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INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE



*Essays:*  
*Financing Science for Global Food Security*  
*Food Policy and Market Reform in Viet Nam*  
*and Bangladesh*

## **The International Food Policy**

**Research Institute** (IFPRI) was established in 1975. IFPRI's mission is to identify and analyze alternative national and international strategies and policies for meeting food needs of the developing world on a sustainable basis, with particular emphasis on low-income countries, poor people, and sound management of the natural resource base that supports agriculture; to make the results of its research available to all those in a position to use them; and to help strengthen institutions conducting research and applying research results in developing countries.

While the research effort is geared to the precise objective of contributing to the reduction of hunger and malnutrition, the factors involved are

many and wide-ranging, requiring analysis of underlying processes and extending beyond a narrowly defined food sector. The Institute's research program reflects worldwide collaboration with governments and private and public institutions interested in increasing food production and improving the equity of its distribution. Research results are disseminated to policymakers, opinion formers, administrators, policy analysts, researchers, and others concerned with national and international food and agricultural policy.

IFPRI is a member of the Consultative Group on International Agricultural Research, an association of 16 international research centers, and receives support from a number of governments, multilateral organizations, foundations, and other sources.

IFPRI REPORT *1997*

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

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# Message from the Chair

**D**espite the general downturn in funding available for development-related research, IFPRI continued to experience institutional growth during 1997. One of the organization's major initiatives over the past several years, A 2020 Vision for Food, Agriculture, and the Environment, has provided the basis for redefining and strengthening IFPRI's mission and programs.

In addition, the Institute's staff has grown and matured as a research team, as evidenced by its large number of publications and its extensive collaboration with other international organizations and developing-country institutions. IFPRI's role within the Consultative Group on International Agricultural Research (CGIAR) also has become better understood and appreciated by a wider audience. The relationship between policy and technological change is now undisputed, and the need for researchers and policymakers to comprehend and address broad issues of development in the context of agricultural production and rural poverty is increasingly clear.

It is this expanding awareness, combined with the quality of IFPRI's work, that has contributed to the expansion of the institute's resource base at such a difficult juncture in

the international community's funding capacity. We are grateful for the continued support that the donor institutions and governments have provided.



*Martin Piñeiro, Chair*

Where does IFPRI go from here? As part of the CGIAR, IFPRI must zero in on creating a world free of hunger and food insecurity. The following three themes appear to be crucial for the next decade.

First, recent trends in the global economy, including trade liberalization, have created new stresses for poor countries. Many of them will have increasing difficulty keeping up with the technological revolution the world is undergoing. While the CGIAR has an essential role to play as a source of knowledge on new agricultural technologies, IFPRI is particularly well placed to serve as an important source of policy research and analysis that will allow these countries to create the conditions under which they can use the new technologies to the greatest benefit.

*The institute's staff has grown and matured as a research team, as evidenced by its large number of publications and its extensive collaboration with other international organizations and developing-country institutions.*

Second, the analysis of world food production and consumption trends conducted by IFPRI and institutions such as the UN's Food and Agriculture Organization highlights many areas of concern. The studies conducted under IFPRI's 2020 Vision initiative clearly show that growing malnutrition and food insecurity ominously threaten some areas of the world. Only a vigorous and concerted international program of action can hope to improve the nutritional status of a vast segment of the world's population. The development of production technologies that conserve natural resources and policy instruments that promote agricultural production is an extremely high priority.

Third, because a large portion of the world's poor are rural, increasing food production is a major element in alleviating their poverty. However, the people who grow and eat the food are not the only ones who will benefit from such technological advances. Successful food production programs will also go a long way toward assuring world security and peace by reducing competition over scarce food and other resources.

IFPRI's recent external program and management review observed that "IFPRI has positioned itself well to deal with major policy issues currently confronting the world in the areas of agriculture, food security, and environmental sustainability." As chair of the Board, I would like to echo the sentiment and congratulate IFPRI's staff for their hard work, dedication, and productive and creative ways of tackling a variety of important issues. I am confident that these efforts will continue to bear even more fruitful results in the face of the ever-changing challenges that will confront the globe in the years ahead.

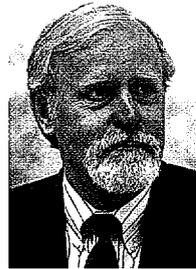
**Martin Piñeiro**

# Director General's Introduction

**A**s developing countries work to achieve food security for their people, they are likely to do so in a world that is changing more and faster than ever before. During 1997 concerns mounted worldwide about the effects of volatile grain prices and stocks, weather fluctuations such as El Niño, increasing water scarcity, declining foreign aid, and the capacity of food production to meet demand in Africa, China, India, and the former Eastern bloc countries. Can developing countries, many of which face an already precarious food security situation, cope with these coming changes? IFPRI's work focuses on helping to understand these issues so that countries have the information they need to make sound policies in a fast-changing world.

In 1997 IFPRI released a food policy report that examines such issues and makes suggestions for addressing them. Small farmers, who are the backbone of agriculture in many low-income developing countries, face a host of technical challenges that impede increased production, and they must often function within poorly functioning markets, the report argues. Agricultural research and policies, therefore, must be directed toward

solving the problems of these farmers. At the same time, sustainable increases in agricultural productivity will require governments to make policy changes and investments economywide.



*Per Pinstrup-Andersen,  
Director General*

The report also notes that the food gap in developing countries—that is, the gap between how much food those countries demand and how much they produce—is likely to grow in the coming decades. The two essays in this annual report show how IFPRI researchers (and collaborators) address the question of how to close the food gap from two different perspectives. “Financing Science for Global Food Security” by Philip Pardey, Julian Alston, and Vincent Smith argues that more agricultural research is needed to bolster slowing crop yields around the world. But who will pay for this research? Financing for agricultural research comes increasingly from the private sector—including multinational agricultural corporations—and it is not clear that their agendas will coincide

*IFPRI's current work on safety nets, consumer access to food, and food subsidies is highly relevant to the countries of East Asia now suffering from a severe financial crisis.*

with the needs of poor farmers in developing countries.

"Food Policy and Market Reform in Viet Nam and Bangladesh" by Raisuddin Ahmed and Francesco Goletti argues that although many developing countries are seizing upon agricultural market reform as a way to revitalize their rural economies and increase food security, there is no one-size-fits-all set of reforms. The authors describe the cases of Viet Nam and Bangladesh, where IFPRI has conducted research that has led to policy change. Viet Nam, making the transition from a command to a market economy, acted on research that showed that liberalizing both domestic and international trade in rice would improve the livelihoods and food security of its poor. In Bangladesh, research showed that most of the foodgrain issued through the country's costly public distribution system was not reaching the poor as intended. As a result, the government dismantled the existing

programs and created others to meet the food needs of the poor.

Since mid-1997, El Niño, with its associated droughts, floods, and fires, has begun to pose a serious threat to food security in a number of regions. Unfortunately, experts suggest that El Niños may become more frequent and more intense as we move into the new century.

IFPRI's past and current

research identifies coping techniques that might help farmers maintain agricultural productivity even in the face of future El Niños. Moreover, the Institute has been conducting research on famine prevention for some time, and this is a field that is highly relevant for the areas that are hardest hit by El Niño. An IFPRI/Johns Hopkins University Press book on the causes of famine and strategies for famine prevention is now well under way.

In another important area of IFPRI research, recent international trade agreements have made developing countries more active participants in the global economy. The challenge for these countries is to take advantage of the opportunities presented by globalization and to make sure that even the poor benefit from them. It is becoming increasingly clear that the only way for developing countries to maintain thriving agricultural sectors in this competitive new environment is to diversify, thereby reducing their

dependence on any one crop or commodity. How best to diversify remains a critical question. Working in Africa and Asia, IFPRI researchers have studied what policies are necessary to encourage farmers to diversify their production and to help farmers succeed in the global marketplace.

As new challenges related to feeding the world's poor and hungry in a sustainable fashion arise, IFPRI research examines how these challenges can be overcome. For example, IFPRI's current work on safety nets, consumer access to food, and food subsidies is highly relevant to the countries of East Asia now suffering from a severe financial crisis and looking for ways to protect

their poor. In addition, IFPRI has long conducted research on a wide range of policy issues in Africa, where many countries are now seeking to hold onto a fragile economic recovery. In these and other areas, IFPRI continues to make an important contribution to the debate on how to achieve a world where hunger, poverty, and malnutrition are eliminated. Although the question of how to attain these goals will continue to be difficult and sometimes contentious, IFPRI's research does not shy away from confronting this challenge head on.

**Per Pinstруп-Andersen**



*Photo by Philippe Berry*

# Financing Science for Global Food Security

*Philip G. Pardey, Julian M. Alston, and Vincent H. Smith*

**A**gricultural research and development (R&D), which has generated astounding increases in food production in the twentieth century, is vital to assuring food security for the burgeoning global population in the coming decades. But changes in the financing, management, and organization of agricultural R&D are occurring rapidly. After decades of sustained growth, the rate of growth of spending on agricultural research has slowed in most countries since the early 1980s, and in some countries spending has even shrunk. The private sector is paying for and conducting an ever larger share of agricultural research, while governments are reducing their agricultural R&D spending. These and other changes have tended to push the agricultural research agenda in new directions, raising questions about whether agricultural R&D will be able to help meet the food needs of the poor and hungry beyond 2000.

World food security beyond 2000 depends on continued global investments in agricultural research and development. The basic facts are well known. World population is expected to increase by about 2.3 billion people by 2020, the amount of new land that can be brought

under cultivation is limited, and other natural renewable resources used in agriculture, like water, are becoming increasingly scarce. Ensuring the future security of adequate food supplies is not a question of simply maintaining agricultural productivity; it has to be one of continuing to improve global agricultural productivity, particularly through research and innovation. Moreover, developments in agricultural R&D in wealthier nations are increasingly intertwined with those in developing countries. An accounting, review, and assessment of what has happened is therefore timely.

## **Changing Investment**

**Patterns** Worldwide, agricultural research spending grew rapidly for most of the post-World War II era, generating extraordinary growth in agricultural productivity around the globe. New high-yielding rice and wheat varieties developed with this funding, together with new farming practices, triggered Asia's Green Revolution of the 1960s and 1970s, in which large yield increases averted the famines widely predicted for that region.

During the past 15 years, however, a sea change has taken place in

agricultural R&D policy and spending patterns. New data in an IFPRI volume to be published by Johns Hopkins University Press show that in inflation-adjusted terms, public investment in agricultural R&D around the globe rose from US\$7.2 billion in 1971 (expressed in 1985 prices) to US\$15 billion in 1993, putting the overall average annual growth rate at 3.6 percent. But the rate of growth in public investment slowed sharply over this period. In developed countries, the annual growth rate of real public investment in agricultural R&D fell from 2.7 percent during the period 1971-81 to 1.7 percent in 1981-91. Similarly, in developing countries, the growth rate of public investment in agricultural research fell by just under half, from 6.4 percent in the 1970s to 3.9 percent in the 1980s. More dramatically, real funding for international agricultural research centers, which played a key role in bringing about the Green Revolution, increased by more than 14 percent per year in the 1970s but by less than 1 percent per year between 1985 and 1996. Developing countries now account for more than half of all global public R&D investments, and how those funds are used will significantly affect future global food security.

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### **Key Policy Developments**

In recent years, priorities for public agricultural research have changed dramatically. The public research agenda has broadened. Public funding has shifted toward research on postharvest handling, food processing and food safety, and environmental issues such as soil erosion and groundwater pollution, and away from research dealing with production agriculture. These adjustments reflect the increasing influence of nontraditional interest groups—environmentalists, food processors, and consumer groups—in the formulation of agricultural science policy, as well as the expanded research role of the private sector. In addition, some governments have pushed public funds toward more basic research, the benefits of which are more difficult for the private sector to appropriate, and away from applied research of more immediate consequence for industry.

Donor funds directed toward both international and national-level

agricultural R&D agencies (especially those in Africa) have reflected first-world concerns with the environment and agricultural aspects beyond the farm. In addition, donors increasingly seem to view agricultural R&D as a means of directly and rapidly tackling poverty problems rather than as an activity best suited to stimulating productivity and growth over the longer term, with poverty reduction brought about as a consequence of that growth.

Recent IFPRI-led research shows how the organization and management of public agricultural R&D have also been changing. In the developed countries (for which the most comprehensive and up-to-date data are available), many previously public roles have become privatized, and the line between private and public research is becoming increasingly blurred. Private R&D firms have increasingly been able to bid for publicly funded projects, some public research and technology transfer institutions have been explicitly privatized (for example, plant breeding and horticultural facilities in the United Kingdom and extension services in New Zealand), and others have received a mandate to sell their research services to private firms (for example, universities in most developed countries and extension agencies in New Zealand and the United Kingdom). In addition, public agricultural research facilities are being phased out in many countries—in the

Netherlands and the United Kingdom about 50 percent of the facilities were merged or closed between 1980 and 1995—and management and employment structures have been altered. Changes include the introduction and expansion of contestable funding arrangements among alternative, often public, research agencies (as in New Zealand) or competitive grant processes (such as the U.S. Department of Agriculture's National Research Initiative), a shift away from long-term contracts toward shorter fixed-term contracts for researchers (especially in the United Kingdom), and expanded accountability and oversight procedures (as in the research and development corporations that now play a significant part in funding rural research in Australia).

Similar changes have taken place in some developing countries as well, although the timing and specifics of the changes are different and the private sector has generally played a smaller role as both a funder and performer of R&D. Some countries (especially in Africa but also in Asia and Latin America) have seen a contraction in real public support for agricultural R&D. During the late 1980s and early 1990s, some of this shrinkage in domestic support was partly supplanted by an increase in donor funding for research, but in more recent years overall donor funding has declined and spending priorities have shifted away from agricultural R&D.

