

Bringing Farmers into Global Trade

TITLE XII
Report to Congress
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USAID
United States Agency for
International Development



*T*ogether, we must accelerate economic growth. Reducing poverty and accelerating economic growth are essential to African stability and access to food. We create opportunity by building the agriculture sector. In Africa, agriculture-led growth must be a fundamental part of any national development strategy—70 percent or more of the poor live in rural areas and depend on agriculture for all or part of their incomes. Increasing incomes in agriculture also generates employment and income increases in other sectors.

—*Andrew S. Natsios,*
Administrator

PARTNERSHIP TO CUT HUNGER IN AFRICA

LOY HENDERSON AUDITORIUM, DEPARTMENT OF STATE, JUNE 27, 2001



THIS REPORT, entitled *Bringing Farmers into Global Trade*, summarizes the accomplishments of USAID and our public and private partners in FY 2001. In prior years, the report on Title XII and USAID's other agricultural programs consisted of an overview and a description of the activities conducted by the various USAID administrative units and our partners. Two changes occurred that necessitated a shift to a thematic focus. First, in 2001, under the new Administration, USAID began the process of reorganization and, as such, the administrative units formerly framing this report changed. Second, the reorganization created an opportunity to shift this annual report to a thematic focus that mirrors the interim agriculture strategy (see Annex Six).

The interim agriculture strategy has four themes: accelerating agriculture using science-based solutions, including biotechnology, to reduce poverty and hunger; developing global and domestic trade opportunities for farmers and rural industries; bridging the rural knowledge divide through training, outreach, and adaptive research at the local level; and promoting sustainable agriculture and sound environmental management. This report focuses on theme two: developing market and trade opportunities for farmers and rural industries.

Our university partners are essential to our efforts in developing market and trade opportunities for farmers and rural industries. Title XII of the Foreign Assistance Act of 1961, as amended, is designed to mobilize the capacities of U.S. land-grant institutions to participate in international efforts to apply agricultural sciences to solving food, health, nutrition, rural income and environmental problems, especially such problems in low-income, food-deficit countries. Increased food production and improved distribution, storage, and marketing not only prevents hunger and ensures human health and child survival, but builds the basis for economic growth and trade in which democracy and a market economy can thrive.

I look forward to informing you on the progress of our collaborative efforts.

Andrew S. Natsios
Administrator

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Bringing Farmers into Global Trade



Executive Summary

This report summarizes the implementation of Title XII of the Foreign Assistance Act by the U.S. Agency for International Development (USAID) for FY 2001. USAID's agricultural activities are guided by the priorities outlined in four key documents: the Title XII legislation, the U.S. Action Plan on Food Security, the respective bureaus' and USAID missions' strategic plans, and the interim agriculture strategy.

During FY 2001, USAID invested approximately \$303 million in activities that addressed the objectives of the Title XII legislation. The Global Bureau's funding was devoted largely to agricultural research and training. USAID's implementing partners included the Collaborative Research Support Programs (CRSPs), which mobilized the resources and expertise of more than 50 U.S. universities and their counterparts in developing countries, and the 16 international agricultural research centers (IARCs) supported by the Consultative Group on International Agricultural Research (CGIAR). In FY 2001, USAID launched the Partnership for Food Industry Development (PFID), a U.S. university-led activity which mobilizes private and public-sector expertise to promote competitive participation by developing and transition economies in the new global food trading system.

This year's Title XII report focuses on the connection between markets and trade, improved agricultural productivity, and poverty reduction. It highlights those activities of USAID and its partners that contributed to USAID's second strategic theme of the interim agriculture strategy: developing market and

trade opportunities for farmers and rural industries. Drawing on lessons learned from past assistance to agriculture, the report focuses on efforts by USAID and its Title XII partners to alleviate constraints to agricultural growth by: increasing market volumes and market access opportunities; promoting new product development and agroservices; targeting input marketing constraints; developing market information systems and networking opportunities; promoting standards and quality; and enhancing trade capacity.

