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Eminent social scientist to lead CIAT

r. Grant M. Scobie has been appointed as the next director general of CIAT, effective July 1995, by decision of the Board of Trustees.

Scobie, 53, has investigated and taught the economics of research and development in agriculture for more than 30 years. Much of his work has focused on world food supplies, particularly of rice.

He is currently professor and chairman of the Department of *Economics at the University of* Waikato in his native New Zealand. He also works extensively in the developing world as partner in an economics consulting firm.

Scobie has gained substantial experience in Latin America, as a rice economist at CIAT from 1973 to 1976, and later as a consultant to a dozen countries in the region.

He brings to CIAT a wide range of experience in evaluating the economics of investment in research. "Dr. Scobie is well prepared to deal with complex



Centro Internacional de Agricultura Tropical International Center for Tropical Agriculture

decisions about resource allocation within CIAT," notes Board chairman Dr. Lucia Vaccaro. "He will also be an effective advocate for international agricultural research among our donors," she adds. "The Board looks forward with great satisfaction and enthusiasm to CIAT's future under Dr. Scobie's leadership."

Scobie is a familiar personality in the Consultative Group on International Agricultural Research (CGIAR), the system that supports CIAT and 15 other Centers. He has consulted for the system's Technical Advisory Committee based in Rome and for five individual Centers. He has also consulted for organizations that support the CGIAR, including the World Bank and Ford and Rockefeller Foundations.

Scobie graduated in agricultural sciences in New



Latin American rice growers unite to finance international research See page 6



Dr. Grant M. Scobie

Zealand, holds a Master's degree in agricultural economics from Australia, and received his Ph.D. in economics at North Carolina State University, USA. He has published extensively, including 3 books, 6 book chapters, and nearly 40 journal articles—2 of them award winning.

Scobie's wife, Dr. Veronica Jacobsen, is also an economics professor at the University of Waikato and a lawyer. She is particularly concerned with institutional agreements on the management of natural resources.

Monitoring the health of our planet

See page 8



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CIAT International highlights research and international collaborative activities of the International Center for Tropical Agriculture (CIAT, from the Spanish acronym). Its contents may be quoted freely or reprinted with proper credit given to the source. Clippings would be appreciated.

For more information about CIAT, contact the CIAT Communications Unit, Apartado Aéreo 6713, Cali, Colombia; telephone [57-2]445-0000; telex 05769 CIAT CO; E-mail N.RUSSELL@CGNET.COM Fax [57-2]445-0273.

CIAT is dedicated to the alleviation of hunger and poverty in developing countries of the tropics by applying science to agriculture to increase production while sustaining the natural resource base.

CIAT is one of the 16 international centers sponsored by the Consultative Group on International Agricultural Research (CGIAR), a group of 40 nations and international agencies that fund research for development. The Centers focus on the crops and livestock that provide 75% of the food for the developing world.

Editing and Production

Eduardo Figueroa Jr. Gail Pennington Nathan Russell	Editors
Julio C. Martínez	Design and Layout
CIAT Graphic Arts	Production

A letter from the Board Chairman

It is my pleasure to inaugurate this new feature of CHT International, intended to inform cooperators and donors of CHT's perspective on key events within and outside the Center.

In 1994, CHAT underwent a rigorous process of analysis and decision making in response to the severe economic reduction and uncertainty we were experiencing.

At midyear Gustavo Nores stepped down as director general. With his characteristic conviction and enthusiasm, he left an indelible mark on the Center by leading it towards a prototype of integrated commodity and natural resource management research, based on institutional partnerships.

After Dr. Nores resigned, CIAT was most fortunate to draw upon the wisdom and experience of a distinguished member of its Board of Trustees, Robert Havener, who has acted since then as interim director general.

Almost simultaneously, we were profoundly affected by the still unresolved kidnapping of Thomas Hargrove, head of our Communications Unit.