The pace and focus of biological innovation in agriculture and related industries, who pays for R&D and how much, and the costs and benefits of the research all depend on the form of property protection afforded the results of specific R&D projects. Many countries are enacting or revising laws to protect biological material and the innovations and research processes surrounding that material. These national efforts are increasingly being shaped and circumscribed by international laws and conventions. These changes in property protection appear to be changing the roles of the public and private sectors with regard to the funding, performance, and dissemination of agricultural R&D, but much else is changing, too, so the specific effects of changing property rights are not clear. Moreover, many of the details of these property-rights policies remain unresolved, which makes it difficult to be definitive about their ultimate impact on the nature and rate of technical progress in agriculture.

### **The Private Sector's Changing Role**

In many developed countries, the private sector has become a much more substantial provider of agricultural research. Spending on private agricultural research has risen by just over 5 percent per year since 1981 and now amounts to almost half of total agricultural R&D expenditures in developed countries. This rapid increase

has been partly a result of expanded property rights over biological innovations and, in some countries, a movement away from public funding for near-market research that previously may have "crowded out" private research. The emerging modern biotechnologies are an important element in this expansion as well.

The private sector has a very different agricultural research focus from that found in the public sector. For example, in five countries that collectively account for more than 40 percent of developed-country agricultural R&D investments (Australia, the Netherlands, New Zealand, the United Kingdom, and the United States), over 80 percent of public research, but only 12 percent of private research, is devoted to farm-level technologies such as improved crop and livestock production practices. Moreover, in different countries, private agricultural R&D tends to be specialized in different areas and then exported elsewhere, reflecting the increasing international flow of R&D goods and services. For example, postharvest research accounts for between 30 and 90 percent of private agricultural research—in countries such as Australia, Japan, and New Zealand, it is the dominant concern of privately funded agricultural R&D. In contrast, while agricultural chemical research on fertilizer, herbicides, and pesticides is of minor importance in some countries, it accounts

for more than 40 percent of private agricultural research in the United Kingdom and the United States and more than 75 percent of private research in Germany.

Interestingly, however, the composition of private R&D has been changing over time. In the United States, for example, agricultural machinery and postharvest research accounted for over 80 percent of private agricultural R&D in 1960, but by 1992 it amounted to only 42 percent of private agricultural R&D. Private investments in plant breeding, veterinary, and pharmaceutical research, which are more directly related to agricultural productivity, increased substantially during the same period.

### **What Will These Changes Mean?**

The crucial issue for global food security is whether or not the recent changes in public and private agricultural R&D have made global agricultural R&D more effective in increasing agricultural productivity and contributing to food security. Have the changes led to efficiencies in the total quantity and quality of research being undertaken? Are lower-cost sources of funds being used? Are resources being more effectively allocated among competing programs, projects, and institutions? Is research emphasis being divided more appropriately among commodities, natural resource management, and other areas of research?

Are research resources being allocated more effectively between basic and applied research and extension and between farming and food processing and safety research?

It is too soon to provide clear answers to many of these questions. It is possible, however, to determine some potential costs and benefits of the changes that have taken place. A particular concern is the slowdown in the growth rates of public agricultural R&D funding, especially since a broad array of empirical evidence shows that in the past such investments have generated annual rates of return well in excess of 30 percent.

The expanded role of the private sector in agricultural R&D also raises important questions. When research boards and committees are dominated by industry representatives, public funds may be directed to projects that benefit only limited sectoral interests rather than those projects that will have the largest effects on overall agricultural productivity. For example, extensive industry representation may lead to R&D that focuses on larger, perhaps more capital-intensive agricultural operations or on issues of concern only to particular agroecological areas. In addition, more directed public-private ventures may crowd out industry research funds, thereby exacerbating the tendency for private investments in R&D to be underfunded. On the other hand, increased industry

input may result in more effective applied research programs.

In principle, increasing competition for research funds can improve research productivity and reduce research costs by helping funders choose the best research opportunities and the most appropriate scientists. However, competitive processes can also cost more to manage. The challenge is to devise institutions that minimize all the costs of research decision making, including the costs of misallocating resources and the costs of competing for funds.

The shift away from very long-term contracts (or tenure) for researchers to shorter-term contracts also has its potential pluses and minuses. On the plus side, it is easier to remove “dead wood” from the research system, provide short-term incentives for greater research productivity among all researchers, and give research administrators greater flexibility in managing resources. However, the removal of long-term guarantees of employment reduces incentives for gifted individuals to pursue research careers that require large personal investments in human capital.

The consequences of rationalizing public research facilities may be less ambiguous. Where rationalization has taken place to respond to recent changes in scientific methods and to take advantage of new economies of size and scope, there

have been clear gains in economic efficiency. Where “rationalization” has simply been a pseudonym for budget cuts, the results depend on whether the expected rates of return on investing in R&D were higher than returns from using the funds for other purposes.

Broadening the research agenda may have led to some benefits. Environmental and food safety issues are often public goods issues, and from society’s perspective private markets fail to provide the right amount and mix of R&D. Accordingly, many believe that reallocating public research funds to these issues and away from near-market research programs must enhance people’s economic welfare and may improve global food security by making agricultural production practices more sustainable and food more nutritious. The answer to even these questions remains unclear, however, since no formal evidence is available on the payoff to public R&D on environmental or food safety issues, or their effects on food security.

To the extent that public resources have been diverted toward agribusiness and food processing research (as in the United Kingdom and New Zealand, and possibly in Australia), projects funded in these areas may have displaced projects in the area of farm productivity that are more likely to enable the world to feed its poor more effectively.

The shift in public funding from developed to developing countries raises other questions. It is not clear whether developing countries can recruit and retain adequate numbers of talented scientists, given that salaries are often low and lag behind inflation. Some research systems in developing countries spend too much on labor and too little on other operational requirements, leaving scientists without the tools they need to work effectively.

There is, then, both cause for concern and cause for hope with respect to the changes taking place in global agricultural R&D investments. Many of the changes discussed here have been relatively recent, however, and the effects of research on economic output are visible only after long lags. Thus, it may be years before the effects of these changes become clear. In the meantime, policy choices and change will occur, and researchers can produce much useful data and analysis to help inform these policy decisions, specifically information on the nature and likely consequences of the changing pattern of funding and performing R&D, the local and spillover effects of agricultural research, and the effects of the changing intellectual property regimes on research. It is decisions

*To the extent that public resources have been diverted toward agribusiness and food processing research, projects funded in these areas may have displaced projects in the area of farm productivity that are more likely to enable the world to feed its poor more effectively.*

on these issues that in turn will have potentially profound, long-run consequences for the world's future food security.

*Philip G. Pardey is an IFPRI research fellow and leads IFPRI's global and regional program on agricultural research, extension, and education policy. Julian M. Alston is a professor in the Department of Agricultural and Resource Economics at the University of California, Davis, and leads the Science and Technology Program at the University of California Agricultural Issues Center. Vincent H. Smith is a professor in the Department of Agricultural Economics and Economics at Montana State University. The three are coeditors of *Paying for Agricultural Productivity*, to be published by The Johns Hopkins University Press for IFPRI.*

# Food Policy and Market Reform in Viet Nam and Bangladesh

*Raisuddin Ahmed and Francesco Goletti*

**D**uring the past decade, the collapse of communism and the economic stagnation in countries with widespread market interventions have convinced many developing-country policymakers of the wisdom of market-oriented development strategies and made market reform a popular buzzword. But how to conduct such reforms under various conditions is not always clear. Over the past several years, IFPRI has applied its expertise in food policy research and analysis to critical issues of agricultural market reform in many developing countries, including Viet Nam and Bangladesh. These two countries present contrasting situations: while Viet Nam is trying to make the transition from a command to a market economy, Bangladesh already has a large-scale private system of production but considerable government intervention in foodgrain markets. IFPRI's research has made substantial contributions to market reforms in both of these countries, and these efforts offer important lessons about how to bring about policy change in developing countries.

The two countries share several characteristics. Both bear the painful burden of pervasive poverty, with roughly the same per capita average income of US\$300 per year. The

agricultural systems in both countries are shaped by the deltas of some of the mightiest rivers in the world—the Ganges, the Brahmaputra, and the Meghna in Bangladesh, and the Mekong and Red Rivers in Viet Nam. Both countries are densely populated. In Bangladesh, a population of about 120 million lives in an area of about 147,000 square kilometers (68 percent of which is agricultural land), while in Viet Nam about 78 million people live on about 330,000 square kilometers (22 percent of which is agricultural land). In both countries, rice is the dominant crop, with agriculture relying heavily on small-scale peasant farms of about one hectare each.

Despite these similarities, the high rate of growth in agriculture in Viet Nam during the last decade



*Photo by Philippe Berry*

(about 5 percent) differs dramatically from the low rate in Bangladesh (about 2 percent). This contrast can be attributed to several factors.

A more egalitarian distribution of assets, particularly land, in Viet Nam means that the benefits of agricultural growth are more widely distributed in the rural areas, where the majority of the population, and the poor, live. Any initial spurt of growth in agriculture has a greater chance of multiplying, because most of the profits earned by rural households are reinvested in the rural economy. In contrast, Bangladesh has always had a privately owned and operated system of agricultural production. Almost 20 percent of the rural population in Bangladesh is landless, compared with less than 3 percent in Viet Nam. While the poor are spread throughout Bangladesh, they are relatively concentrated in the northern mountains and central highlands in Viet Nam. About 80 percent of agricultural land in Viet Nam is irrigated, compared with only 30 percent in Bangladesh. The rate of literacy is high in Viet Nam (80 percent) and low in Bangladesh (27 percent). Finally, participation of women in the labor force, including the agricultural labor force, is much higher in Viet Nam than in Bangladesh.

Although the two countries have had different agricultural production histories, both are seeking the most efficient ways of ensuring food security for the poor and promoting a

healthy rural economy through reform of their agricultural markets.

### **Rice Market Reforms in Viet Nam**

Since it began dismantling its communist structure of agriculture and distribution in 1988, Viet Nam has achieved spectacular success in agricultural production. Agriculture and rice production have grown at about 5 percent per year. By the mid-1990s, however, it became clear that the momentum of growth could not be sustained as long as the domestic market was only partially liberalized and the export market remained a public monopoly. The initial high growth rate for rice production and the low quota for rice exports had already acted as a disincentive for rice producers.

In 1995, the government of Viet Nam and the Asian Development Bank asked IFPRI to undertake an in-depth investigation of rice marketing practices. The research included three main components. First, IFPRI conducted a detailed study of the structure and operation of rice markets. Second, IFPRI identified and analyzed the incentives and constraints to marketing, including the impact of existing interventions and reforms on farmers, processors, traders, exporters, and consumers. Third, IFPRI evaluated the effects of various policy options on national and regional income, production, prices, consumption, and the welfare of

different groups (farmers, rural and urban households, and poor, vulnerable groups). In conducting this evaluation, IFPRI developed the Viet Nam Agriculture Spatial Equilibrium Model (VASEM), an important tool used by both IFPRI and the Ministry of Agriculture for analyzing rice policy options.

IFPRI's research contributed to a number of policy changes. Traditionally, the north of Viet Nam has been a food-deficit area. The mountainous areas in the northern and central regions are populated by ethnic minorities with relatively low incomes, and the food security of these people is of enormous concern to the government. To address this critical policy issue, the government historically controlled the supply of rice to the north from the south through public agencies and restricted the movement of grain from south to north. IFPRI's study of domestic markets demonstrated that regional price differences were in excess of transportation and marketing costs and that liberalization of the domestic rice market would substantially reduce the regional price differences. In other words, past policies caused consumers in the north to pay more for rice from the south than they would under a free market system. Internal trade liberalization would strengthen rather than weaken food security in the north. When the government liberalized

*The IFPRI study also documented that market information was scarce for both the private and the public sectors, with high costs in missed opportunities and inappropriate decisions.*

the domestic trade of rice and paddy and ended public shipments of rice to the north in favor of market shipments, price differences across regions were reduced. IFPRI predicted that the benefits of this measure could be between US\$60 and US\$100 million per year.

In 1995, Viet Nam imposed an export quota of 2 million tons of rice. The conventional wisdom was that higher exports would endanger the food security of the country in general and of the poor in particular. According to IFPRI research, Viet Nam had the potential to export close to 5 million tons of rice. Because land distribution is relatively uniform in Viet Nam, most farmers, including most of the poor, are surplus rice producers and would benefit from an increase in the rice price. (Some poor farmers in the mountains are the exception.) In effect, the quota system served as a tax of about 25 percent on domestic producers and a rent for state-owned enterprises equivalent to about

US\$130 million per year. In 1997 the government raised the rice export quota to 3.5 million tons and in 1998 to 4 million tons. These decisions added about US\$200 million to national income and contributed to a mild reduction in rural poverty. IFPRI estimated the benefit of removing the quota completely to be between US\$250 and US\$350 million per year; at the same time poverty was predicted to fall by about 3 percent in rural areas.

IFPRI research also found that the rice marketing system in Viet Nam was underdeveloped. A few large state enterprises had access to capital and trade, while a multitude of small and medium-sized private enterprises had only limited access to credit and world markets. In 1997 and 1998,

therefore, the government greatly increased the opportunities for private enterprises of various kinds to export rice. The number of rice exporters increased from about 15 in 1995 to more than 30 in 1997. The provinces with surplus rice in the Mekong River Delta are now playing a more important and autonomous role than in the past, when one company had a virtual monopoly in rice exports. Although the government still sends confusing signals about private participation in rice trade, recent policy statements augur well (it is almost a certainty that at least some private companies will be allowed to export in 1998). In 1997, paddy prices did not decline as they had in previous years. The link between higher rice exports, higher



*Photo by Philippe Berry*

paddy prices, and a healthier rural economy is now widely recognized.