Among the regional bureaus, Africa continued to manage USAID's largest agricultural program, addressing hunger, poverty and food insecurity by focusing on the revitalization of rural-based agricultural growth, capacity building, investment in biotechnology, and improving access to markets and trade. In Asia and the Near East, USAID's agricultural programs supported a variety of agricultural policy reform, agribusiness development initiatives, and rural infrastructure improvements. USAID's programs in Latin America and the Caribbean focused on promoting trade as an engine of growth and protecting the region's environment and natural resources. The primary emphases of USAID's assistance to the countries of Europe and Eurasia continued to be land reform, agribusiness and trade development, and improved quality standards.

The Bureau of Humanitarian Response provided funding for agricultural activities through its Office of Foreign Disaster Assistance and its Office of Food for Peace, which administers the P.L. 480, Title II Food for Peace Non-Emergency

Program. In FY 2001, food assistance programs, including Title II, accounted for 22 percent of U.S. foreign assistance.

The Board for International Food and Agricultural Development (BIFAD) met once during 2001 with the CRSPs to discuss globalizing university contributions to the "new agriculture" interim strategy. BIFAD's committees, including the Strategic Partnership for Agricultural Research and Education (SPARE) and the Food Security Advisory Committee (FSAC), remained active. FSAC met twice to prepare for the World Food Summit: *five years later*, and SPARE met five times to develop guidelines for review of CRSPs and other ongoing agricultural activities in USAID, and to discuss new challenges and opportunities for the U.S. university community and the Agency's response. In FY 2001, SPARE conducted reviews of the BASIS, INTSORMIL and Peanut CRSPs as part of the CRSP renewal process. The recommendations of these meetings and reviews were forwarded to the Agency by BIFAD.

In FY 2002, USAID will expand on the directions of the interim strategy, holding stakeholder consultations with Title XII partners to provide guidance to the Agency as it refines its strategic themes. The FY 2002 Title XII report will focus on the fourth theme: promoting sustainable agriculture and sound environmental management. It will also highlight USAID's World Summit on Sustainable Development commitments including the Water Initiative, the Initiative to End Hunger in Africa (IEHA), and the Geospatial Information for Sustainable Development (GISD) Partnership.



Bringing Farmers into Global Trade

Poverty in the developing world still affects large numbers of both rural and urban populations. Most of the world's rural poor continue to eke out a meager living from the land. Low agricultural productivity is cited as one of the most critical factors in the intractability of rural poverty. At the same time, globalization, trade liberalization, and new market niches are creating new opportunities for income generation through agricultural trade. The lessons of development aid in the past two decades point increasingly to the need to help farmers gear their activities and resources to the production of value-added agricultural goods for which there are market opportunities.

Through its Title XII and other development partners, USAID has been working to help build the institutions, scientific and technical know-how, and human capacity throughout the developing world to enable small-scale producers and food processors to capture regional and global trade opportunities.

The Market and Trade Connection

In many developing countries, terms of trade have long been tilted in favor of industry and against agriculture, creating strong disincentives for farmers to increase the volume and quality of their produce. The liberalization of global markets, resulting from the General Agreement on Tariffs and Trade (GATT) and subsequently the World Trade Organization (WTO), combined with reduced government intervention in domestic markets and lower tariffs, has reduced disincentives and created more competition and opportunities for producers.

Reduced government intervention in developing countries has taken a number of forms. The reduction and, in some cases, elimination of tariffs in regions has led to increased commodity trade between neighboring developing countries. In FY 2001 the Common Market of East and Southern Africa (COMESA), for instance, launched a free trade area, eliminating tariffs altogether for nine of its 20 member states and reducing tariffs for its non-free trade area members by 80 percent. Competitive markets have replaced fixed government prices for produce, leading to more efficient production choices.

Market information systems have further increased the efficiency and integration of markets. The experience of Mali illustrates how better market information can contribute to increased rural incomes.