The Center has emerged from this difficult period strengthened in its dedication to its goals and better placed to achieve them. We have been particularly encouraged by the Colombian government's decision to join the CGIAR system, with an important multiyear financial contribution. The positive results of a meeting of donor country ministers at Lucerne, Switzerland, also inspires greater confidence in the future. Aurthermore, CIAT's 1994-1995 External Program and Management Review provides a refreshing endorsement of the Center's course of action, with pertinent suggestions as to how it may be improved still further.

The appointment of Dr. Scobie as director general thus comes at an auspicious moment for CIAT and the CGIAR. We look forward with great optimism to the Center's future in the post-Lucerne era under his leadership.

Lucia Vaccaro

Kidnapped

homas Hargrove

r. Thomas Hargrove, editor and head of CIAT's Communications Unit, was kidnapped on 23 September 1994 by unidentified persons at a road block near Puerto Tejada in Cauca department. The Center began immediately to explore with the Colombian authorities, US embassy, and international organizations the possibilities for securing his release.

In November the Center informed the Colombian press that it had received a communication from the kidnappers providing proof that Hargrove is alive and demanding a large ransom. CIAT management emphasized that the Center is in no position to pay or negotiate a ransom, since it is a nonprofit development institution that depends entirely on donor funds.

To those of you who have written letters of concern to the Colombian press and government, we express our deepest gratitude. We understand the frustration of Tom's many friends and colleagues at not being able to do more. Be assured that CIAT, Tom's family, and the Colombian authorities are making every effort to free him.

The "Spirit of Lucerne" strengthens commitment to agricultural research

onors reaffirmed their commitment to the CGIAR Centers at a recent high-level meeting in Lucerne, Switzerland.

Thirty-nine delegations, 14 headed by government ministers, attended the event, held 9-10 February. Participants adopted the Lucerne Declaration and Action Program, which outlines a strategy of agricultural research to break the vicious circle of poverty, population growth, and environmental degradation in developing countries.

"It is a moral outrage that in a world of plenty one billion people continue to live in abject misery," said Ismail Serageldin, CGIAR chairman. "The challenge is to promote people-centered sustainable development that helps feed the hungry, reduce poverty, and safeguard the environment," he added.

The United Nations Environmental Programme (UNEP) accepted an invitation to become the CGIAR system's fourth cosponsor. The other three are the Food and Agriculture Organization (FAO), United Nations Development Programme (UNDP), and World Bank.

Four countries joined the system as donor members: Côte d'Ivoire, Egypt, Iran, and Kenya. Other members announced they would increase their contributions in 1995. Some said they were prepared to consider multiyear funding.

Delegates hailed broader membership in the CGIAR as an important step toward more equal partnerships between North and South. The meeting called for global and regional forums to ensure that the research agenda of the CG Centers accurately reflects the needs of all partners, including farmer groups, NGOs, universities, and international institutions.

In addition, the CGIAR will convene a committee of NGOs to improve communication with them and will initiate a dialog with private sector organizations.

These outcomes of the meeting reflect a new spirit of international cooperation and commitment to agricultural research—the "spirit of Lucerne."

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he government of Colombia donated US\$1.2 million to support core research at CIAT in 1994 and has reconfirmed its intention to maintain this support in 1995, says Robert Havener, interim director general of the Center. "The government also informed us recently that the level of its contribution will increase at the rate of 20% in each of the next 5 years," adds Havener.

"With this contribution to CIAT, Colombia becomes a member of the CGIAR," says Dr. Fritz Kramer, the Center's deputy director for finance and administration. This membership gives Colombia a voice in planning strategies to feed a world whose population will reach 6.7 billion by the year 2005.

Ismael Serageldin, CGIAR chairman, paid a special tribute to Colombia, present for the first time at International Centers' Week in October 1994. "Our host country's presence was a source of special pride to us," says Lucia Vaccaro, chairman of CIAT's Board of Trustees. The country was represented by Dr. Juan José Perfetti, viceminister for agriculture, and Dr. Alvaro Balcázar of the National Planning Office. "CIAT's contribution . . . has been fundamental in helping us to make a significant difference in agricultural productivity in Colombia," wrote Dr. César Gaviria, former President of Colombia, in a letter pledging support to Serageldin.