The IFPRI study also documented that market information was scarce for both the private and the public sectors, with high costs in missed opportunities and inappropriate decisions. In November 1997 the government established an agricultural market monitoring unit within the Ministry of Agriculture. Currently, the system traces domestic, border, and international prices for about 10 agricultural commodities, using national and international databases and electronic sources.

Finally, in Viet Nam, the task of training people to perform market analysis was paramount. IFPRI trained about 20 people in survey techniques, data entry, data processing, regression analysis, time series analysis, and computer graphics. It also trained about 20 people from various ministries, government agencies, and organizations in food and agricultural policy analysis. It took senior policy advisers to Thailand so that they could learn from the experiences of the world's leading rice-exporting country, and it presented its agricultural policy model, VASEM, to a large number of Vietnamese institutions. These capacity-building activities will be a lasting legacy of IFPRI's work in Viet Nam.

Although agriculture in Viet Nam has made enormous strides, the country still faces important policy challenges that will require further

policy analysis. First, Viet Nam must develop competitive markets, particularly export markets for agricultural products. Second, it must diversify into high-value agricultural products (such as vegetables, fruits, and livestock products) and rural industrial goods (such as processed meat, starch, and juices). Finally, it must define new roles for the government, such as monitoring market development, correcting problems as they appear, and facilitating the emergence of institutions and infrastructure that will support sustainable growth.

### **Food Policy Reform in Bangladesh**

Public intervention in the foodgrain markets of Bangladesh started during the great Bengal Famine of 1944, at the height of World War II, and went through various modifications in the following decades. By the late 1980s, public involvement in food markets included rationing schemes to distribute foodgrains to all urban consumers and the rural poor; a food-for-work program for the un- and underemployed; a vulnerable group development program for destitutes; a public stock of foodgrains through which grain was bought and sold to stabilize prices; a public monopoly on imports; and a host of regulatory measures to facilitate these interventions.

From 1989 to 1994, IFPRI collaborated with the Bangladesh Institute of Development Studies and the Ministry of Food on a project

designed to measure the effects of these programs. Bangladesh asked the collaborators to suggest alternatives or modifications; to determine how much foodgrain the public procurement program should buy, stock, and distribute, and at what price; to measure the budgetary and economic costs of interventions; and to assess the nature of private markets and their relations with public marketing. In addition, the project studied the comparative advantage of various crops in order to formulate policies for diversification that would enhance long-term food security in rural Bangladesh. To strengthen the country's own capacity for food policy analysis, project leaders developed a food policy planning and monitoring unit in the government by training employees, involving them in research, and installing a program of computerized food policy information.

The evaluation of the rural rationing scheme revealed that the cost to the government was very high and that 70 percent of the program's foodgrain was not reaching the target population. The government abolished rural rationing, saving an estimated US\$60 million per year.

To extend help to the rural poor, the government wanted an alternative to the rural rationing scheme. Thus a food-for-education (FFE) scheme was devised to fill the gap. Because the poor tended to depend on their children to earn additional income, they often did not send

them to school. The FFE scheme provided income to poor households in exchange for sending their children to school and helped pull the poor children out of poverty by developing their capacity to participate in gainful economic activities.

A similar evaluation of urban rationing (locally known as statutory rationing) revealed that the leakage of foodgrain away from the target population was even higher in urban areas, about 92 percent. The government ultimately suspended this program.

Public procurement and the open market sale of foodgrains, ostensibly for price stabilization, were also examined from a number of angles, including timing, quantities to be procured and sold, prices at public transactions, modes of operation, and their impact. This research showed that procurement through competitive bidding (locally called open tendering), instead of purchase from rice mills through bilateral negotiations, would save the government around US\$25 million annually and have a greater impact on price support. The pricing of foodgrains in procurement and open-market sales was shown to be most efficient when prices were set with some relation to market prices. These procurement operations have also been modified as a result of IFPRI's research.

Foodgrain markets, the study revealed, are reasonably competitive, and processing and marketing facilities are progressively being devel-

oped. The marketed surplus of rice is now about 50 percent of production, compared with about 12 percent in the mid-1960s. The government has suspended the licensing of traders, the antihoarding law, movement restrictions on foodgrain, and restrictions on credit to traders. Reforms are expected to contribute to more competition and market development. The government has also reduced the target public stock from 2 million to 0.8 million tons. For the first time, import trade in foodgrains has opened up to the private sector. Another study on the cost of the entire public foodgrain distribution system demonstrated that this cost was quite high (about 12 percent of public expenditure for development) and cut into funds that could have been used to develop infrastructure or conduct agricultural research in Bangladesh.

The research on agricultural diversification motivated the World Bank to mount a mission to explore the possibility of accelerating agricultural growth through diversification. The government and donors are still pursuing this possibility.

The period covered by IFPRI's project in Bangladesh, a time of extensive reform of food policies, was also a period when domestic production of foodgrains grew faster than it had since 1970. Whether Bangladesh can sustain and build upon these reforms will depend primarily on how it manages the food-

and agricultural system in periods of serious shocks and how rapidly the overall economy and the income of the poor grow in coming years.

### **Lessons for Market Reform**

Policy change occurs when conflicts regarding the change are resolved. Different political systems have differing capabilities for resolving such conflicts. It may seem that Viet Nam, with the greater control offered by a communist political system, was in a stronger position than a democratic Bangladesh to carry out the drastic measures necessary for effective reform. To a certain extent this has been the case and is reflected in Viet Nam's transition from a command economy to a market-oriented system. However, Vietnam has not yet fully freed up its higher tiers of marketing. The suspicion that full liberalization will erode the foundation of its political system has made the government cautious. But the forces favoring change have been unleashed, and a retreat is unlikely even though the process will move slowly. Bangladesh, on the other hand, has a pluralistic set of political forces, and progress in liberalization in good economic times may be partially reversed in bad times. To influence policy, research-based information must take into consideration this political configuration.

Whether a country is a net importer or an exporter of foodgrains and whether its food-

*In Bangladesh, research helped create a favorable environment for change by revealing a hidden system of waste and rent-seeking.*

grain production is growing fast or slowly make significant differences in the ability of the political system to make policy changes. Thus, Viet Nam, a major rice exporter with sustained agricultural growth, has been making gradual but consistent changes since the initial commitment to market reforms in 1996. Bangladesh made substantial changes when rice production was growing quickly, but a few years of stagnant production created nervousness and allowed the forces arrayed against change to gain ground. Although a reversal is unlikely, owing to donor pressure and the commitment of some policymakers, further progress toward a competitive market may have to wait for another round of rapid growth in production.

Irrespective of political differences, a country initiating reforms must develop a market monitoring institution that can trace bottlenecks and identify emerging problems in order to solve them as soon as they occur. In the absence of such an institutional mechanism, small problems can grow into bigger issues

that threaten the success of the reform process.

In most societies, policy change implies some losers and some gainers, and making the gainers aware of how they may benefit can counter the pressure against change that may arise from potential losers. Also, wasteful policies often endure simply because of the hidden nature of the outcome of such policies. Transparency of information can evoke a powerful process of change. In Bangladesh, for example, although it was interaction with policymakers and others that actually led to policy change, research helped create a favorable environment for change by revealing a hidden system of waste and rent-seeking.

Finally, an approach to strengthening capacity for food policy analysis must take into consideration the institutional differences among countries. Viet Nam has numerous institutions for policy research but lacks experience with and knowledge about market economics, which has hampered the usefulness of these institutions. In contrast, Bangladesh has many trained analysts but few institutions to conduct food policy analysis. Therefore, it has been eminently sensible for the two countries to take different approaches to their capacity-building efforts.

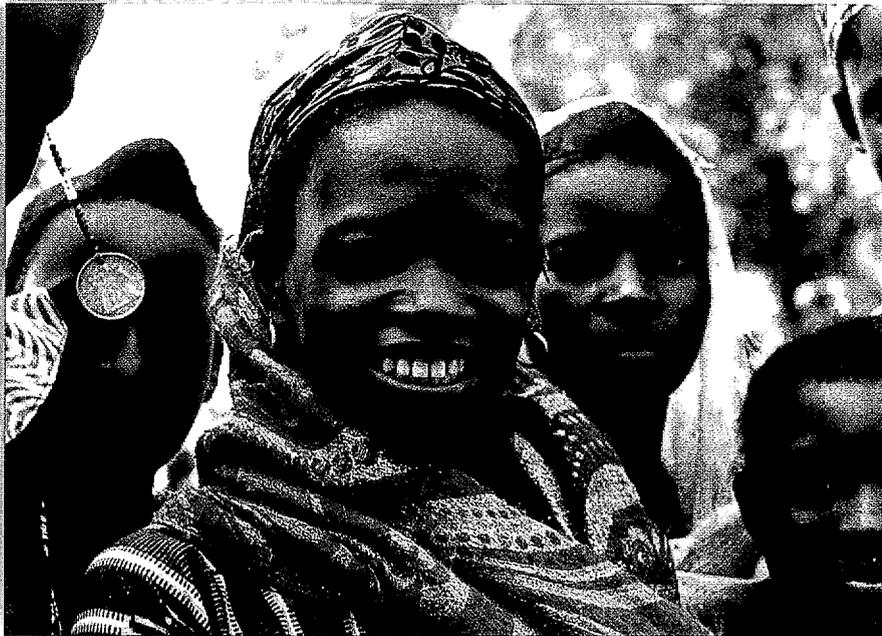
*Raisuddin Ahmed is director and Francesco Goletti is a research fellow of the Markets and Structural Studies Division at IFPRI.*

# A 2020 Vision for Food, Agriculture, and the Environment

FPRI's 2020 Vision for Food, Agriculture, and the Environment initiative, launched in 1993, continues to receive enthusiastic response from policymakers, researchers, concerned citizens, and others from nongovernmental organizations, private companies, international development institutions, and the media around the world. The objectives of the initiative are, first, to develop a consensus for action for meeting world food needs, while reducing poverty and protecting the environment, and second, to generate information and encourage

debate to influence action that will realize the 2020 Vision of "a world where every person has access to sufficient food to sustain a healthy and productive life, where malnutrition is absent, and where food originates from efficient, effective, and low-cost food systems that are compatible with sustainable use of natural resources."

An important part of the 2020 Vision initiative is raising awareness of the world's food and environmental problems and what can be done to solve them. During 1997, a



*Photo by Alison Slack*

*An important part of the 2020 Vision initiative is raising awareness of the world's food and environmental problems and what can be done to solve them.*

Food Policy Report summarizing recent developments in and long-term prospects for the world food situation received global media attention, including stories in many leading newspapers and television and radio interviews. IFPRI also published four new 2020 Vision discussion papers and six briefs on topics ranging from water resources to the potential impact of AIDS and covering the globe from Latin America to China. Two issues of the newsletter, *News & Views*, challenged readers to think about crucial issues such as the future of the world's fisheries and the growth of population. 2020 Vision analyses were shared through papers delivered at workshops and conferences and through journal articles and book chapters. IFPRI staff made more than 20 presentations on 2020 Vision findings to large audiences in

developed and developing countries around the world, including host-country ministers, other key leaders, and the media. In addition, the public awareness campaign of the 2020 Vision initiative won third place in the Agricultural Communicators in Education 1997 Critique and Awards Program.

Phase I of the initiative, which lasted from 1993 to December 1996 and included an international conference in 1995, focused on identifying the challenges and the key elements of a global action program to realize the 2020 Vision. In 1997, the initiative entered a new phase. In Phase II, the emphasis is on helping developing countries design and implement their own 2020 Vision strategies and action plans, primarily through regional networks. The initiative continues to generate timely, state-of-the-knowledge information on key topics related to food, agriculture, and the environment; to communicate the 2020 Vision to diverse audiences; and to provide a forum for dialogue, debate, information sharing, and consensus building among important players around the world.

# Research and Outreach

To fulfill its mission to identify and analyze policies designed to meet the food needs of hungry people in low-income countries without harming the environment, IFPRI collects data and conducts high-quality research on issues of importance to policymakers in developing countries and decision-makers and researchers around the world. IFPRI's work on issues related to sustainable food production, food consumption and nutritional well-being, markets, and trade and macroeconomic policy is conducted and disseminated through four

research divisions and an outreach division: their main findings in 1997 are presented here.

## Environment and Production Technology Division

In coming decades the world's farmers will need to produce enough food to feed an ever-growing population without further degrading the earth's natural resource base. The Environment and Production Technology Division conducts



Photo by Suresh Babu

research on the most appropriate technologies, institutions, and policies for sustainably producing more food on the same amount of land in developing countries. Its agenda focuses on policies that deal with deforestation, water resource allocation, property rights and communal action, sustainable development of less-favored lands, and the generation and dissemination of new agricultural technologies.

### **Arresting Deforestation in the Humid Tropics**

As the poor continue to convert forest land to farm land at the margins of tropical moist forests, research on technologies, policies, and institutions that can help sustain economic growth in already settled areas while alleviating poverty becomes increasingly important.

In 1997, the second year of a three-year research program that is part of the CGIAR's initiative on alternatives to slash-and-burn agriculture, IFPRI conducted research in the Brazilian Amazon and supported comparable work by other CGIAR centers in Cameroon, Indonesia, and Peru. IFPRI researchers developed bioeconomic models of representative farms to simulate the effects over time of policy and technology changes on household resource use and welfare and on livestock and crop production and deforestation. The model simulations show that if a policy stipulated

that 50 percent of settlers' farms must be conserved as forest, the current value of farmers' incomes over six years would decline by 20 percent (a sum of US\$8,757), but the carbon preserved in that forest would be valued at US\$60,800. Since farmers capture few of the benefits of carbon sequestration, the results highlight the wide divergence between private and social interests and show that farmers may only need modest compensation relative to the size of the social gain to leave part of their farm in forest.