Throughout the 1970s and 1980s, Mali was chronically dependent on food aid. The inception of a USAID-sponsored program which broadcasts market information to an estimated 70 percent of Mali's rural population has contributed to a nearly 40 percent increase in per capita income of some one million small farmers. In 2001, Malian farmers exported 55,000 metric tons of grain to regional markets.

Despite such market-driven gains, underinvestment in rural areas throughout the developing world has dramatically slowed growth. Farmers producing surpluses of perishable crops continue to suffer major losses because they cannot get their crops to market in time. Roads, transport, market information, and storage facilities are not yet adequate to support efficient marketing of their products. When good weather and technology come together to produce bumper harvests, producers of staple crops often find the markets flooded, causing the prices for these crops to plummet. Inadequate marketing, storage, and processing capacities contribute to boom-and-bust cycles in many countries. All of these factors undercut farmers' incentives and abilities to increase their competitiveness.

While globalization is expanding agricultural market opportunities, poor product quality, inefficient

transport from field to market, and extensive waste due to post-harvest spoilage hinder effective competition in the global marketplace. In the absence of an adequate institutional framework and consistent availability of modern technology and market data, many exporters cannot expand commercial output, improve product quality, or ensure timely delivery and adequate supply of their final products to consumers.

The opportunities for improvement are enormous. There is vast potential for rural farmers to penetrate new market niches and increase their market share in domestic, regional, and international markets. To bring about such changes, more emphasis needs to be placed on market-led rural development by strengthening the institutions responsible for standards and quality control, ensuring the enforcement of contracts, and improving access to market information. Activities need to be integrated across the entire value chain. Wholesalers, retailers and consumers are demanding higher-quality products. To be competitive in today's marketplace, the farmer needs to meet these demands.

USAID Market and Trade Activities: Overview and Lessons Learned

In the 1970s and early 1980s, USAID's market support activities consisted mostly of large infrastructure improvement investments, often financed with revenue from sales of food aid. Port, road, and rail investments reduced transportation and marketing costs. Support for integrated development projects linked small farmers to domestic output markets and international input markets. USAID also supported agricultural extension, cooperative development, market organization, rural finance, and water and sanitation services. However, the sustainability of this work was stymied by agricultural policies that ensured low-cost food for urban consumers through highly regulated prices, controls on commodity movements, and marketing parastatals. The unsustainability of large USAID investments, such as Project North Shaba in the former Republic of Zaire, exemplifies how poor policies frustrated the achievement of agricultural development objectives.

In the 1980s, USAID supported agricultural growth by training agricultural statisticians and economists of host-country governments to improve their capacity to collect and analyze market data. Improved analysis provided the basis for macroeconomic and market policy reforms. These reforms focused on eliminating producer and consumer price ceilings, privatizing marketing boards, eliminating domestic and regional commodity movement controls, and establishing market information systems. Free markets were seen as the best way to ensure that governments, industry,

and farmers used resources as efficiently and profitably as possible. USAID's investments in the fertilizer and grain sectors, for example, led to market reforms in Kenya.

From the mid-1970s to the mid-1980s, USAID also provided significant support to farming systems research and extension (FSR/E) projects, which assisted developing countries in strengthening their agricultural technology generation and transfer systems. These projects were most prevalent in Africa but were also supported in Asia and Latin America and the Caribbean. In Central America, USAID led the donor community in providing assistance to develop country capacity to produce and market non-traditional agricultural export (NTAE) crops.

Structural adjustment programs in the 1980s and the end of the Cold War in the early 1990s brought about an acceleration of economic reforms in developing countries. USAID and other donors used aid conditionality to encourage new thinking on how to ensure broad-based economic growth. The Agency supported producer organizations and agribusiness development to help farmers and firms respond better to both the opportunities and the risks of a free-market economy. USAID encouraged the establishment of business and trade associations to assist governments in gathering and distributing market information, developing appropriate trade policies, and mobilizing domestic and foreign investment. In Central America, the focus of USAID's sup-

port for the development of NTAEs shifted from individual producers to producer organizations, strengthening these organizations' ability to assist their members or clients with NTAE-related production and marketing services. And, recognizing the special needs of vulnerable populations, USAID, through its food aid programs, sought to shield these populations from the risks of market-based economic growth and climate variability.

