel in Oosterbeek, the Netherlands, to discuss directions for INRM research in the CGIAR. The participants represented most of the 16 CGIAR Centers, national research systems (NARS) in eight developing countries, the CGIAR's Technical Advisory Committee, NGO Committee and its Impact Assessment and Evaluation Group, non-CGIAR international research institutes, advanced research organizations, and funding agencies.

The workshop was organized by the CGIAR Center Directors Committee (CDC) and chaired by CIFOR Director General Jeffrey Sayer as head of the CDC Committee on Sustainability and the Environment. Following the workshop, a statement known as the "Bilderberg Consensus" was issued. Below is a summary.

The Challenges

There is wide agreement that the CGIAR's three principal goals of eradicating poverty, attaining food security and conserving the environment are highly inter-dependent. If measures to improve yields of food crops and livestock are not based on adequate understanding of the needs and options of the poor and do not take into account the ecology, economic and institutional context of the systems being addressed, poverty will not be eradicated. Since the early 1990s, the CGIAR has recognized that agricultural research must go beyond the traditional paradigms and deal more broadly with how the rural environment can better contribute to the CGIAR's three main goals.

Principles and Criteria

Participants established principles and criteria to determine how well CGIAR projects integrate the scientific, social and

ecological dimensions of INRM. A set of eight examples of INRM problems was identified to test how these principles and criteria might be applied. The problem sets were chosen from five ecoregions: dry lands and deserts; range lands and savannahs; humid tropical lowlands; aquatic systems; and mountains and uplands.



Scientific Opportunities and Breakthroughs

Advances in several scientific areas were seen as having the potential to improve INRM, but also to pose new challenges. One problem the CGIAR needs to be particularly sensitive to is the difficulty that small farmers face in acquiring access to the

benefits of advanced technologies (such as biotechnology, remote sensing and spatial modeling, and computer-based information) without external assistance

Ecoregional and Systemwide Programs

Eco-regional and system-wide programs have potential as vehicles for the implementation of CGIAR-initiated INRM activities. Several such programs are already in place, with collaborative partnerships well developed and scientific and geographic areas defined. There have been encouraging results, even though many require sharpening of management, more visible stakeholder expression, a clearer problem focus and more integrated NRM approaches.

Obstacles to INRM Research

The workshop concluded that there is a strong need for INRM research and that much is already known about how this should be pursued. CGIAR Centers have made major advances in the application of INRM principles in certain areas and to certain problems. However, the performance of the CGIAR as a whole is variable and the practical application of INRM research has fallen short of aspirations. Several attributes of the CGIAR were identified as having

been inimical to the fulfillment of INRM potential. To make progress, the CGIAR needs to make changes (including structural, managerial, and institutional changes) at System and Centre levels.

The Next Steps

The Bilderberg Consensus was presented at ICW99 in October, and a follow up meeting was sponsored by Switzerland and the Netherlands. Amongst the next steps is a scientific meeting on INRM focused on cross-cutting issues common to CGIAR priority eco-regions will be hosted by ICLARM in Penang, Malaysia, from 21-25 August 2000. An ad hoc task force comprising Jeff Sayer (CIFOR), Paul Eggar (Switzerland), Florencia Montagnini



(CATIE), Richard Harwood (TAC) and Michael Swift (TSBF) was set up to prepare the meeting. This taskforce will:

- Promote electronic discussion of key INRM topics, and encourage CGIAR scientists to take the lead in moderating/leading such discussions.
- Revamp, update and maintain the INRM website www.cgiar.org/cifor/inrm developed by CIFOR to facilitate dialogues and exchange of information amongst CGIAR INRM scientists.
- Publish the Bilderberg report, possibly attaching to it a bibliography of the documents and a summary of the web-based inventory.
- Provide inputs on INRM to the CGIAR Consultative Council discussions on vision and restructuring.