**Water Resources** As part of its ongoing work on policies for allocating water among sectors within a river basin, IFPRI began research on a prototype model of the Maipo River Basin in Chile as a pilot case study. The model analyzes the interactions between water allocation, farmers' choice of inputs, agricultural productivity, nonagricultural demand for water, and resource degradation, in order to estimate the social, economic, and environmental changes resulting from more efficient allocation of water.

Other research examines the relationship between food production, food security, and water scarcity on a global basis. Researchers are developing long-term projections of water supply and demand, including water demand for the household and industrial sectors, and assessing the implications of these demands for

the availability of water for agriculture. The model used for these purposes will also be used to analyze the global and regional consequences of reforms in water-related policy and investments in water and irrigation management and development.

### **Property Rights and Collective Action**

Indigenous property rights systems are changing in many parts of the world as a result of population pressures and increased commercialization, and these changes are often associated with worsening degradation of natural resources. Unless farmers have assured access to their resources, they have little incentive to sustain these resources for future generations.

IFPRI's research, which is part of an initiative shared by all of the centers of the CGIAR, looks at how various property rights institutions have evolved; how they affect the sustainable management of natural resources; and what their effects are on equity in the distribution of natural resources. The research also examines the factors that determine the emergence of various forms of collective action organizations and how they affect the efficiency and sustainability of natural resource management.

In 1997 IFPRI continued work on several projects related to the property rights and collective action program. A project examining the links

between land tenure and forest resource management undertook data collection in six countries (Ghana, Indonesia, Malawi, Nepal, Uganda, and Viet Nam). While the analysis is still ongoing, preliminary results show that in Uganda and Viet Nam forest resources are better preserved under private ownership than under communal or state ownership, but the customary land tenure institutions in Indonesia (Sumatra) and Malawi were also found to be quite effective in encouraging tree planting. Another project is evaluating the effectiveness of existing local property rights systems and organizations in managing crop and rangeland resources in low-rainfall, drought-prone areas of North Africa and West Asia. The study provides strong evidence that while property rights do matter in determining the management and investment behavior of farmers, the existing property rights systems are failing to provide the right balance between individual and social interests in the rangeland areas. A related study under way in Sub-Saharan Africa analyzes the links between risk and the types of property rights that have evolved for pastoral resources in drought-prone areas, and how the links affect the institutional and policy options for managing these areas in the future. A key question for the research is whether pastoral resources and their surrounding areas should be privatized rather than managed

collectively as has traditionally been the case. Theoretical analysis suggests that there are definite economic and social advantages to common property arrangements, but that they do lead to higher than optimal stocking rates and increased transactions costs. Field research to test these types of hypotheses was initiated in Niger and Ethiopia.

### **Agricultural Research, Extension, and Education**

Public investment in agricultural research has declined in both developed and developing countries in recent years, and the significant shift toward greater privatization of research and its financing has raised concerns that both the level and quality of research needed to meet continuing food needs is lagging, with potentially serious consequences for the future. IFPRI is conducting research on a number of policy issues related to the cost-effective provision of needed technologies for agriculture. These include assessment of the returns to agricultural research, methods for priority setting, alternative financing mechanisms, and the consequences for developing countries of schemes for the protection of intellectual property rights over genetic resources.

Significant progress was made in 1997 in analyzing the policy issues related to the funding, managing, and organizing of public agricultural

research and development. Researchers completed quantitative and comparative analysis of the policy and institutional innovations in the agricultural research systems of five developed countries.

**Sustainable Development of Less-Favored Lands** In the past, agricultural development strategies have focused on high-potential lands deemed to have the best prospects for increasing food production and stimulating economic growth. As a result, large areas of less-favored lands have been neglected and have become major areas of poverty, food insecurity, and environmental degradation.

One component of IFPRI's work on less-favored lands aims to determine whether public investments in rainfed or irrigated lands have the biggest payoffs for growth and poverty reduction, and whether there is a tradeoff between these two goals. New results obtained for India show that on the margin many public investments in rural infrastructure, agricultural research, and education have higher growth and poverty-reduction payoffs in the rainfed areas today, largely as a result of the high level of investments that have already been made in irrigated areas. Moreover, the investment returns in many low-potential rainfed areas are quite competitive with the returns from high-potential rainfed areas.

Modeling work completed in 1997 for a hillside community in central Honduras shows how the construction of a road together with the improved marketing opportunities this created led to a marked transformation of the village economy through horticultural production. Although limited to a few areas of suitable land, horticultural production provides an important source of cash income that has relieved the pressure to crop many of the more fragile lands. Horticultural production has also proved to be relatively equitable and has helped improve per capita incomes despite continued population growth.

## Markets and Structural Studies Division

**W**ell-functioning markets are a critical factor in the transformation of a rural subsistence economy to a commercial one. For markets to operate efficiently, infrastructure such as roads and institutions such as banks must also be available. As a part of the structural adjustment movement of the 1980s, many developing countries undertook reforms of their domestic markets by reducing subsidies and shifting roles played by governments to the private sector. Now the progress, design, and effects of many of these reforms are being evaluated by the Markets and Structural Studies Division.

## Input Market Reform and Development

In 1997 the division evaluated policies designed to reduce the government's costs of distributing inputs such as seed and fertilizer and to promote the participation of the private sector in successful input-market development. Research sought to determine the effects of reforms on farmers and agricultural production and identify the appropriate sequence of reforms. A study in Malawi concluded that the proper sequencing of agricultural market reforms in Malawi in the 1980s would have been to liberalize the maize sector first, then the groundnut export sector, and then to remove subsidies on inputs such as fertilizer.

A study that examines the effects of market reforms on agricultural inputs and outputs in five African countries (Benin, Ghana, Madagascar, Malawi, and Senegal) finds that, in general, market reforms have fallen short of expectations. They have improved the marketing of outputs in some countries, but input marketing has lagged because government withdrawal from distribution has created a vacuum. Fertilizer use has atrophied, particularly on small plots and in remote locations. Farmers growing export crops, however, have managed to obtain fertilizer, often with the help of special organizations set up for that purpose. A separate study of the reform of the groundnut sector in Senegal shows that use of badly needed fertilizer has not

increased much because prices are high and credit to buy fertilizer is hard to find.

In Sub-Saharan Africa, continuous cultivation, low fertilizer use, and the breakdown of traditional soil management techniques are causing a decline in soil fertility. In 1997 IFPRI completed a review of the need for and challenges facing integrated nutrient management techniques that lend themselves to sustainable agriculture. One of the conclusions of the review is that a better understanding of nutrient cycles and balances in farming areas is necessary in order to determine how nutrients can be made available to a particular crop in the right form, in the correct amounts, and at the right time. The farmer can then choose the appropriate and lowest-cost mix of chemical and organic fertilizers and soil conservation techniques to achieve high yields without diminishing the productive capacity of the soil.



Photo by Nienke Beintema

## Output Market Reforms and Development

Reforms of domestic markets have faced tremendous difficulties in many countries because infrastructure and institutions are weak, programs are poorly designed and implemented, private traders lack trust in the national government's commitment to reforms, or policymakers are not committed to reforms. The challenge facing reforms in most countries is to balance increasing private participation with the roles that are best assumed by the state.

Among the research activities completed in 1997 is a study of groundnut market reforms in Senegal. The reforms are only partial: the government still controls the procurement of unshelled groundnuts and producer prices. As a result, public and private forces coexist and sometimes compete against each other. Nevertheless, 56 percent of private traders have entered the groundnut market since the reforms were put into place, partly due to the devaluation of the currency. The study finds that the unit costs of marketing are higher under private traders than under government controlled marketing, largely because the private sector controls only 15 percent of the market and thus experiences diseconomies of scale.

The five-country African study reviews the effect of output market reforms on the performance of local

markets. It finds a positive short-term response in all five countries, especially Benin and Ghana. New traders have entered the market and investment in trading activities has increased. Prices have been more stable and operating costs have declined, but many problems remain as a result of the partial nature of the reforms. Some segments of the marketing chain have been excluded from the reform process. Another problem is that traders enter the market but do not expand their operations beyond the entry level. To function successfully, a market must have many active traders expanding their area of coverage and the quantities they market.

Another study, which monitors the Viet Nam rice market, provided an opportunity to analyze agricultural marketing systems during the transition from a centrally planned to a market-based economy. The study finds that due to rising productivity, Viet Nam's transition from rice importer to exporter has not harmed domestic consumers; in fact, domestic per capita rice consumption has risen. Any increase in rice productivity will not benefit farmers, however, unless export quotas are relaxed.

Ongoing projects include research on rice market reform in Côte d'Ivoire, wheat market liberalization in Egypt, and agricultural market reform in Madagascar. IFPRI is also helping Bangladesh implement policy changes through ongoing research

and advisory services, training, information dissemination, and identification of food policy options.

### **Agricultural Commercialization, Diversification, and Export Promotion**

In the face of changing world markets, developing countries must adjust their product mix, but this can be hard to do, especially with the barriers to market entry and high marketing costs that most producers in developing countries face. This research seeks to develop policies that encourage widespread participation in exports of agricultural goods and innovations in the kinds of products exported.

Work in Indonesia extends earlier research on crop diversification in several other countries. It focuses on market institutions, infrastructure, and policies underlying Indonesia's efforts to diversify its agricultural export base into fruits, vegetables, and cut flowers. The study finds that high protection of the domestic market has reduced the competitiveness of Indonesian horticultural products. Exports of horticultural products account for only 2 percent of total exports, and imports have increased sharply in response to recent trade liberalization. Quality remains the primary issue restraining the expansion of exports.

A potential growth sector in developing countries is aquaculture,

especially in Asia, where both production and demand for fish are growing rapidly. IFPRI, in collaboration with the International Center for Living Aquatic Resources Management (ICLARM), held a policy workshop in Denmark in 1997 to solicit the advice of experts from developing countries on priorities for fisheries policy research. Participants stressed that fish exports are now central to the balance of payments of many developing countries, and that changes in the structure of production are having major effects on food security. These effects can be either positive or negative, depending on how well policy promotes the widespread participation of producers and distribution of benefits.

Another study completed in 1997 looks at the impact of rice price policy on agricultural diversification, infrastructure, and poverty in Viet Nam.

The division is collaborating with the Environment and Production Technology Division on research that focuses on the implications for livestock producers worldwide of a huge surge in demand in Asia for animal products. This surge is projected to continue and to provide a potential vehicle for the economically viable and environmentally sustainable intensification of smallholder farming in both Asia and Africa. Ongoing projects in the division include work on promoting smallholder dairies in East Africa and growth in smallholder farming in South Africa.

## Food Consumption and Nutrition Division

**T**he mission of the Food Consumption and Nutrition Division is to help developing countries formulate policies that will reduce poverty and undernutrition. In addition to conducting research that bears directly on the quality and quantity of food consumed, the division studies how to help the poor generate income, accumulate assets, and gain access to the necessary complements of good nutrition—clean water and adequate child and health care. In 1997, the division carried out research in 14 countries.

**Rural Finance** Improving the access of the poor to credit and savings options increases their income and enables them to preserve their assets and buy food during hard times. But most formal rural credit programs have failed to reach the poor. IFPRI's research on rural finance, based in nine countries, examines the changes in income, agricultural production, food consumption, and nutrition that come about when households participate in member-based financial institutions such as credit groups, village banks, and cooperatives. In 1997 researchers arrived at a number of conclusions. Research showed that access to financial markets can significantly raise rural incomes and spending on food, although access

to farmland and well-functioning markets for the sale of farm products and the purchase of agricultural inputs are also important. Access to credit does not, however, have much effect on nutritional status, which depends on a complex interaction of factors. A study in Nepal, completed in 1997, confirms the results of earlier studies in other countries showing that access to credit assists households in coping with temporary reductions in income, such as when bad weather has reduced crop yields. The poor usually obtain credit from informal lenders such as friends and relatives rather than from banks, which require collateral, and their increased access to formal credit sources does not necessarily reduce borrowing from informal sources. Studies in Malawi and Nepal show that people tend to go to banks for larger, longer-term loans for financing specific enterprises and to informal lenders for quick cash to smooth consumption and finance unexpected expenditures. Demand for credit, the study in Malawi suggests, does not depend heavily on interest rates. This finding implies that improving access to sustainable financial services should be a higher policy priority than subsidizing interest rates.

**Urban Food Insecurity and Malnutrition** As the population balance shifts from rural to urban areas in developing countries, food insecurity and malnutrition are

rapidly rising in cities along with the number of urban poor. IFPRI's research in Ghana finds that, in 1997, 15.3 percent of the children of Accra were underweight, compared with 13 percent in 1993. Children from the poorest households were three times more likely to be undernourished than children from the richest households. The study shows that the people of Accra are highly dependent on purchased food that is prepared and often consumed away from home. Almost 40 percent of the food consumed by the poor is "street food," compared with 25 percent for the highest income group.

A livelihood security assessment conducted in three urban centers of Bangladesh shows that almost 80 percent of the population are renters or squatters with insecure housing tenure. Employment is also insecure, particularly in the monsoon season when heavy rains put a stop to many income-generating activities such as construction work and rickshaw driving. The loss of income contributes to food insecurity. About 15 percent of children surveyed were low in weight for height and 40 percent were low in height for age.