Regional Variations

One of the lessons learned during the past 30 years of USAID's market and trade activities is that each region faces a different set of constraints to economic development. A key challenge for African countries is raising agricultural productivity enough among small-holder farmers to enable them to increase their incomes on rain-fed rather than irrigated farms. Variations in African agro-ecologies (soils, rainfall, topography, altitude), often within a country's borders, frustrate the application of broadly appropriate "green revolution" plant and husbandry technologies. Therefore, Africa must take advantage of market mechanisms to mitigate production and commodity price risk. Unfortunately, the necessary transport and communication infrastructure to underpin efficient regional market integration is not in place, and governments often employ "on again, off again" import and export policies to address weather-induced food supply and demand imbalances. Thus, while increasing small farm productivity is necessary for broad-based economic growth, dynamic science and technology delivery, improved transport and communication in-

frastructure, market incentives, and consistent regional trade policies are also essential.

The Latin America and the Caribbean (LAC) region, on the other hand, is characterized by the highest income and asset inequality of any region in the world. Although 75 percent of the population is urbanized, rural areas are still home to the poorest of the poor, who have little or no access to new technologies and markets. And food insecurity remains high. In poorer, less urbanized countries, (e.g., some Central American countries and Haiti), where gross agricultural product comprises between 15 and 40 percent of total output, agricultural exports have the potential to contribute significantly to growth. Traditional commodity crops such as basic grains and coffee, however, are subject to severe price volatility. This leaves the rural poor struggling to adapt to market changes brought about by globalization. The proliferation of free trade agreements (FTAs) within the Western Hemisphere is expanding opportunities for the region's farmers and rural producers to increase incomes by reorienting their production toward newer, trade-led market opportunities.

Emerging Market and Trade Opportunities

World markets are far more integrated today than ever before. The volume of world agricultural trade has more than doubled since 1981, but some regions have lagged behind. Africa's share of agricultural trade, for instance, fell from a high of 8 percent in the 1960s to about 3 percent in 2001.¹ Globalization, trade liberalization, and lifestyle changes are creating new market

opportunities for agricultural goods. In the developed countries there is increased demand for variety, quality, niche products such as organic foods, and year-round availability. In the developing world, income growth, urbanization, and a shift away from staples consumption present new opportunities. Africa's 284 million urban residents present considerable potential to expand domestic and regional markets for higher-value crops, livestock products, and processed foods.

Even with these expanding opportunities, however, high transaction costs leave small-scale producers in isolated areas out of the market altogether. Poor infrastructure, particularly roads and communication systems, contributes to the weakness of rural markets. Weak institutions and inadequate information systems play an equally detrimental role. The regionalization and globalization of markets have brought to the fore new demands in the form of product quality specifications, food safety requirements, environmental concerns, and other emerging mandates which affect competitiveness. Problems associated with quality standards, timing, and supply are penalizing local products in domestic, regional, and international markets.

Africa is particularly vulnerable. Few African countries have the capacity to meet stringent international standards without investing more in production, processing, and packaging. Africa will need to raise its competitiveness in those commodities where it has a comparative advantage. These include traditional exports, such as cocoa and coffee, as well as new products for specialized niche markets, such as environmentally friendly or out-



of-season tropical products. This can be done by improving product quality and reducing input costs along the value chain.