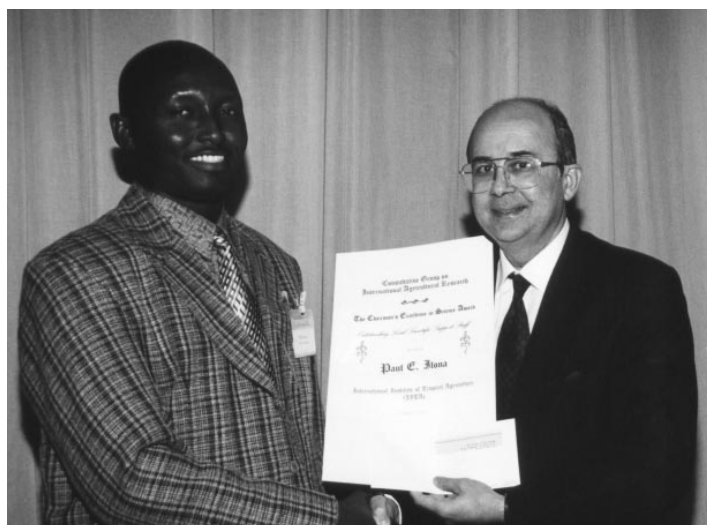
CHAIRMAN'S 1999 SCIENCE AWARDS

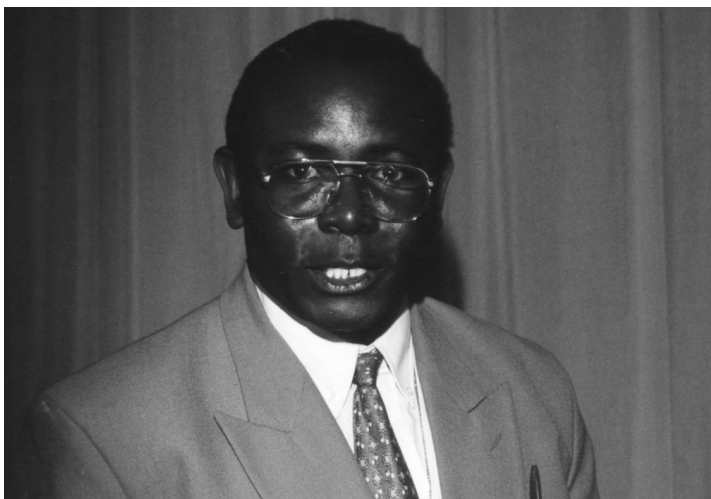


Left to right: Chairman Ismail Serageldin, Amos Omoro, Paul E. Ilona, James Legg, David Bergvinson and Walter Falcon of Stanford University.

Outstanding Local Scientific Support Staff

The award was presented to **Paul E. Ilona**, a Research Associate from Nigeria working at the International Institute of Tropical Agriculture (IITA) “for his outstanding contributions to the development of cassava varieties and their adoption by farmers in Sub-Saharan Africa.” Cassava is a vital component of food supplies in Sub-Saharan Africa and IITA’s Paul Ilona has made a sizeable contribution to extending improved varieties to thousands of farmers across the continent. Mr. Ilona has assisted national programs and farmers in many countries to collect, characterize, and maintain local germplasm. He has organized hundreds of farmers in Nigeria to multiply improved varieties. And he has worked effectively with non-governmental groups to resuscitate cassava production in emergency situations in Angola and Liberia. Mr. Ilona has proven that he is a extremely competent researcher with strong agronomic skills and an unusual ability to work under very tough conditions to solve complex and challenging problems



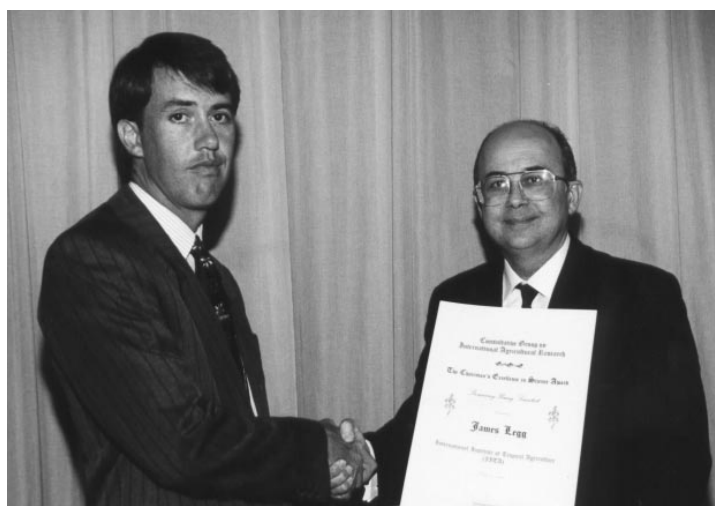


Outstanding Local Scientist

The award was presented to **Amos Omore**, a Veterinary Epidemiologist from Kenya working at the International Livestock Research Institute (ILRI) “for his outstanding contributions to the improvement of dairy production and marketing in small holder livestock systems in Kenya.” Amos’ work involves helping to develop and test methodologies for “production-to-consumption” dairy subsystems in sub-Saharan Africa. His major contributions include: conducting a national-level rapid appraisal to identify constraints and opportunities for dairy development in Kenya; assessing the public health risks of raw milk marketing; testing and implementation of “best-bet” technologies and policy options to improve dairy production and marketing in smallholder systems. Amos’ work demonstrates more than outstanding intelligence and commitment. He has shown what it is to be an “integrator” and a whole system’s thinker.