The World Bank will match 50% of new donations to Center core budgets in 1994 and 1995, Kramer points out. The total increase will be more than \$1.7 million.

"As CIAT's host country, Colombia has been a strong supporter since the Center's founding in 1967," Kramer says. The relationship has been mutually beneficial.

More than 1,000 Colombians have participated in CIAT training programs; about 50 have conducted M.Sc. and Ph.D. research at the Center. More than 3,000 Colombians have attended scientific conferences at its headquarters near Cali.

"Colombia has also indicated its intention of providing leadership by encouraging other Latin American countries to become donor members of the CGIAR system," Havener notes.



The quality of the science and the dedication and spirit of CIAT employees "greatly impressed" the experts who evaluated the Center recently.

IAT received a strong endorsement of its research and management from the fourth External Programme and Management Review, completed recently.

The results of this review are especially significant: It is the first since CIAT embarked on its strategic plan for the 1990s, and it follows a difficult period of funding reduction and organizational change.

"We have been deeply impressed by the way CIAT has handled this crisis," says Declan J. Walton, chairman of the review panel. "We have no reservations about the changes that have been made.... CIAT is a good centre, ... doing high-quality science and showing great resilience."

Excellent results from the CIAT External Review



At the cutting edge

The reviewers are impressed with CIAT's "vision and initiative" in balancing commodity improvement and resource management research. They comment that the Center "is at the cutting edge of integrated research for agroecosystems involving small holder communities," and state "the growing evidence of the impact" of all commodity programs.

They praise CIAT's move towards consortia involving both traditional partners and new actors—the private sector and NGOs. "The sheer scope of CIAT's networking and consortia activities, and the enthusiasm of the NARS for CIAT's continuing participation, even after formal devolution of networks, speaks well for the Centre."

Special tribute

"The quality of CIAT science remains good, and the Panel has suggested only minor adjustments," Walton says. He adds that "the Panel was greatly impressed by the quality and devotion of CIAT scientists, and wishes to pay a special tribute to the Programme leaders who have held their teams together and helped to pilot the Centre through the rough waters of the last two or three years."

Walton thanks Robert Havener, who has bolstered morale in his brief period as interim director general. He states CIAT's need for a period of stability under inspiring leadership. This responsibility will fall to Dr. Grant M. Scobie, new director general as of July.

Group results

CIAT staff has showed great satisfaction with the results of the review. "It's the accomplishment of the whole group," says Dr. Gerardo Habich, associate director of institutional relations. "The quality of our people, without exception, is what has helped us progress," he adds.

The external reviews of the Centers, conducted every 5 years, are carried out by an independent group of well-known international experts in agricultural research and its management. The group was contracted by the Technical Advisory Committee of the CGIAR system.

The review panel was commissioned in 1993. In 1994, the panel visited different countries and contacted governments and national organizations that have links with CIAT, including countries from Latin America, Asia, and Africa. The second phase, in early 1995, was carried out at CIAT.

Latin Amer unite to fin internation

Aauricio Antorveza

atin America's rice industry has taken to heart the adage that "God helps those who help themselves." Following sharp cuts in external aid, four countries have pooled their resources to preserve the benefits of international rice research.

The Latin American Fund for Irrigated Rice (FLAR) was established on 16 January 1995, at CIAT. The cofounders are official and private entities of Brazil, Colombia, Uruguay, and Venezuela, working with CIAT and the Interamerican Institute for Cooperation on Agriculture (IICA). Together the members have pledged a total of US\$315,000 yearly to the Fund for the next 3 years.