Drawing on lessons learned and emerging market and trade opportunities, USAID is partnering with the Title XII and non-Title XII agricultural development community to alleviate the constraints to smallholders imposed by inadequate trade and marketing systems. These constraints are being addressed in the following ways:

1 INCREASING MARKET VOLUMES AND MARKET ACCESS OPPORTUNITIES

It is now widely recognized that policy reforms are necessary but not sufficient conditions for generating a greater supply response and increasing competitiveness in both domestic and export markets. Although market liberalization removed major distortions, it has proved disappointing for agricultural growth, export performance, and poverty reduction because it did little to ensure that smallholder farmers, particularly those living in remote areas, could benefit. Even in areas close to export and domestic markets, the response has been mixed because reforms have been incomplete or inconsistent. Domestic markets remain largely unable to deliver the production and income gains expected from market reforms. Many countries' marketing systems continue to be plagued by high transaction costs, scarce and asymmetric market information, limited transparency, and reduced access, especially by smallholders.

When markets work, producers respond. In Mali, for instance, the liberalization of the rice market led to a tripling of production during the 1990s as small-scale processors and traders successfully halved the marketing margin from producer to final consumer price. Similarly, the liberalization of dairy markets in Kenya led to dairy production becoming the fastest growing source of income for over 600,000 farmers. But when markets don't work, the effects can be devastating for smallholders. At the onset of trade liberalization in Cameroon, the entry of some 600 local exporters resulted in a fragmented private export sector for cocoa that proved less competitive on world markets and resulted in not only a loss of Cameroon's quality premium, but also a discount for its cocoa, ultimately reducing smallholder incomes.

To lessen market risks, USAID works with producer organizations to help farmer members aggregate their demand for inputs and sale of outputs. These organizations also reduce rural financial intermediate risks and costs, speed technology adoption, and spread marketing transaction costs across farmers, traders and processors. Private and public partnerships spring up, resulting in the joint management of trade risks and opportunities, with the ultimate result being more agricultural exports, more revenue, and more jobs.

Activities supporting increasing market volumes and market access opportunities are too

numerous to list here, but a few examples are presented below to illustrate the interventions supported by USAID.

Livestock and dairy

🌿 *Broadening Access to Sustainable Input Supply (BASIS) Collaborative Research Support Program (CRSP) scientists working with government officials established a common certification system for animal health that allows the free movement of livestock across Ethiopian, Kenyan, and Somalian borders. A livestock free-trade zone is under consideration.*

🌿 *Land O'Lakes has been helping producers improve the quality and quantity of milk and milk products in eastern Africa as part of the Dairy Initiative. In FY 2001, significant improvements in product quality and reductions in product losses were achieved, leading to increased sales of higher-quality milk. Working with a Kenyan processor, milk sales increased by 15 percent through new trade linkages. Supply linkages with technology-packaging industries resulted in the introduction of new yogurt packaging and increased exports. In Uganda, processing plants were reopened and farmers formed secondary cooperatives.*

🌿 *Eureka Chickens in Lusaka, Zambia, requested International Executive Service Corps (IESC) assistance and expertise to help develop and expand its markets. IESC*

worked with the company to develop new marketing strategies for branded products in urban areas and better management structures and financial management. Overall, these improvements have helped Eureka compete at the high end of the market and increase its market share by 4 percent and its sales by over \$21,000 in less than six months. The company was able to hire five more employees and train its management staff in modern management practices.

Forestry

- 🌿 The Armenia Agribusiness Small and Medium Enterprise (ASME) project facilitated over \$1 million in sales of value-added wood products to China through an Armenian/American Investors Conference. Held in New York in June 2001, the conference brought in dozens of U.S. investors to meet with ASME client firms in the processed food, beverage, and dairy industries.
- 🌿 Bolivia became the global leader in the management of tropical forests, with 884,980 hectares certified as sustainably managed. The value of certified forest product exports surpassed \$12 million, up 61 percent since 1999, and exceeded the 2000 target by 26 percent. In FY 2001, USAID supported six local producer groups and three indigenous groups in the development of forest management plans for over 285,000 hectares and helped them enter into strate-

gic alliances with the forestry industry to sell their products.