Promising Young Scientist

The award was presented to **James Legg**, an Associate Scientist from the United Kingdom working at the International Institute of Tropical Agriculture (IITA) “for his outstanding contributions to strengthening research for the control of cassava mosaic virus disease in Africa.” This destructive disease poses one of the greatest challenges to researchers in the Tropics, and costs farmers an estimated US\$1.2 to 2.3 billion each year. James Legg has been working with IITA since 1995 in the fight against it. Together with colleagues in East Africa, he has helped turn a disastrous situation into a clear success story. Because of their research on identifying and disseminating mosaic resistant cassava varieties, a lasting solution is now available and is already successfully implemented. Areas where there was starvation only recently are now growing again a productive cassava crop.



Promising Young Scientist

The award was presented to **David Bergvinson**, Senior Scientist from Canada working at the International Maize and Wheat Improvement Center (CIMMYT) “for his outstanding contributions to the development of modern host plant resistance program in maize.” In just four years working at CIMMYT, David has addressed several major scientific challenges with innovation, initiative, energy, logic and enthusiasm. He has expanded and advanced the host plant resistance program to one which routinely uses molecular methods within a full-scale pedigree breeding program. At the same time, he has established the largest insect rearing facility for maize in the world. David has demonstrated a personal commitment to research that impacts in farmers’ fields and has earned the highest respect from his fellow scientists.



ANNOUNCEMENTS

ICRISAT's New Director General

The Chair of ICRISAT's Governing Board, Dr. Ragnhild Sohlberg, has announced that DR. WILLIAM DOLLENTE DAR has been appointed as the next Director General. He is expected to join the Institute

on or about 10 January, 2000.

Born in the town of Santa Maria in the province of Ilocos Sur, Philippines in 1953, William Dar will be the youngest Director General in the Institute's history.



Dr. William Dar

William Dar rose to his current position of Presidential Advisor on Rural Development in the Philippines after a steep and steady rise in his career beginning with his BS degree in Agricultural Education at the Benguet State University in the Philippines. He took his MS degree in Agronomy from the same university, where he worked his way up from Instructor to Professor to Vice President for Research and Development Support Services. He completed his Ph.D. in Horticulture at the University of the Philippines, Los Baños, in 1980.

In 1987, Dr. Dar helped set up the Bureau of Agricultural Research of the Philippine Department of Agriculture, and, as its first Director, led it through its first seven years. He led the formulation of the National Agricultural Research and Extension Agenda, and the rationalization of the agricultural research system of the country. In 1994, he became Executive Director of the Los Baños-based Philippine Council for Agriculture, Forestry, and Natural Resources Research and Development (PCARRD), which is the apex agricultural research institution of the country.

President Estrada of the Philippines appointed William Dar as the Acting Secretary of the Department of Agriculture (equivalent to the Minister of Agriculture) in 1998, and to his present position in


August 1999. His greatest contribution to agriculture was during his tenure in the Department of Agriculture where he worked unstintingly for rural development and the uplift of Filipino farmers and fisher folk. Under his stewardship the agriculture sector gained a positive 2.7 percent growth, with rice and corn registering 35 percent and 62 percent growth respectively, the highest in six years. He also served as the Chair of the Asia-Pacific Association of Agricultural Research Institutions (APAARI), and represented the region in the establishment of the Global Forum on Agricultural Research (GFAR), an initiative of the CGIAR.

William Dar is no stranger to ICRISAT having served as a member of the ICRISAT Governing Board from January 1997 to September 1999. He is a member of other Boards of Trustees including CIMMYT, and the Australian Centre for International Agricultural Research. Earlier he was a member of the Oversight Committee of the CGIAR. ICRISAT is very pleased to welcome Dr. Dar as the new Director General, and looks forward to his invigorating leadership and direction.

New Rural Development Chief at World Bank

ROBERT L. THOMPSON has been appointed Director of Rural Development at the World Bank. He has been serving as a senior advisor on strategy and policy for agricultural and rural development at the Bank in Washington, DC. He is also a senior advisor at the Center for Strategic and International Studies in Washington, DC.

Thompson served formerly as President and CEO of the Winrock International Institute for Agricultural Development (1993-98), as Dean of Agriculture (1987-93) and Professor of Agricultural Economics (1974-93) at Purdue University, as Assistant Secretary for Economics at the U.S. Department of Agriculture (1985-87) and as Senior Staff Economist for Food and Agriculture at the President's Council of Economic Advisers (1983-85).