FLAR was endorsed by the International Rice Research Institute (IRRI), based in the Philippines, which holds the world mandate on rice research. IRRI is interested in joining the Fund and has already agreed to participate in the Fund's Technical Committee meetings. Research on rice, a key staple of Latin America, has brought great benefits to both producers and consumers. FLAR was created to insure that it continues.

> The Fund aims to make irrigated rice more competitive, efficient, and profitable in the region, while also reducing environmental risks.

Key staple

New rice technology yields annual benefits of about US\$600 million, mostly in lower prices of this key staple for the region's 460 million rice consumers. Rice prices have dropped by 40% in real terms since 1967.

Traditional support has declined for research on irrigated rice in the international centers despite its huge financial returns. "This made us pinch ourselves we had to wake up and find a way of saving the work already done," said Dorancé Muñoz, assistant technical manager of the National Rice Growers Federation (Fedearroz), Colombian cofounder of the Fund.

The Wild Savanna: South America's Frontier of Hope A new video from CIAT

Dust bowl, or rice bowl? This vast area of grassland—a fragile and complex environment—has the potential for both.

With unchecked development for short-term gain, the savannas may suffer the same fate that turned huge areas of US farmland into a dust bowl early this century. But with sound policies and persistent agricultural research, the world's largest remaining reserve of arable land could become a cornucopia, helping feed the world's rapidly growing population.

The Wild Savanna examines this critical choice—from the Colombian Llanos, where cowboys still reign, to the Cerrados of Brazil, where more intensive agriculture has made deep inroads. The film reveals growing scientific evidence that with the right technology the savannas are capable of producing food for years to come without succumbing to environmental degradation. This documentary is available on VHS, length 56:30, in a variety of world formats (NTSC, PAL, and SECAM).

In Colombia the English and Spanish editions are available from CIAT for Col\$25000. Persons in other developing countries or in developed countries can obtain either edition for US\$50.00 from AGCOM, 6625 N. Pidgeon Spring Place, Tucson, Arizona 85718, USA. AGCOM's telephone and fax number is (800)598-3372.



del Frijol en los Trópicos

Recent Publications Problemas de Producción

Diseases of

Tropical Pasture Plants

From CAB International

Problemas de Producción del Frijol en los Trópicos

(1994)

(Also available in English) Pastor-Corrales, Marcial; Schwartz, Howard F. (editors) 736 pages, 14.5 x 22 cm, perfect bound, paperback ISBN: 958-9183-78-6 Cost: Colombia, Col\$17,000. Other developing countries, US\$24. Developing countries, US\$30.

This book compiles most of the available results on the most important limitations in bean cultivation. The 29 authors are bean researchers with recognized experience in their fields. The book covers six general themes: tendencies in bean production and its limitations in Latin America and Africa; diseases caused by funguses; bacterial diseases; diseases caused by virus and microplasma; and insects, pests, and other limitations such as nutritional disorders, nematodes and seed pathology.

Diseases of Tropical Pasture Plants

M Lonos and P. Touton

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Lenné, J.M.; Trutmann, P. (editors) 404 pages, 15 x 23 cm, plastic-coated hardcover ISBN: 0851989179 Cost: Colombia, Col\$23,000. Latin America, Africa and the Caribbean, US\$40. Customers in regions other than those listed above must send orders to CAB International, Wallingford, Oxon OX 10 8DE, UK

The first comprehensive textbook on tropical pasture diseases is organized in four main sections. The first section examines animal production systems in the tropics. The second section covers diseases of tropical pasture plants caused by viruses and nematodes. The third relates experiences of pasture pathologists and agronomists in identifying, understanding, evaluating, and managing diseases of tropical pasture plants in the most important regions in which they are grown. The final section covers management of diseases of tropical pasture plants and future prospects for research.

Ecología y Enseñanza Rural: Manual para profesores rurales del área andina

Ecología y

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This practical guide to teaching ecology in rural education programs includes the curriculum, methodology, and educational activities for primary level. Directed to the rural teacher with limited economic resources, it is based on the experience of the FAO project "School, ecology, and small farmer communities" being carried out in the Peruvian mountain range.