Horticulture

- 🌿 Egyptian export earnings from four major crops (French beans, table grapes, strawberries, and cut flowers) topped \$60 million during FY 2001, compared with less than \$10 million at project startup in 1996. Export development assistance through the Agricultural Technology Transfer Project provided training on cold storage, grading, and standards, resulting in world-class products.
- 🌿 Close to 60 Nicaraguan onion producers sent medium, large, jumbo, and colossal sweet onions to Keystone Marketing, Inc. of Pennsylvania, which supplies produce to Wal-Mart and other U.S. stores. These producers shipped more than 56,000 cartons of sweet onions, linking small agricultural cooperatives in northern Nicaragua to international markets, thereby raising their incomes.
- 🌿 A large Zambian agribusiness, Agriflora, has been linked with 250 small farmers through USAID's Zambian Agribusiness Technical Assistance Center. These small farmers produce high-quality vegetables that are exported to Europe by Agriflora. The result is an increase in these farmers' incomes of at least \$2000 per year. An assessment of donor programs by the British Commonwealth described this USAID project as a leading model of "wealth-creating" activities.

Food and Export Commodities

- 🌿 Over 30,000 Haitian farmers are now exporting high-quality mangoes, coffee, and cocoa, surpassing USAID project targets. In addition, nearly 250,000 farmers are using conservation measures to preserve the environment and regain the use of unproductive land.
- 🌿 In response to a long-term drought in Umutara, Rwanda, USAID provided seeds, tools, fertilizer, and training to community associations. The results of the first two harvest seasons were remarkable—lands once considered useful only for grazing now produce up to two metric tons of maize per season. Many households are earning over \$400 per harvest in a region where herder households are fortunate to earn half that amount.
- 🌿 Farmers in Malawi are adopting improved varieties of sweet potatoes and cassava with superior disease resistance and drought tolerance. These new varieties were developed by the Southern Africa Root Crops Research Network (SARRNET) through USAID support. Increased sweet potato and cassava production from these varieties has created off-farm employment and small enterprise development. In one instance, a Malawian trader delivers a daily load of 1.5 metric tons of cassava to a street food market, generating work for a driver and two assistants at the market, while

at the farm level, six men and four women are employed on a seasonal basis.

Market Capacity Building

- ☛ *Expanded market linkages for producers of highland and jungle crops and selected manufactured products have resulted in a \$14 million increase in sales by Peruvian micro-entrepreneurs and farmers.*
- ☛ *In Bolivia, USAID is supporting The Amazonian Center for Sustainable Forest Enterprise (CADEFOR). This local NGO enables businesses and local communities to make business contacts and seek markets for mostly certified forest products, provides technical assistance covering production and administrative processes, and helps disseminate forest product and market information.*
- ☛ *In Russia, USAID continues to implement the Program to Revitalize Agriculture through Regional Investment (PRARI). This activity seeks to improve the agribusiness investment climate in selected regions via the development of policies and institutions that are conducive to investment and trade in agriculture. In addition, this activity is identifying viable investment opportunities at the regional level and facilitating partnerships between U.S. and Russian private agribusinesses.*

2 NEW PRODUCT DEVELOPMENT AND AGRO-SERVICES

Developing countries heavily dependent on a few traditional agricultural export crops are vulnerable to commodity price fluctuations. During 2000 and 2001, for example, coffee prices dropped to their lowest levels in 30 years due to a worldwide oversupply. In many cases, prices plummeted below the cost of production, causing serious hardships to farmers. The coffee crisis critically affects rural poverty, since unlike other commodity plantation crops such as sugar or oil palm, the bulk of coffee producers are smallholders living in remote rural areas. USAID is enabling affected smallholders to compete in the high-quality segments of the coffee market by supporting activities to enhance coffee quality and productivity, improve business practices and linkages, and promote value-added transformation. USAID is assisting those farmers who cannot compete to diversify into other agricultural and non-agricultural alternatives including value-added niches (e.g., fruits and vegetables) and environmental services when the potential for producing quality coffee is lacking.