**Gender and Intrahousehold Distribution Issues** IFPRI's work on gender and intrahousehold issues is founded on the idea that an understanding of how resources are allocated among household members is essential for predicting the

consequences of policies. In Bangladesh, for instance, new household surveys indicate that men and boys receive larger shares of choice foods such as meat, dairy products, and fruit than women and girls. More than half of the women in the study suffered from protein-energy malnutrition. Individual variation mostly accounted for the differences among anemic women, confirming the importance of studying intra-household resource allocations. Holding other factors constant, research indicates that agricultural production programs aimed at more equitably distributed foods (for example, fish and vegetables) will have a greater impact on the nutrient intake of women and children, who are most likely to develop micronutrient deficiencies.

The extent of intrahousehold discrimination varies across countries and cultures. A key issue in the design of feeding programs, for example, is whether parents reallocate resources away from children who participate in a feeding program. The empirical results of a study in the Philippines confirm that there is virtually no intrahousehold reallocation of calories in response to a feeding program.

IFPRI's research shows that a person's bargaining strength within the family depends not only on asset ownership, but also access to employment, access to communal resources, traditional social support

systems, support from NGOs and the state, and social norms and perceptions. Changes in rules governing common property resources or declines in the prices or productivities associated with goods produced from these resources can affect individuals in the household in different ways. Attention to gender differences in property rights can improve the outcome of natural resource management policies and projects in terms of efficiency, environmental sustainability, equity, and empowerment of resource users.

Membership in social networks may be an important form of social capital for men and women. In the Kwazulu-Natal area of South Africa, for example, IFPRI's research finds that social networks develop more extensively in remote areas where people do not expect to benefit from government programs. However, traditional differences between men and women in social networks are disappearing with urbanization and lack of jobs.

### **Targeted Poverty Programs**

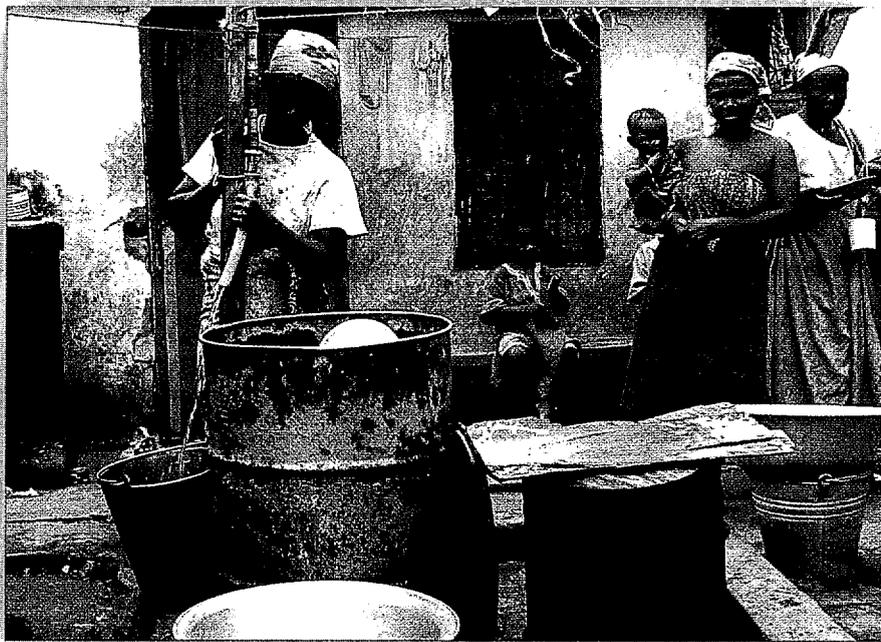
IFPRI believes that countries need to have social safety nets in place to protect the destitute. But what policies are best for preventing and reducing poverty? What is the best way to identify the poor? Are they being reached by existing poverty interventions? In a study of Egypt's food subsidy on wheat and bread, research finds that of every 100 units

of subsidized wheat that enters the food distribution system, approximately 20 units do not reach their intended beneficiaries, and 80 units go to consumers. Only 17 of the 80 go to the poorest income quintile. Other work in Egypt finds that it takes about 7 years for nominal wages to catch up with increases in food prices.

### **Micronutrient Malnutrition**

IFPRI, in collaboration with a number of other CGIAR centers, the Waite Agricultural Research Institute in Australia, the U.S. Department of Agriculture (USDA), and Cornell University in the United States, is developing food-based approaches to solving the problem of the

“hidden hunger” caused by a deficiency in micronutrients such as iron, zinc, beta carotene, and iodine. Lack of these trace minerals in the diets of people who subsist on foods grown in soils that are deficient in these minerals causes untold misery from a number of illnesses throughout the developing world. By breeding staple food plants high in micronutrients, scientists hope to reduce or eliminate these serious health problems. In 1997 IFPRI assisted with germplasm screening and bioavailability testing for five crops (wheat, rice, maize, beans, and cassava), with encouraging results. Tests on wheat discovered that breeding plants for higher zinc uptake also increased the health of the plants and their yields.



*Photo by Carol Levin*

Preliminary human bioavailability studies commenced in 1997 in collaboration with USDA's Western Human Nutrition Research Center. These studies will attempt to determine the bioavailability of iron in humans that comes from two varieties of beans identified in the initial germplasm screening exercise.

## Trade and Macroeconomics Division

**W**ork in the Trade and Macroeconomics Division focuses on two broad themes: the long-run impact of macroeconomic policy reforms and structural adjustment programs on agriculture, and the effects of regional integration and reforms in the world trading system on agriculture in developing countries.

Over the past three years, the division has made a major effort to develop analytical and empirical models that can be adapted easily from one project and country to another. In 1997, the division extended the methodology and applied it to new settings. A number of computable general equilibrium (CGE) models have been completed. Some are multicountry and multi-sectoral trade models, while others focus on a single country. One model focuses on the regional economy of a watershed, specifically that for the Olifants River in South Africa. In 1997, researchers devel-

oped comprehensive, economywide models of several countries in Southern Africa. New techniques were used to produce social accounting matrixes that underlie the policy analysis for these countries. In Brazil and Indonesia, regional and national agricultural simulation models are being extended to include the effects of policy on environmental outcomes such as deforestation and land degradation.

Today the work in the Trade and Macroeconomics Division involves not only large macroeconomic models but simulation models that examine the production and consumption decisions made in farm households. Models that will help researchers understand the effects of market-related policies on household production and consumption and the intrahousehold distribution of income and expenditure are being developed.

### Macroeconomic Policy

The division is studying macroeconomic reforms and regional integration in six countries of Southern Africa (Malawi, Mozambique, South Africa, Tanzania, Zambia, and Zimbabwe) and the effects of these changes on economic growth and equity. This project uses both historical analysis and formal, economic modeling and pays special attention to the link between agriculture and the rest of the economy. In 1997 the division undertook a comparative

analysis of macroeconomic adjustments and agricultural and economic performances, particularly since 1980, of four of the six southern African countries. The significant differences found in macroeconomic policies and agricultural performance indicators are attributable to the differing nature and severity of the exogenous shocks (both internal and external) that buffeted the four economies during the study period. Even so, the growth rates of agricultural production and GDP were positively correlated.

In 1997 the division carried out macroeconomic studies on the Philippines, Indonesia, Morocco, and Egypt. Work on the Philippines investigated the income and equity effects of three development strategies that could have been pursued in the early 1980s and are still relevant today. The policy experiments showed that agriculture-based development results in larger proportionate increases in GDP and average rural and urban household income than either of two industrial, export-oriented development scenarios. The labor-intensive industrial scenario showed larger gains for urban household income, and the resource-intensive industrial scenario had the most favorable effect on income equity.

In 1997 a project in Indonesia analyzed the comparative influence of government policies and external factors on the price competitiveness

of Indonesian crops and the economywide effects of changes in rice yield and foreign exchange rates with and without government price-support and stocking policies for rice. Results showed that if the Indonesian marketing board maintains rice prices when rice productivity rises, resources are not freed to move toward higher-value agricultural uses, such as fruit and vegetable production. Instead, more resources are drawn toward rice production. Furthermore, the real exchange rate appreciates, increasing imports and imposing a bias against other exports; the prices of nonconsumer goods fall relative to the prices of consumer goods, leaving consumers worse off; and the strain on government accounts increases. Without marketing-board intervention, resources move into higher-value uses, spreading the benefits of a productivity increase in rice across the economy: consumers are better off, the bias against nonagricultural exports disappears, and net government income increases as the expansion of nonagricultural output generates more tax revenues.

### **Global and Regional Trade**

During 1997, the division considered ways to coordinate agricultural policies at a time when the trade and macroeconomic environment is changing rapidly. The division addressed problems of regional integration in studies of the effects of the

North American Free Trade Agreement (NAFTA) on the Mexican economy; the relationship between NAFTA and other regional groups in Latin America, including the Mercado Común del Sur (MERCOSUR); and the extent to which social and political upheavals in Southern Africa have severely distorted the region's economies. The division also began a study of the economic effects of the financial crisis in Asia, with particular attention to the food and agriculture sectors. A workshop was held in Harare, Zimbabwe, to define urgent macroeconomic and regional issues in Southern Africa.

Using a multicountry model that includes the United States, Europe, Japan, Brazil, Argentina, and the rest of the world, the division investigated whether a regional trade agreement such as MERCOSUR creates or diverts trade. The analysis showed that MERCOSUR is creating trade, directly and indirectly. Additional work on MERCOSUR included a

policy experiment using two different settings for Brazil's monetary supply, while its trade policies and exchange rates remained the same. A more expansionary money supply led to increases in the price of nontradable goods and a decline in the real exchange rate, along with reduced exports and larger imports. These results suggest that the current bilateral trade balance between Argentina and Brazil is influenced as much by macroeconomic conditions in each country as by the trade liberalization brought about by MERCOSUR.

The division's research documented the impact of global-level macroeconomic and agricultural cycles—expansion during the 1960s and 1970s, and stagnation and retrenchment during the 1980s—on the economies of the Latin American and Caribbean (LAC) countries and the performance of the agricultural sector in the region. Research showed that by the mid-1990s, the LAC economy and its agricultural sector began to benefit from a more supportive international environment and the improved policies of LAC countries. Growth rates of agricultural and food production in the region clearly rebounded from the 1980s and were above equivalent rates for the world. However, these growth rates have been lower than the average LAC rates for 1960-95 and the rates for developing countries as a whole for the 1990s.



*Photo by Neal Bliven*

The division's work also documented the trend in the LAC region toward increased trade—mainly due to trade liberalization and economic integration—and highlighted the important increase in oilseed and horticultural trade, which helped maintain a positive trade balance in the region in spite of historic deficits in cereals and dairy products.

## Outreach Division

**T**he Outreach Division disseminates the results of IFPRI's research through publications, seminars, and conferences to those who influence policy on food, agriculture, and the environment. The division also strengthens the capacity of developing countries to conduct their own food and agricultural policy research through training and collaboration.

Although IFPRI is committed to expanding research capacity in every country with which it collaborates, the institute has focused particularly on building capacity in a selected group of countries where institutions and research capabilities can benefit the most from a prolonged association with IFPRI. In 1997, Country Programs became a part of the Outreach Division. Offices were established in three new countries: China, Uganda, and Viet Nam. The post of Regional Coordinator for West Africa was also created in 1997.

## Publications and Information

During 1997 IFPRI produced and disseminated a broad array of research, general information, and 2020 Vision publications. Publications directed to the policy research community include research reports, books, food policy reviews, occasional papers, working papers, lectures, and reprints of articles published externally by IFPRI staff. Less-technical publications include abstracts of research reports, food policy reports, and food policy statements. General information is provided in the annual report, brochures, briefs, and newsletter. As an outgrowth of its 2020 Vision on Food, Agriculture, and the Environment initiative, IFPRI publishes discussion papers, briefs, and a newsletter. A list of 1997 publications begins on page 54.

In 1997, IFPRI filled about 5,500 requests for some 21,000 publications, in addition to the 152,000 publications sent out to the individuals and organizations on the institute's mailing list. An ever-increasing number of IFPRI publications are released in Spanish and French as well.

IFPRI is steadily expanding the information it presents on the World Wide Web. In addition to general information such as publication lists, IFPRI posts many of its shorter publications in full, including abstracts, newsletters, food policy statements, 2020 briefs, and unpublished discussion papers and other reports from IFPRI's research divisions.

During 1997 IFPRI's public awareness activities continued to gain momentum: IFPRI staff were cited widely in newspapers and interviewed on television and radio broadcasts in both developed and developing countries. All of the major wire services carried stories about IFPRI's work.

IFPRI adopted a new logo in 1997, in the hope that it will soon become an easily recognized symbol of IFPRI's work. The logo can be interpreted in two ways: some see it as a graceful branch bearing fruit, which symbolizes IFPRI's ties to agriculture and the environment. Others see people with their arms uplifted, which symbolizes IFPRI's concern for poor people everywhere. The logo is now being used on all IFPRI publications.

### **Seminars, Workshops, and Conferences**

In 1997 IFPRI continued to communicate the results of its research and to interact with its partners and the food policy research community through activities organized by the Policy Seminars Program. IFPRI held three workshops and a major conference on agriculture and natural resource management, which measured the benefits of policy research, economic transformation, and poverty alleviation in African countries, and macroeconomic reforms and regional integration in Southern Africa. IFPRI also organized other meetings related

to its research program. All these events are listed here.

*Meeting of the External Advisory Committee on Strengthening Development Policy Through Gender Analysis*  
March 17, Washington, D.C., U.S.A.

*Briefing of the Wisconsin Rural Leadership Program*  
March 19, Washington, D.C., U.S.A.

*IFPRI-International Development Bank Workshop on Agriculture and Natural Resource Management*  
March 26, Washington, D.C., U.S.A.

*Workshop on Measuring the Benefits of Policy-Oriented Social Science Research*  
April 4-5, Washington, D.C., U.S.A.