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ean rice growers ance al research

Cooperation among the rice growers is decisive for FLAR's success.

This new model for interinstitutional cooperation should increase the stability of international research. With the Fund, "we're less vulnerable to external factors," comments Miguel Saldivia, president of the Association of Certified Seed Producers of the Eastern Plains of Venezuela (Aproscello). "We're forging our own destiny, aware of the big challenge ahead," he adds.

The founding members are optimistic. "This mechanism offers something for everyone," says Néstor Gutiérrez, director of Economic Research at Fedearroz. "It reflects a new level of maturity for the rice sector across the continent," Gutiérrez adds.

"The great thing is that we're working together. We've realized that united we stand, divided we fall," says Marco Antonio Oliveira, research manager of the Rio Grande Rice Institute (IRGA) of Brazil.

Aauricio Antorveza

A modern idea

"The Fund is a modern idea. Its results may range from good to revolutionary but will never be bad," says Carlos Mas, regional director of the National Institute for Agriculture and Livestock Research (INIA) of Uruguay.

The Fund got to work the day it was created. Steering and Technical Committees began establishing guidelines and discussing the joint research agenda. The technical work plan assigns top priority to ensuring that the region has access to the best rice germplasm available worldwide. The group chose Luis Roberto Sanint, leader of CIAT's Rice Program, as Executive Director. "We plan to include activities in plant breeding, integrated crop management, biotechnology, and market development," Sanint says. "All activities must benefit all member countries."

Their immediate task is to encourage other Latin American and Caribbean institutions and countries to join the Fund.

Delegates from the Dominican Republic attended the signing of the act of acceptance of the agreement. Argentina and Ecuador are also considering membership.

by: Eduardo Figueroa Jr.

Monitoring the health of our planet

ust as blood pressure. temperature, or pulse can reveal illness in humans, indicators used to monitor the environment and natural resources can tell us about the health of our planet. To help satisfy the urgent need for such tests, the United Nations Environment Programme (UNEP) has approved funding for a project in CIAT's Land Management Group to develop and distribute information on environmental and sustainability indicators for Latin America and the Caribbean.

"Sustainable development satisfies human needs without compromising the basis of development—the environment," says Manuel Winograd, tropical ecologist and principal scientist assigned to the new project. This is a complex process occurring at economic, ecological, technical, social, cultural, and political levels.

Reliable tools

Indicators may be defined as tools that express technical information about a complex phenomenon in a form that can be easily understood, explains Winograd. They provide decision makers with a reliable way to monitor development and its effects on the environment and natural resources. Better monitoring in turn gives a firmer basis for choosing strategies, actions, and policies that contribute to sustainable development.

For example, it has been observed that farmers in the forest margins and Cerrados of Brazil shift from the high-quality grass *Panicum* to hardier *Brachiaria*. At the farm level, this may indicate a decline in soil fertility. At the local or national level, the shift may be related to economic factors.

The preference for *Brachiaria* may even signal changes at the global level. Recent work at CIAT suggests that this and other productive grasses have a tremendous capacity to store carbon in their extensive root systems. The spread of these species may therefore serve as an indicator of progress in removing "greenhouse gases" from the atmosphere and thus reducing the threat of global warming.

Developing a regional database

Various institutions have already made a considerable effort to develop and use environmental information and sustainability indicators. For example, UNEP publishes a biannual report entitled Environmental Data Report. The Ecological Systems Analysis Group (GASE, its Spanish acronym), based in Argentina, has developed a database and conceptual framework with a hundred environmental indicators. Even so, no institution in Latin America and the Caribbean as vet can disseminate environmental information and develop sustainability indicators for use at the local, national, and regional levels.