Moving from traditional crops to value-added niche production can be complex. A 1993 competitiveness study found that Morocco had a comparative advantage in strawberry production and export. Unfortunately, poor product quality and expensive planting

material constrained export profitability and growth. The problem lay with farmer access to good planting material. Spanish plant material suppliers refused to pay royalties to improved plant variety patent holders. As a result, these suppliers provided Moroccan producers with second-quality stock. USAID-supported technical assistance put Moroccan producer and export associations and agriculture ministry staff in contact with high-quality plant material suppliers in California and Florida, developed pre-shipment quality control procedures, and lined up export financing for U.S. suppliers. The first shipment of 5 million strawberry plants arrived with almost 100 percent survival, and Morocco was on its way to increased strawberry production and improved quality. Improved quality and productivity, access to improved varieties, and marketing assistance moved Morocco from near-zero export market share to major player status in the European fresh strawberry market.

USAID support for new product development and agro-services covers a wide variety of activities. The examples below illustrate the scope of Agency interventions.

- ☛ *Smallholder farmers in South Africa have supplied markets with 45 tons of export quality honeybush tea under the Agribusiness in Sustainable Natural African Plant Products Project (ASNAPPP).*

☛ *Urea briquettes are being produced by simple briquetting machines, which local machine shop operators can manufacture. The International Fertilizer Development Center (IFDC), through its Adapting Nutrient Management Technologies (ANMAT) project, involves the private sector in the production and marketing of this new fertilizer technology. IFDC provides engineering drawings to interested merchants who purchase the briquetting machines to produce and sell briquettes locally. The project creates a self-sustaining fertilizer market in numerous developing countries in a sector previously under government control.*

☛ *Cowpea-based convenience foods for children and adults are being developed by Bean/Cowpea CRSP food scientists at the University of Georgia and the University of Ghana-Legon. The target markets for these new foods are West Africa and the United States. Initial consumer testing of a nutritious cowpea-based product resembling pork rinds indicates a potential market among certain ethnic groups. A private U.S. food processor has expressed interest in licensing and marketing the product.*

3 TARGETING INPUT MARKETING CONSTRAINTS

Technology is an important source of farm productivity in all developing countries. Even in the poorest and most remote rural areas, global technical

change can have a significant impact on daily life. One of the most difficult challenges that USAID faces is the growing gap in technology innovation and adoption between developed and developing countries.

The delivery systems that provide physical and financial inputs to farm families determine whether productivity-enhancing technologies result in lower-cost farm products and whether farm families earn higher profits. Delivery systems are not stand-alone chains; they are affected by a country's macroeconomic management (interest rates on trade and product credit), laws (plant variety protection), land tenure (securing availability of land), information dissemination (extension, post-harvest handling), infrastructure quality, agroclimate, and ability to adopt technology. Moreover, in deciding whether to adopt technology, farmers weigh an array of climatic, social, economic, and cultural risks. USAID's approach incorporates input systems within the commodity chain. In many cases, USAID encourages output processors to lend inputs to farmers, with eventual "in-kind repayment" at harvest time. This approach has yielded success but entails significant contract enforcement risks. USAID, in partnership with U.S. cooperative development associations, has also developed techniques for linking producer organizations with commercial sources of production and trade finance. This has often occurred as part of a longer-term NGO-farmer relationship that includes

technology dissemination, business training, democratic group decision making, and linking farmers with exporters and processors. Longer-term NGO-farmer technology dissemination relationships have been identified as an essential element in USAID's agribusiness development strategy.