He is past president of the International Association of Agricultural Economists. He is a Fellow of the American Agricultural Economics Association and of the American Association for the Advancement of Science and a Foreign Member of the Royal Swedish Academy of Agriculture and Forestry and of the Ukrainian Academy of Agricultural Sciences.

Anthropologist Assumes Lead at CIAT

DR. JOACHIM VOSS has been appointed as the next Director General of the International Center for Tropical Agriculture (CIAT), based in Cali, Colombia, by decision of the Center's Board of Trustees. Voss will take up the position in April 2000.

An experienced and widely respected research manager, Voss, 52, has a demonstrated capacity to lead teams of natural and social scientists in addressing the problems of small farmers, poor consumers, and the environment in developing countries.

Currently, he is manager of the Research Division of Canada's International Development Research Centre (IDRC), where he has worked since 1988. His main responsibilities are to organize and lead problem-focused, interdisciplinary teams working on natural resource management, the environment, and information and communications.

"We are delighted to have someone of Dr. Voss' stature and experience," said CIAT Board Chairman Dr. Fernando Chaparro. "He brings to us a wealth of experience in international agricultural development, and he's thoroughly dedicated to the Center's humanitarian mission."

"Joachim has an excellent grasp of research and development issues and realities in Africa, Asia, and Latin America," said CIAT's interim director general Aart van Schoonhoven. "He's well-prepared to lead CIAT in fulfilling its responsibilities both as a regional and global research center."

Voss is well known at CIAT and in the CGIAR. From 1983 to 1988, Voss served CIAT as a Rockefeller Foundation postdoctoral fellow and then as a senior scientist working on farming systems in Burundi, Rwanda, and Zaire. During the past five years, while acting as IDRC's representative to the CGIAR, he has acquired a detailed knowledge of the 16 Centers supported by the Group and of their donors. Voss holds a Master's degree in Rural Sociology from the University of Guelph and received his Ph.D. in economic anthropology from the University of Toronto.

CIAT's fifth Director General since the Center's establishment in 1967 – succeeds economist Dr. Grant M. Scobie, who resigned last September after more than four years of dedicated service in leading the Center.

New Deputy Director General at IRRI

The former vice president of the Chinese Academy of Agricultural Sciences (CAAS), DR. REN WANG, will officially become IRRI's new deputy director general for research in January 2000.

Announcing the appointment, IRRI director general Ronald P. Cantrell said, "Dr. Wang brings to IRRI not only impressive leadership experience and an excellent scientific background but also a direct link to China's valuable contributions and traditions of scientific excellence in rice research. His joining the Institute will undoubtedly strengthen ties between IRRI and China and provide our research efforts with an important boost at the start of the new millennium."

Formal links between IRRI and China were first established in 1982 with the CAAS as the lead agency. The relationship was strengthened in November 1997 when the China-IRRI Liaison Office was formally established in Beijing. During a recent visit to IRRI, Dr. Wang said, "The world today is faced with several irreversible trends: population increases in developing countries; a growing demand for more and better food; a need to conserve diminishing natural resources, biodiversity, and the environment; and the globalization of trade and science."

Chinese Premier Li Peng appointed Dr. Wang as vice president of the CAAS in November 1994, where he was responsible for strategic planning, priority setting, and developing major agricultural research programs. Dr. Wang also served on the expert advisory panel that drafted China's national guidelines for the development of agricultural science and technology (2001-2015). He was a member of an expert committee charged with developing guidelines and making strategic plans for the Ministry of Science and Technology.

Before joining the CAAS, Dr. Wang was deputy director of the International Institute of Biological Control run by Commonwealth Agricultural Bureaux International in the United Kingdom. Over two years, he developed research projects and was involved in institutional capacity building, training programs, technical assistance in biological pest control, integrated pest management, and conservation of biodiversity. Dr. Wang was also a member of a specialist panel on science and strategy that was part of the CGIAR System Review in 1998.

REMEMBER – WE HAVE MOVED!

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THE CGIAR

CGIAR Chairman

Ismail Serageldin

CGIAR Executive Secretary

Alexander von der Osten

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Foundations

Ford Foundation, Kellogg Foundation, Rockefeller Foundation

International and Regional Organizations

African Development Bank, Arab Fund for Economic and Social Development, Asian Development Bank, European Commission, Food and Agriculture Organization of the United Nations, Inter-American Development Bank, International Development Research Centre, International Fund for Agricultural Development, Opec Fund for International Development, United Nations Development Programme, United Nations Environment Programme, The World Bank

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