*Conference on Economic Transformation and Poverty Alleviation in African Countries*  
April 4-5, Washington, D.C., U.S.A.

*International Consultation on Fisheries Policy Research in Developing Countries: Issues, Priorities, and Needs*  
June 2-5, Hirtshals, Denmark

*Briefing of the Illinois Farm Bureau*  
August 13, Washington, D.C., U.S.A.

*Workshop on Macroeconomic Reforms and Regional Integration in Southern Africa Project (MERRISA)*  
September 8-12, Harare, Zimbabwe

### **IFPRI Policy Seminar Series**

IFPRI held 16 policy seminars in 1997, double the number of the preceding year. These seminars, held at IFPRI's headquarters, present the results of recent research on topics of interest to IFPRI and Washington-area policymakers.

*An Economic Analysis of Spatial Market Integration and Efficiency Measures*, Paul Fackler, North Carolina State University, Raleigh, U.S.A., February 20

*Rice Markets, Agricultural Growth, and Policy Options in Vietnam*, Francesco Goletti, IFPRI, Washington, D.C., U.S.A., February 27

*Growth Economics and Development Economics: What Should Development Economists Learn (If Anything) From the New Growth Theory?*, Vernon Ruttan, University of Minnesota, St. Paul, U.S.A., March 20

*Rice in the Twenty-First Century*, Gurdev Singh Khush, International Rice Research Institute, Manila, Philippines, April 24

*A New Partnership for Rural Development in Africa: A Perspective from the World Bank*, Jean-Louis Sarbib, World Bank, Washington, D.C., U.S.A., May 1

*Human Rights: A Normative Basis for Food and Nutrition-Relevant Policies*, Arne Oshaug, Nutrition Institute, University of Oslo, Norway, May 8

*Developing Technology for Agriculture in Sub-Saharan Africa: Evolution of Ideas, Present Issues, and Future Research*, John Sanders, Purdue University, West Lafayette, Indiana, U.S.A., June 5

*Africa—The Need and Potential for Radical Change in Foreign Aid*, John W. Mellor, John Mellor Associates, Inc., Washington, D.C., June 19

*The Role of International Agricultural Research to Achieve Food Security for All*, Ismail Serageldin, World Bank, Washington, D.C., U.S.A., July 22

*The Challenges of Re-Establishing Majority Participation in Agricultural Ownership in South Africa*, Tracey Simbi, Ministry of Agriculture and Land Affairs, Pretoria, South Africa, August 7

*Privatization of World Hunger?* Raymond Hopkins, Swarthmore College, Swarthmore, Pennsylvania, U.S.A., September 4

*The Climate Change Negotiations: An Australian Perspective*, Brian Fisher, Australian Bureau of Agricultural and Resource Economics, Canberra, Australia, October 20

*Prospects for Agricultural Productivity: A Private Sector Perspective*, John Kruse, Pioneer Hi-Bred International, Inc., Des Moines, Iowa, U.S.A., November 6

*Explaining Agricultural and Agrarian Policies in Developing Countries*, Hans Binswanger, World Bank, Washington, D.C., U.S.A., November 20

*Economic Causes and Consequences of Civil War*, Paul Collier, Centre for the Study of African Economies, University of Oxford, England, December 4

*The World Food Situation: Recent Developments, Emerging Issues, and Long-Term Prospects*, Per Pinstrup-Andersen, Rajul Pandya-Lorch, and Mark Rosegrant, IFPRI, Washington, D.C., U.S.A., December 15

### **IFPRI Lecture Series**

C.H. Hanumantha Rao, chairman of the Centre for Economic and Social Studies in Hyderabad, India, delivered the fifth lecture in IFPRI's annual lecture series on December 10. The lecture series provides a forum for speakers at the forefront of current

thinking and fosters an exchange of ideas on controversial issues related to food, agricultural, and environmental policies and the alleviation of hunger and poverty. In his lecture, entitled "Agricultural Growth, Sustainability, and Poverty Alleviation in India: Recent Trends and Major Issues of Reform," Rao examined the major trends in agricultural growth in India today in the context of ongoing economic reforms.

### **Training and Capacity Strengthening**

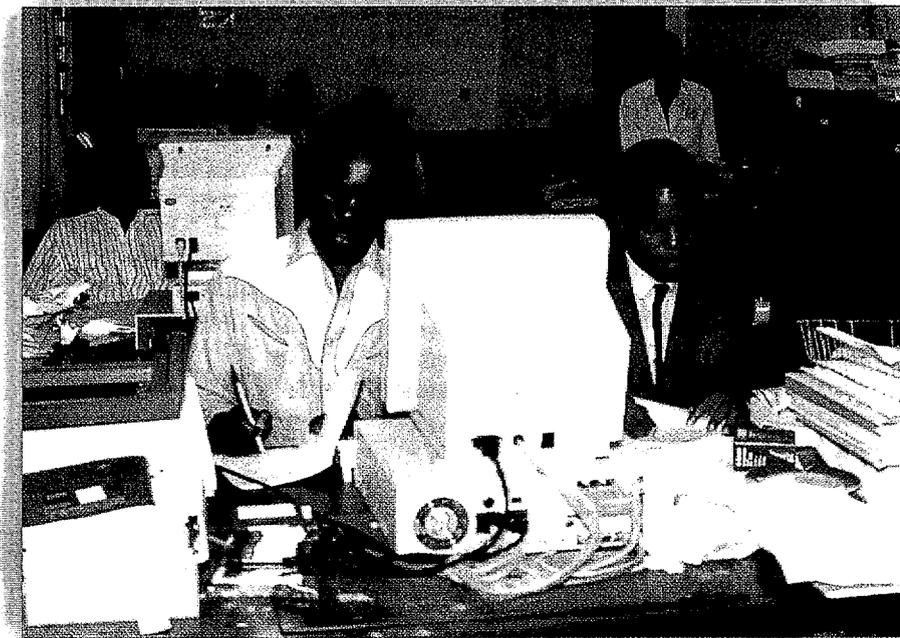
A major constraint in designing appropriate policies for agriculture and rural development in developing regions is the dearth of institutions and research staff available for formulating policies and programs. Strengthening the capacity to analyze the information generated by policy research and to use it effectively in policy formulation is fundamental to the process of development.

To improve their research and teaching capacity, IFPRI is collaborating with a number of institutions in Africa, Asia, and Latin America on a long-term basis. IFPRI research fellows outposted to Africa are conducting collaborative research and training activities at Bunda College of Agriculture at the University of Malawi; at Eduardo Mondlane University and the Ministry of Planning and Finance in

Mozambique; and at the University of Ghana in West Africa. In Latin America, training and capacity strengthening activities are being conducted in collaboration with the Network on Teaching Agricultural and Rural Development Policies for Latin America (REDCAPA). And in South Asia, IFPRI is imparting policy analysis skills through training courses and workshops conducted in collaboration with the Indian Council for Agricultural Research. In addition, several short-term training courses were conducted in collaboration with other institutions in southern and western Africa.

In October, IFPRI and the University of Maryland jointly conducted a short course on "Food, Agriculture, and Natural Resource Policy Analysis," attended by 10 policy advisers, researchers, and instructors from Kenya, Malawi, and Uganda.

The Outreach Division continued to host graduate students at IFPRI who can gain practical experience by collaborating with researchers on their thesis research. Similarly, visiting research fellows worked closely with IFPRI's researchers on topics of mutual interest.



*Photo by Suresh Babu*

# Collaboration

IFPRI's collaboration with institutions around the world, particularly in developing countries, offers two important benefits. Through these joint efforts, IFPRI researchers help to strengthen the capacity for policy research and analysis in developing countries. At the same time, collaborators help inform IFPRI's research, making it relevant to the needs of developing countries. In 1997, IFPRI worked with more than 140 institutions in the developing world and posted 13 IFPRI staff members to developing countries as part of collaborative projects with institutions in those countries.

IFPRI also collaborates with other international agricultural research centers and with multilateral and developed-country institutions through shared staff appointments, joint projects, consulting arrangements, and conferences and seminars.

IFPRI continues to pursue long-term collaborative arrangements with several developing-country institutions conducting policy research and analysis to help strengthen their research and teaching capacity. Working with the Bunda College of Agriculture at the University of Malawi, IFPRI expanded its outreach and training efforts to improve policy

research in Southern Africa in 1997. Building on a collaborative program with Ghana's National Development Planning Commission, IFPRI created the position of regional coordinator for West Africa in 1997. This regional coordinator has worked with IFPRI's colleagues and collaborators in the region to identify priorities for conducting policy research, training, and capacity strengthening. Another similar effort is taking place in Mozambique. With Eduardo Mondlane University and the Poverty Alleviation Unit of the Ministry of Planning and Finance, IFPRI is working to strengthen the capacity to conduct policy research in food, agriculture, and the environment, helping develop databases to support this research, establishing links with universities abroad, and weaving IFPRI's policy research into the university's courses. In 1997, IFPRI also continued to offer training and capacity-strengthening exercises in Latin America and South Asia.

## Collaborating Institutions in Developing Countries

### Africa

#### Benin

Laboratoire de Recherches et d'Expertise Sociales, Université Nationale du Bénin

**Botswana**

Southern Africa Center for  
Coordination in Agricultural  
Research

**Côte d'Ivoire**

Centre Ivoirien de Recherches  
Economiques et Sociales

**Ethiopia**

Department of Economics, Addis  
Ababa University

Makelle University College

**Ghana**

Ghana Institute of Management and  
Public Administration

Ministry of Agriculture

National Development Planning  
Commission

University of Ghana  
Centre for Social Policy Studies  
Noguchi Institute of Medical  
Research

University of Science and  
Technology

**Kenya**

Association for Strengthening  
Agricultural Research in Eastern  
and Central Africa

Tropical Soil Biology and Fertility  
Programme

**Madagascar**

Centre National de Recherches  
Appliquées au Développement  
Rural (FOFIFA)

Ministry of Research and  
Development

**Malawi**

Malawi Rural Finance Company

Ministry of Women, Children,  
Community Development,  
and Social Welfare

University of Malawi, Lilongwe  
Agricultural Policy Research Unit,  
Bunda College of Agriculture  
Bunda College of Agriculture

**Mali**

Ministère du Développement  
Rural et de l'Environnement

**Mozambique**

Eduardo Mondlane University

Ministry of Planning and Finance

National Directorate of Statistics

Poverty Alleviation Unit, Ministry of  
Planning and Finance

**Nigeria**

African Groundnut Council

**Senegal**

Conference of West and Central  
African Ministers of Agriculture

Institut Sénégalais de Recherches  
Agricoles

Unité de Politique Agricole

#### **South Africa**

Data Research Africa

Land and Agriculture Policy Centre

Mvula Trust

National Department of Agriculture  
and Land Affairs

Southern Africa Labor and  
Development Research Unit,  
University of Cape Town

University of Natal

University of The North

University of Pretoria

#### **Tanzania**

CARE International-Tanzania

Planning Commission, The  
President's Office

#### **Uganda**

Forestry Research Institute

National Agricultural Research  
Organization

#### **Zambia**

Institute for Social and Economic  
Research

#### **Zimbabwe**

Eco-Nomics Africa

University of Zimbabwe

#### **Asia**

##### **Bangladesh**

Association for Social Advancement

Bangladesh Institute of  
Development Studies

Bangladesh Rural Advancement  
Committee

CARE International-Bangladesh

Data Analysis and Technical  
Assistance

Institute for Nutrition and Food  
Science, University of Dhaka

Ministry of Agriculture

Ministry of Food

##### **China**

Chinese Academy of Agricultural  
Sciences

Chinese Academy of Social Sciences

Economic Research Service

Ministry of Agriculture

##### **India**

Government of Rajasthan

Indian Agricultural Research  
Institute

Indian Council for Agricultural  
Research

Institute for Social and Economic  
Change

Jawaharlal Nehru University

National Centre for Agricultural  
Policy

National Council for Applied  
Economic Research

#### **Indonesia**

Agency for Agricultural Research  
and Development

Center for Agro-Socioeconomic  
Research

Forestry Research Institute  
of Indonesia

Lembaga Demografi (Center for  
Demographic Research), University  
of Indonesia

University of Jambi

#### **Malaysia**

Malaysian Institute of Strategic and  
International Studies

#### **Nepal**

Gorkha Development Project

Institute of Forestry

Winrock International Nepal

#### **Pakistan**

Agricultural Price Commission

Ministry of Food

Pakistan Institute of Development  
Economics

#### **Thailand**

Thailand Development Research  
Institute

#### **Uzbekistan**

Scientific Information Center of  
the Interstate Commission for  
Water Coordination

Water Resources Management and  
Agricultural Production in Central  
Asian Republics

#### **Viet Nam**

Ministry of Agriculture and  
Rural Development

Viet Nam Agricultural  
Science Institute

#### **Latin America and the Caribbean**

##### **Argentina**

Fundación Andina

Fundación ArgenInta

Instituto de Estudios Económicos  
de la Realidad Argentina y  
Latino Americana,  
Fundación Mediterránea

Instituto Interamericano de  
Cooperación para la Agricultura

National Institute of Agricultural  
Technology (INTA)

Secretaría de Agricultura, Pesca  
y Alimentación

##### **Brazil**

Empresa Brasileira de Pesquisa  
Agropecuária

Federal University of Acre

Federal University of Brasilia

Federal University of Paraná

Federal University of Rondônia

Red de Capacitación en Análisis  
de Políticas Agrícolas

State Planning Commission,  
State of Acre

State Planning Commission,  
State of Rondônia

State Secretary of Health,  
State of Acre

State Secretary of Health,  
State of Rondônia

#### **Chile**

Catholic University of Chile

#### **Colombia**

Instituto Interamericano de  
Cooperación para la Agricultura

Ministerio de Agricultura y  
Desarrollo Rural

#### **Costa Rica**

Centro para la Integración y  
Desarrollo Empresarial, Instituto  
Interamericano de Cooperación  
para la Agricultura