"The new UNEP-funded project will fill this gap, using a new, multidisciplinary approach that takes into account the technical, socioeconomic, and environmental aspects of agricultural development," says



Gilberto Gallopín, leader of **CIAT's Land Management** Group. "We will work with CIAT programs and institutions in Latin America and elsewhere."

Two-phase project

During 1995, the project will gather information, ascertain the needs of decision makers, and refine methods for designing sustainability indicators, Winograd notes. It will also start

to organize a regional network for sustainability indicators, "Once this first phase of the project has ended, we hope that users of the information will help finance future activities of a new joint venture," Gallopín says.

During its second phase in 1996-1997, the project will publish a report in English and Spanish (to be available in print form or on diskette with hypertext) containing information

that will help 1) identify the causes of environmental problems, 2) monitor the effects of human activity on natural resources and the environment, 3) gauge the impact of measures taken by society to halt resource degradation, and 4) predict the conditions required for sustainable agricultural development.

This new initiative coincides with two other developments that set the stage for increased collaboration between UNEP, CIAT, and other centers in the Consultative Group on International Agricultural Research (CGIAR). One is UNEP's decision to become the Group's fourth cosponsor. The other is the Programme's designation of CIAT as its second collaborating center in Latin America. The first to be designated was Brazil's National Institute of Space Research (INPE, its Portuguese acronym), where UNEP has a national center for Global Resource Information Database (GRID).

Recent changes in UNEP's organization are intended to better satisfy the information needs of its clients. "The project at CIAT is consistent with our new focus on helping policy makers formulate, implement, and evaluate their policies and strategies," says Norberto Fernández, coordinator of **UNEP's Environment** Assessment Programme for Latin America and the Caribbean.

by: Nathan Russell



Processing cassava starch at La Agustina: research in a farm setting to benefit small farmers.

ominique Dufour believes in making the most of what one has, and in helping people help themselves. The French food technologist is applying these principles at CIAT to improve the market for cassava, a starchy root crop grown in some of the tropical world's most marginal areas.

Dufour arrived at CIAT as outposted staff of France's Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), in November 1992. Since then he has dedicated himself to enhancing the value of cassava in a variety of projects with the **CIAT Cassava Utilization** Laboratory.

For example, a study in Ecuador develops meat products using cassava flours and starches as binding agents. CIRAD, CIAT, and the Universidad del Valle examine

markets and market opportunities for cassava products. Another important project classifies characteristics such as starch percentage and cyanogen contents of all the varieties in the CIAT cassava germplasm collection.

Export potential

New products would enable cassava producers to break into more lucrative domestic and export markets. Fermented cassava starch, now produced only in Colombia and Brazil for local cheese breads, has potential as an export product. "Sour cassava starch has properties found in no other starch," Dufour says. "It rises like wheat flour, but without gluten."

Dufour is promoting the development of gluten-free foods in a study involving the French and Brazilian governments and companies of both countries. "With 35,000 people allergic to

wheat in France alone, a substitute for wheat bread would have a great market worldwide," he says.

Making

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Dufour also set up trials with large bread companies, who found they could improve the quality of bread dough by adding sour starch to the wheat flour.

Sour starch must be dried by the tropical sun, Dufour says, or it won't rise when baked. "Extensive tests have shown that the ultraviolet rays are essential, although we still don't know why."

On-site research

Much of the research on cassava starch takes place at "La Agustina," a small cassavaprocessing plant located in the mountainous Cauca region of Colombia. Dufour claims that his research partners, seven professors at the Universidad del Valle in Cali, bought the plant because they couldn't find a

suitable farm in the area to carry out testing.

At "La Agustina" university students test processing machines they have designed. Dufour and CIAT test cassava varieties and production methods. Other agencies carry out water recycling studies. Farmers come from other regions, even other countries, to learn how to produce cassava starch.

"Operating at La Agustina gives us complete control over research conditions, but in a farm setting," points out Freddy Alarcón, CIAT specialist in starch production.