Instituto Interamericano de  
Cooperación para la Agricultura,  
Costa Rica

#### **Ecuador**

Center for Population Studies

#### **El Salvador**

Fundación Nacional para  
el Desarrollo

#### **Honduras**

Escuela Agrícola Paramericana

Instituto Interamericano de  
Cooperación para la Agricultura,  
Honduras

#### **Mexico**

Colegio de México

Secretaría de Agricultura, Ganadería  
y Desarrollo Rural

#### **Peru**

Conservation International-Peru

#### **North Africa/Middle East**

##### **Algeria**

Haute Commission de  
Développement de la Steppe

##### **Egypt**

Ain Shams University

American University of Cairo

Assiut University

Center for Agricultural Economic  
Studies, Cairo University

El-Azhar University

Menoufia University

Ministry of Agriculture and  
Land Reclamation

Ministry of Trade and Supply

Zagazig University

**Iraq**

IPA Agricultural Research Center

**Jordan**

Ministry of Agriculture

National Center for Agricultural  
Research and Technology Transfer

University of Jordan

**Lebanon**

Agricultural Research Institute,  
Ministry of Agriculture

American University of Beirut

**Morocco**

Centre Regional de Recherche  
Agricole, Institut National de la  
Recherche Agronomique

**Syria**

Ministry of Agriculture and  
Agrarian Reform

Research Directorate

Steppe Directorate of Aleppo

Steppe Directorate of Palmyra

**Tunisia**

Ecole Nationale d'Agriculture  
de Megrane

Ecole Supérieure d'Horticulture,  
Chott-Meriem

Institut des Hautes Etudes  
Commerciales

Institut des Régions Arides

Institut National de la Recherche  
Agronomique de Tunisie

Ministry of Agriculture

**Collaborating CGIAR  
Institutions**

Center for International  
Forestry Research

Centro Internacional de  
Agricultura Tropical

Centro Internacional de la Papa

Centro Internacional de  
Mejoramiento de Maíz y Trigo

International Center for Agricultural  
Research in the Dry Areas

International Center for Living  
Aquatic Resources Management

International Centre for Research  
in Agroforestry

International Crops Research  
Institute for the Semi-Arid Tropics

International Institute of Tropical  
Agriculture

International Irrigation  
Management Institute

International Livestock  
Research Institute

International Plant Genetic  
Resources Institute

International Rice Research Institute

International Service for National  
Agricultural Research

West Africa Rice Development  
Association

### **Collaborating Institutions in Developed Countries and International Agencies**

Agricultural University of Norway

Asian Productivity Organization,  
Japan

Asian Vegetable Research and  
Development Center, Bangladesh

Association for International  
Agriculture and Rural  
Development, U.S.A.

Center for Research in Water  
Resources, University of Texas,  
Austin, U.S.A.

Center for the Study of African  
Economies, Oxford University,  
United Kingdom

Chemonics, U.S.A.

Columbia University, U.S.A.

Cornell University, U.S.A.

Deutsche Stiftung für Internationale  
Entwicklung, Germany

European Commission, Belgium

Free University, Amsterdam,  
the Netherlands

Institute for Fisheries Management  
and Coastal Community  
Development, Denmark

Institute for International  
Economics, U.S.A.

Institute of Development Studies,  
University of Sussex,  
United Kingdom

Inter-American Development Bank,  
U.S.A.

International Center for Research  
on Women, U.S.A.

International Fertilizer Development  
Center, U.S.A.

International Fund for Agricultural  
Development, Italy

Katholieke Universiteit Leuven,  
Belgium

Kenyon College, U.S.A.

Land Tenure Center, University of  
Wisconsin-Madison, U.S.A.

Montana State University, U.S.A.

Northwestern University, U.S.A.

Overseas Development Institute,  
United Kingdom

Purdue University, U.S.A.

RAND Corporation, U.S.A.

Resources for the Future, U.S.A.

Royal Veterinary and Agricultural  
College, Denmark

School of Public Policy and Social  
Research, University of California,  
Los Angeles, U.S.A.

Southern African Development  
Community

Stanford University, U.S.A.

Swiss Federal Institute of Technology

United States Department  
of Agriculture

University of Berne, Switzerland

University of Bonn, Germany

University of California,  
Berkeley, U.S.A.

University of California,  
Davis, U.S.A.

University of Copenhagen, Denmark

University of Florida, U.S.A.

University of Giessen, Germany

University of Göttingen, Germany

University of Hohenheim, Germany

University of Kiel, Germany

University of Minnesota, U.S.A.

University of Namur, Belgium

University of Sheffield,  
United Kingdom

Wageningen Agricultural University,  
the Netherlands

Waite Agricultural Research Institute,  
University of Adelaide, Australia

World Bank



*Photo by Towa Tachibana*

# 1997 Publications

## Research Reports

Number 106

*Wheat Production in Bangladesh: Technological, Economic, and Policy Issues*, by Michael L. Morris, Nuimuddin Chowdhury, and Craig Meisner.

Policy implications of each research report are summarized in a four-page *IFPRI Abstract*, which is published in English, French, and Spanish.

## IFPRI/Johns Hopkins University Press Books

*Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*, edited by Lawrence Haddad, John Hoddinott, and Harold Alderman.

*Sustainability, Growth, and Poverty Alleviation: A Policy and Agroecological Perspective*, edited by Stephen A. Vosti and Thomas Reardon.

## Food Policy Reviews and Synopses

Number 4

*Rural Finance for Food Security for the Poor: Implications for Research and Policy*, by Manfred Zeller, Gertrud Schrieder, Joachim von Braun, and Franz Heidhues.

Each *Food Policy Review* is summarized in a two-page *IFPRI Synopsis*, which is published in English, French, and Spanish.

## Occasional Papers

*Care and Nutrition: Concepts and Measurements*, by Patrice L. Engle, Purmina Menon, and Lawrence Haddad.

*Achieving Food Security in Southern Africa: New Challenges, New Opportunities*, edited by Lawrence Haddad.

*Identifying the Food Insecure: The Application of Mixed-Method Approaches in India*, by Kimberly Chung, Lawrence Haddad, Jayashree Ramakrishna, and Frank Riely.

## Food Policy Reports

*The World Food Situation: Recent Developments, Emerging Issues, and Long-Term Prospects*, by Per Pinstrup-Andersen, Rajul Pandya-Lorch, and Mark W. Rosegrant.

## **Food Policy Statements**

### **Number 24**

*Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policies*, by Lawrence Haddad, John Hoddinott, and Harold Alderman.

### **Number 25**

*Sustainability, Growth, and Poverty Alleviation: A Policy and Agroecological Perspective*, by Stephen A. Vosti and Thomas Reardon.

### **Number 26**

*The World Food Situation: Recent Developments, Emerging Issues, and Long-Term Prospects*, by Per Pinstrup-Andersen, Rajul Pandya-Lorch, and Mark W. Rosegrant.

## **Lecture Series**

### **Number 5**

*Agricultural Growth, Sustainability, and Poverty Alleviation in India: Recent Trends and Major Issues of Reform*, by C. H. Hanumantha Rao, 1997.

## **IFPRI Report**

Volume 19, Numbers 1, 2, and 3 (in English, French, and Spanish).

## **A 2020 Vision for Food, Agriculture, and the Environment**

*News & Views* (newsletter), March and October.

## **Discussion Papers**

### **Number 19**

*China's Food Economy to the Twenty-First Century: Supply, Demand, and Trade*, by Jikun Huang, Scott Rozelle, and Mark W. Rosegrant.

### **Number 20**

*Water Resources in the Twenty-First Century: Challenges and Implications for Action*, by Mark W. Rosegrant.

### **Number 21**

*Challenges to the 2020 Vision for Latin America: Food and Agriculture since 1970*, by James L. Garrett.

### **Number 22**

*The Nonfarm Sector and Rural Development: Review of Issues and Evidence*, by Nurul Islam.

## **Briefs**

### **Number 42**

*Africa's Changing Agricultural Development Strategy*, by Christopher L. Delgado.

### **Number 43**

*The Potential Impact of AIDS on Population and Economic Growth Rates*, by Lynn R. Brown.

### **Number 44**

*Land Degradation in the Developing World: Issues and Policy Options for 2020*, by Sara J. Scherr and Satya Yadav.

**Number 45**

*Agriculture, Technological Change, and the Environment in Latin America*, by Eduardo J. Trigo.

**Number 46**

*Agriculture, Trade, and Regionalism in South Asia*, by Dean R. DeRosa and Kumaresan Govindan.

**Number 47**

*The Nonfarm Sector and Rural Development: Review of Issues and Evidence*, by Nurul Islam.

**Reprints**

Adams, Richard H., Jr. (with Sonia M. Ali). The Egyptian Food Subsidy System: Operation and Effects on Income Distribution. Reprinted from *World Development* 24, no. 11 (1996).

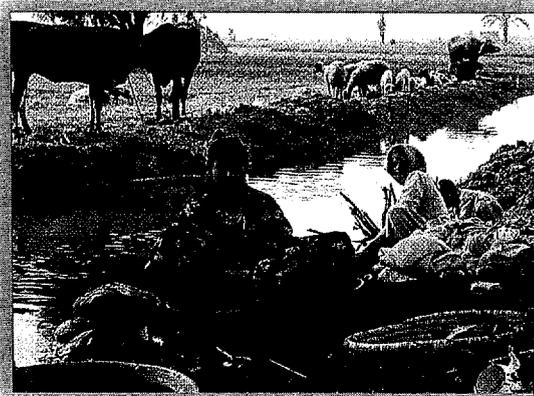


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## Special Reports

*Dar es Salaam Urban Livelihood Security Assessment: Design, Background, Strategy, Data Collection, and Analysis Methodology*. Prepared by Daniel G. Maxwell and R. Rutakahana for CARE Tanzania.

*Determinants of Access to Credit and Its Impact on Agricultural Productivity, Household Food Security, and Nutritional Status in Malawi: A Synthesis of Main Findings*. Prepared by Aliou Diagne for the Rockefeller Foundation.

*A Strategy for Urban Development for CARE Togo*. Prepared by Daniel G. Maxwell for CARE Togo.

*Trends in Stunting: Which Age Group Should We Focus On?* Prepared by Marie T. Ruel, Saul S. Morris, and S. Barquera-Cervera for the Administrative Committee on Coordination/Sub-Committee on Nutrition (ACC/SCN) as IFPRI's contribution to the *Third Report on the World Nutrition Situation*.

## Papers Presented by IFPRI Staff

In addition to the publications mentioned above, in 1997 IFPRI staff presented more than 150 papers in various forums sponsored by organizations other than IFPRI. Presentations were made at seminars, workshops, and conferences in institutional settings that included

universities and academic society conferences, nationally and internationally organized research colloquia, and bilateral and multilateral advisory group meetings.

### **Publications Review**

All IFPRI research publications undergo external review. Manuscripts submitted for publication as IFPRI research reports, food policy reviews, and IFPRI/Johns Hopkins University Press books undergo external review through the IFPRI Publications Review Committee. The committee oversees these reviews and makes recommendations for publication. The committee comprises seven research fellows and the director of the Information Program.

IFPRI is grateful for the efforts of the following external referees who reviewed manuscripts for the research report series and for IFPRI/Johns Hopkins books during 1996 and 1997.

John M. Antle, University of Montana, U.S.A.

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Andrew D. Foster, Brown University, U.S.A.

Bruce Gardner, University of Maryland, U.S.A.

Alain de Janvry, University of California at Berkeley, U.S.A.

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William A. Masters, Purdue University, U.S.A.

Siddiq Osmani, University of Ulster at Jordanstown, U.K.

C. H. Hanumantha Rao, Centre for Economic and Social Studies, India

C. Peter Timmer, Harvard Institute for International Development, U.S.A.



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# Personnel

List reflects personnel employed by IFPRI as of December 31, 1997, and includes part-time staff members. Country indicates citizenship of staff member.

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### Coordinator, 2020 Vision for Food, Agriculture, and the Environment

Rajul Pandya-Lorch, Kenya

### Research Fellow Emeritus

Nurul Islam, Bangladesh

### Special Assistant to the Director General

Stacy Roberts, U.S.A.

### Executive Secretary to the Director General

Edith Yalong, Philippines

### Graphics Specialist

Vicki Lee, Philippines

### Word Processing Specialist/Program Assistant

Audrey Howard, U.S.A.

## Research

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#### Director

Peter Hazell, United Kingdom

#### Research Fellows

Shenggen Fan, China

John Kerr, U.S.A.

(based in Rhode Island, U.S.A.)

Ruth Meitzen-Dick, U.S.A.

(based in Missouri, U.S.A.)

Keiji Otsuka, Japan

Philip Pardey, Australia

John Pender, U.S.A.

Mark Rosegrant, U.S.A.

Stephen Vosti, U.S.A.

Stanley Wood, United Kingdom

(outposted to Colombia)

#### Research Fellow Emeritus

Peter Oram, United Kingdom

#### Postdoctoral Fellows

Bruno Barbier, France

Chantal Carpentier, Canada

(outposted to Brazil)

Nabil Chaherli, Tunisia

(outposted to Syria)

Nancy McCarthy, U.S.A.

(outposted to Kenya)

Tidiane Ngaido, Senegal  
(outposted to Syria)

**Visiting Research Fellows**

Ruth Alsop, U.S.A.

Gilles Bergeron, Canada

Steve Franzel, U.S.A.

**Research Analysts**

Nienke Beintema, Netherlands

Claudia Ringler, Germany

Julie Witcover, U.S.A.

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Anna Knox-McCulloch, U.S.A.

Nancy Leach, U.S.A.

Oscar Neidecker-Gonzales,  
Honduras

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John Williams, Pakistan

**Administrative Coordinators**

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Beryl Hackett, United Kingdom

**Word Processing**

**Specialists/Program Assistants**

Beverly Abreu, U.S.A.

Lourdes Hinayon, Philippines

William Whichard, U.S.A.

**Food Consumption and  
Nutrition Division**

**Director**

Lawrence Haddad, United Kingdom

**Research Fellows**

Richard Adams, U.S.A.

Akhter Ahmed, Bangladesh  
(outposted to Egypt)

Howarth Bouis, U.S.A.

Gaurav Datt, India

Carlo del Ninno, Italy  
(outposted to Bangladesh)

James Garrett, U.S.A.

John Hoddinott, Canada

Jan Low, U.S.A.  
(outposted to Mozambique)

Detlev Puetz, Germany

Marie Ruel, Canada

Agnes Quisumbing, Philippines

Manfred Zeller, Germany

**Postdoctoral Fellows**

Benedicte de la Briere, Netherlands

Kelly Hallman, U.S.A.

Dean Jolliffe, U.S.A.

Cecile Lapenu, France

John Maluccio, U.S.A.

Saul Morris, United Kingdom

**Rockefeller Fellows**

Michelle Adato, U.S.A.  
(outposted to South Africa)

Daniel Maxwell, U.S.A.  
(outposted to Ghana)

**Visiting Research Fellows**

Aliou Diagne, Senegal

Hanan Jacoby, U.S.A.

Manfred Schulz, Germany

**Program Analyst**

Bonnie McClafferty, U.S.A.

**Research Analysts**

Lynn Brown, United Kingdom

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Manohar Sharma, Nepal

Alison Slack, U.S.A.

Yisehac Yohannes, Ethiopia

**Research Assistant**

Sumathi Subramaniam, India

**Senior Administrative Coordinator**

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**Specialist/Program Assistants**

Cristina Abad-Quintos, Philippines

Ginette Mignot, Canada

Kara Sulamasy, U.S.A.

**Markets and Structural  
Studies Division**

**Director**

Raisuddin Ahmed, Bangladesh

**Research Fellows**

Ousmane Badiane, Senegal

Christopher Delgado, U.S.A.

Paul Dorosh, U.S.A. (outposted to  
Bangladesh)

Francesco Goletti, Italy

Mylène Kherallah, Lebanon

**Postdoctoral Fellows**

Nicholas Minot, U.S.A.

Bart Minten, Belgium

**Research Analysts**

Philippe Berry, France

Claude Courbois, U.S.A.

Peter Gruhn, Canada

Meyra Mendoza, Philippines

**Senior Research Assistant**

Karl Rich, U.S.A.

**Senior Administrative Coordinator**

Elizabeth Daines, U.S.A.

**Word Processing****Specialist/Program Assistants**

Lisa Grover, U.S.A.

Carolyn Roper, U.S.A.

**Trade and Macroeconomics  
Division****Director**

Sherman Robinson, U.S.A.

**Research Fellows**

Romeo Bautista, Philippines

Hans Löfgren, Sweden

**Postdoctoral Fellow**

Natasha Mukherjee, Canada

**Visiting Research Fellows**

Eugenio Diaz-Bonilla, Argentina

Lucio Reza, Argentina

**Research Analysts**

Marcelle Thomas, U.S.A.

Peter Wobst, Germany

Andrea Cattaneo, U.S.A.

Rebecca Harris, U.S.A.

**Senior Research Assistant**

Moataz El-Said, Egypt

Valeria Pineiro, Argentina

**Administrative Coordinator**

Maria Cohan, Argentina

**Outreach****Outreach Division****Director, Country Programs**

David Nygaard, U.S.A.

**Regional Coordinator, West Africa**

Sudhir Wanmali, India

**Research Fellows**

Sudhanshu Handa, Canada  
(outposted to Mozambique)

Carol Levin, U.S.A.

Jan Low, U.S.A.

(outposted to Mozambique)

**Research Analyst**

Ulla Naesby, Denmark

**Senior Administrative Coordinator**

Almaz Beyene, Ethiopia

**Program Assistant**

Suhasani Ross, India

**Information Program****Acting Head**

Phyllis Skillman, U.S.A.

**Senior Editor**

Heidi Fritschel, U.S.A.

**Information Manager**

David Gately, U.S.A.

**Desktop Publishing Specialists**

Evelyn Banda, U.S.A.

Lucy McCoy, U.S.A.

**Web and Document Specialist**

Mary Mastroianni, U.S.A.

**Information Assistant**

Denise Dixon, U.S.A.

**Information Clerk**

Beatrice Zimmermann, U.S.A.

**Head Librarian**

Patricia Klosky, U.S.A.

**Technical Services Librarian**

Thomas Mann, U.S.A.

**Library Assistant**

Robert Hashimoto, Japan

**Policy Seminars Program****Head**

Laurie Goldberg, U.S.A.

**Conference Assistant**

Joy King, U.S.A.

**Training and Capacity  
Strengthening Program****Head**

Suresh Babu, India

**Research Analysts**

Saroj Bhattarai, Nepal

Neal Bliven, U.S.A.

**Visiting Researchers**

Some 170 visitors spent time at IFPRI in 1997. Those listed here spent about a month or more at IFPRI.

Edouard O. Asante, Ghana Institute of Management and Public Administration, Ghana

David Bathrick, Chemonics International, U.S.A.

Sergio Cassamo, Poverty Alleviation Unit, Ministry of Finance and Planning, Mozambique

Muttiah Chinnadurai, Tamil Nadu University, India

Valerie Defrenne, University of Namur, Belgium

Heba El-Laithy, University of Cairo, Egypt



Photo by Richard Adams

Matar Gaye, Institut Sénégalais de  
Recherches Agricoles, Senegal

Vitoria Ginja, Poverty Alleviation  
Unit, Ministry of Finance and  
Planning, Mozambique

Tammi Gutner, Brookings  
Institution, U.S.A.

T. Haque, National Centre for  
Agricultural Economics and Policy  
Research, India

Ulrich Hausner, University of Kiel,  
Germany

Mahabub Hossain, International Rice  
Research Institute, the Philippines

Patrick Kormawa, University of  
Hohenheim, Germany

Davies Ng'ong'ola, Bunda College  
of Agriculture, University of  
Malawi, Malawi

Simphiwe Ngqangweni, University  
of Pretoria, South Africa

Jean Claude Randrianarisoa,  
National Center for Applied  
Research on Rural Development,  
Madagascar

Karima Saleh, Johns Hopkins  
University, U.S.A.

Emil Sandström, Swedish University  
of Agriculture Sciences, Sweden

Lisa Smith, U.S. Agency for  
International Development, U.S.A.

Joseph Stepanek, U.S.A.

Nguyen Thong, Yale University,  
U.S.A.

Erinc Yeldan, Bilkent University,  
Turkey

Andrés Yurjevic, Latin American  
Consortium on Agroecology and  
Development, Chile

Xiabo Zhang, Cornell University,  
U.S.A.

## **Support**

### **Finance and Administration**

#### **Director of Finance and Administration**

Martin Van Weerdenburg, Australia

#### **Senior Administrative Coordinator**

Bernadette Cordero, Philippines

## **Administrative Services**

### **Travel Coordinator**

Luisa Gaskell, Philippines

### **Facilities Coordinator**

Anthony Thomas, U.S.A.

### **Photocopy/Facilities Assistant**

Glen Briscoe, U.S.A.

### **Receptionist**

Yolanda Palis, Philippines

### **Facilities Assistant**

Melvin Suggs, U.S.A.

## **Computer Services**

### **Head**

Nancy Walczak, U.S.A.

### **Senior Programmer**

David Bruton, U.S.A.

**Programmer**

Kang Chiu, Hong Kong

**Network Engineer**

Yin Leong, Malaysia

**Web and Document Specialist**

Mary Mastroianni, U.S.A.

**Microcomputer Specialist**

Aamir Qureshi, Pakistan

**Finance****Chief Financial Officer**

Celeste Regan, U.S.A.

**Finance Assistant**

Douglas Bowles, U.S.A.

**Chief Accountant**

German Gavino, U.S.A.

**Staff Accountants**

Paulina Manalansan, Philippines

Peter Townsend, U.S.A.

**Senior Accounting Assistant**

Gloria Goodrum, U.S.A.

**Contracts and Grants****Administrator**

Robert McCarthy, U.S.A.

**Budget Administrator**

Christopher Schneck, U.S.A.

**Budget and Contracts Assistant**

Yvette Smith, U.S.A.

**Human Resource Services****Head**

I'dafney Green, U.S.A.

**Human Resource Officer**

Yolanda Buran, U.S.A.

**Human Resource Specialist**

Sandra Freeman, U.S.A.

**Human Resource Assistant**

Alexis Howard, U.S.A.

# Financial Statements

Presented here is a summary of financial information for the years ended December 31, 1997 and 1996. The full financial statements and the independent auditors' report are available from IFPRI on request.

## Balance Sheets

December 31, 1997 and 1996

(US\$ thousands)

<b>Assets</b>		<b>1997</b>	<b>1996</b>
<b>Current assets</b>	Cash and cash equivalents	\$2,635	\$3,868
	Investments	1,928	1,869
	CGIAR grants receivable	771	153
	Restricted projects receivable (net)	2,536	2,643
	Other receivables	600	482
	Other current assets	84	112
	<b>Total current assets</b>	<b>\$8,554</b>	<b>\$9,127</b>
<b>Other assets</b>	Property and equipment, net	632	684
	<b>Total assets</b>	<b>\$9,186</b>	<b>\$9,811</b>
<b>Liabilities and net assets</b>			
<b>Current liabilities</b>	Accounts payable	\$ 707	\$ 627
	Accrued vacation	597	537
	Advance payment of CGIAR grant funds	439	659
	Deferred rent (current portion)	400	122
	Unexpended restricted project funds	2,929	3,294
	Other liabilities	17	49
	<b>Total current liabilities</b>	<b>\$5,089</b>	<b>\$5,288</b>
<b>Noncurrent liabilities</b>	Deferred rent	-	824
	Accrued post-retirement benefits	396	341
	<b>Total noncurrent liabilities</b>	<b>\$ 396</b>	<b>\$1,165</b>
	<b>Total liabilities</b>	<b>\$5,485</b>	<b>\$6,453</b>
<b>Net assets—unrestricted</b>	Operating reserves	2,415	2,046
	Reserves allocated for subsequent year expenditure	654	628
	Net investment in property and equipment	632	684
	<b>Total net assets</b>	<b>\$3,701</b>	<b>\$3,358</b>
	<b>Total liabilities and net assets</b>	<b>\$9,186</b>	<b>\$9,811</b>

## Statements of Revenue, Expenses, and Changes in Operating Reserves

For the Years Ended December 31, 1997 and 1996

(US\$ thousands)

<b>Revenue</b>		<b>1997</b>	<b>1996</b>
<b>Grant and</b>			
<b>contract income</b>	CGIAR—unrestricted	\$ 9,391	\$ 7,990
	Restricted	8,808	7,926
<b>Investment income</b>		235	275
<b>Other income</b>		-	2
	Total revenue	\$18,434	\$16,193

<b>Expenses</b>			
<b>Program services</b>	Direct research and outreach	\$16,282	\$13,536
<b>Other services</b>		45	299
<b>Management and general</b>		1,764	1,727
	Total expenses	\$18,091	\$15,562
	Excess of revenue over expenses	\$ 343	\$ 631

<b>Transfer (to) from reserves allocated for subsequent year expenditure</b>		(26)	(238)
<b>Transfer (to) from net investment in property and equipment</b>		52	(68)
Increase in operating reserves		\$ 369	\$ 325
<b>Operating reserves, beginning of year</b>		2,046	1,721
<b>Operating reserves, end of year</b>		\$ 2,415	\$2,046

## Schedule of Expenses by Type

(US\$ thousands)

<b>Expenses</b>	<b>1997</b>	<b>1996</b>
Personnel	\$ 6,703	\$ 5,794
Fringe benefits	2,024	1,756
Collaboration/field expenses	3,195	2,418
Travel	1,431	1,649
Computer	129	132
External publications	404	555
Trustees' expenses (nontravel)	59	49
Office operations	3,465	2,907
Foreign exchange loss	441	42
Depreciation/amortization	240	260
<b>Total</b>	<b>\$18,091</b>	<b>\$15,562</b>

# 1997 Donors

Agency for Agricultural Research and Development (Indonesia)  
Arab Fund for Economic and Social Development  
Asian Development Bank  
Australia  
Belgium  
Brazil  
Canada  
CARE  
China  
Denmark  
Development Bank of Southern Africa  
European Commission  
Food and Agriculture Organization of the United Nations  
Ford Foundation  
France  
German Agency for Technical Cooperation (GTZ)  
German Federal Ministry for Economic Cooperation and Development (BMZ)  
India  
Inter-American Development Bank  
International Development Research Centre (Canada)  
International Fund for Agricultural Development  
Ireland  
Italy  
Japan  
Land and Agriculture Policy Centre (South Africa)  
Mozambique  
Netherlands  
Norway  
Overseas Development Institute (United Kingdom)  
Philippines  
Rockefeller Foundation  
Rural Industries Research and Development Corporation (Australia)  
South Africa  
Spain  
Sweden  
Switzerland  
United Kingdom  
United Nations Children's Fund (UNICEF)  
United Nations Development Programme  
United States  
United States Department of Agriculture  
World Bank