Research that produces

"La Agustina is a research plant that also produces," says Martín Moreno, engineering professor at the Universidad del Valle and manager of the plant. "The owners make a profit, but 20% goes back into the research. When farmers see a successful production unit, they're more interested in learning how they can do it too—and that's our goal: to benefit farmers."

Whether evaluating biodiversity, studying marketing potentials, improving processing technology, or analyzing starch properties, all the research has one aim, Dufour says. It improves people's standard of living by developing new markets for cassava.

by: Gail Pennington

The ladies know their beans

PARTNERS IN SELECTION: Bean breeders and women bean experts in Rwanda

CGIAR Gender Program

by Louise Sperling and Peggy Berkowitz

This 24-page study celebrates and mourns the successful collaboration between CIAT, the Institut des Sciences Agronomiques du Rwanda (ISAR), and women bean farmers in Rwanda. Begun only a week before the civil war intensified, it shows a bucolic Rwanda that is now difficult to recall.

The farmer participation project began in 1988 when CIAT and ISAR called on local women to evaluate new bean varieties. Rwandan women, responsible for all food crops, know their beans. They plant from 10 to 25 different varieties according to conditions such as soil type and climate. As one woman said, "Rains come or don't, soils are good or not some of the varieties will always produce."

Thanks to their knowledge of local conditions and requirements, 90 farmers in three agroecological zones selected 21 highly suitable varieties in only four seasons. The adoption rate was much higher than when scientists had attempted to introduce new materials. Nine seasons later, many varieties were still being planted.

The project's success led the researchers to continue working with local women, but the civil war abruptly cut off all research. However, even in the face of disaster, scientists were able to apply what they had learned from their collaboration: they gathered favored varieties and distributed them as seed aid in the regions that could use them.

For copies, contact the Consultative Group on International Agricultural Research, CGIAR Secretariat, 1818 H St. N.W., Washington D.C., 20433, USA. tel (202) 473-8951; fax (202) 473-8110.

Not a diatribe

Feeding and Greening the World: The Role of International Agricultural Research

by Derek Tribe

To describe Derek Tribe as an advocate of international agricultural research is like saying a priest is a mere churchgoer. Tribe, emeritus professor of agriculture and executive director of the Crawford Fund for International Agricultural Research, is a fervent believer and a leader in efforts to convince governments of both developing and developed countries to give this research the priority it deserves.

Yet he doesn't resort to exaggeration when stating the urgency of the problems of excessive population growth, hunger, poverty, and environmental degradation in the developing world. He emphasizes that his is "not another doomsday book, but rather a cautiously optimistic assessment of the global community's ability to change, adapt, and move forward to overcome doomsday predictions."

Tribe first defines the scope of global challenges in development and describes progress in understanding and meeting them. Next, he underscores the importance of steady advances in agriculture and the role of science in humanity's struggle to survive and thrive. The author argues that hunger, poverty, and related problems persist because of lack of knowledge, or failure to use what we know.

The solutions, he says, must come from a worldwide "knowledge network" of national agricultural research systems, bilateral research programs, nongovernment organizations, and international agencies and research centers. To support his thesis. Tribe describes how these organizations have genetically improved plants and animals, and helped farmers better manage their crops, livestock, and natural resources. In underscoring the magnitude of this work's impact. he tells how benefits flow to farmers, other sectors of developing country economies. and even back to donor countries through trade and other means.

Tribe deviates from his measured tone only in the chapter on funding and leadership of international agricultural research. What leaves one "baffled and frustrated," he explains, is the irony of dwindling support. "The world has never been in such a precarious position as it is today nor has it ever had better prospects of solving the problems beset." But despite this and "a mass of irrefutable evidence" for increased funding, "governments in most countries, North and South, . . . lost sight of the ball!"

with which it is

Derek Tri

Tribe closes with two letters, one addressed to "The Minister for Finance and Planning, Government of the South" and the other to "The Minister for Overseas Development Assistance, Government of the North." The letters constitute a compelling summary of this timely and useful book.

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