The activities below illustrate the range of activities that the Agency has supported in targeting input marketing constraints:

☛ *Many resource-poor farmers in Honduras were found not to be adopting improved varieties because they had not heard of them or could not access the seeds, according to surveys conducted by Bean/Cowpea CRSP researchers at Michigan State University in collaboration with the Escuela Agrícola Panamericana-Zamorano. The Honduran bean seed system turns out to be highly underdeveloped and continues to be a constraint for the diffusion of improved bean varieties. The identification of these market constraints will allow USAID to design appropriate interventions for resource-poor farmers.*

☛ *Under a new loan scheme, Zambian smallholder households procure irrigation equipment for year-round production of vegetables for the European market. In only three months of operation, and while learning the technology, farmers marketed \$124,000 worth of baby corn, peapods, and runner beans. This activity*

is part of the Zambia Agribusiness Technical Assistance Center (ZATAC) and the Cooperative League of the USA (CLUSA) horticultural project.

🌿 *USAID Africa Bureau's quest to bring new input technologies to rural communities resulted in a grant to Stellenbosch University, South Africa, to develop low capital input hydroponic production technologies for small-scale black South African farmers. Collaborating with the Intensive Agriculture Producers Association of South Africa, the Department of Agronomy is focusing on developing the technology for the production of herbs, fruits, and vegetables.*

4 DEVELOPING MARKET INFORMATION SYSTEMS AND AGRIBUSINESS AND PRODUCER ASSOCIATION NETWORKING OPPORTUNITIES

Market information systems collect and disseminate price and supply information to traders, analysts, and policy makers. Traders employ market information in deciding where to source and sell a commodity. Analysts and policy makers employ price and supply information to determine if liberalization is having its intended impact on consumers. Frequently, national governments threatened with weather-induced transitory food insecurity use market information to identify where food insecurity is most prevalent and food crop prices most volatile. Farmers are probably the most neglected participants in the market information network.

Although innovative radio dissemination programs have succeeded in some countries, rural household access to useful market information is stymied by illiteracy and innumeracy, sparse media coverage, misunderstandings on price determinants, unstandardized packaging, lack of negotiating capacity, inadequate storage facilities, and other factors.

Against this backdrop of incomplete national market information systems, the importance of regional and international market information has grown. USAID has pioneered some forms of regional market information, such as the Famine Early Warning System (FEWS) and dissemination of consumer market prices in southern and eastern Africa. Individual projects, such as the Kenya Export Development Support Project, also try to impress upon local business associations and policy makers the importance of international, high-value crop market information. Nonetheless, widely available and accurate domestic, regional, and international market information is still an important goal. As trade liberalization integrates developing-country producers and consumers into global markets, additional market information will be required. Market information needs range from consumer preferences for production practices that follow certain environmental, labor, genetic modification, or organic standards to fair trade and niche markets. The risk that developing country market information systems will not keep up with

evolving global markets is real and an important investment challenge for USAID.

Marketing information systems are necessary, but not sufficient, to enable small-scale producers to participate in these emerging market and trade opportunities. To encourage rural household and private firm involvement in local, regional, and, to an increasing extent, international governance (through such mechanisms as the WTO and bilateral and regional trade agreements), USAID encourages business and producer association development and the participation of business and producer associations in public sector-private sector policy dialogue.

Most developing country firms must cooperate to compete profitably in international markets. Cooperation can increase technology use, speed market penetration, attract investment, facilitate contract enforcement, and achieve more favorable policies. Business and producer associations foster this cooperation. Public sector-private sector forums, where farmer representatives, NGOs, business and producer associations, governments, and donors talk about lessons learned, investment ideas, and domestic and international policy, are also encouraged. Zambia's Agricultural Consultative Forum is a good example of public sector-private sector alliances. Formed in 1998, the forum is co-chaired by Zambia's agriculture ministry and the national farmers union. Participants include business



and producer association representatives, donors, and national NGOs. Demand-driven policy research and analysis, to inform consultative forum deliberations, is provided by Michigan State University. The forum mobilizes and coordinates investments, recommends policies, fosters new public sector-private sector-donor partnerships, and shares information. It has resulted in greater understanding among investors interested in rural economic growth and market competitiveness.

During 2001, USAID supported the following market information system and agribusiness and producer association networking activities:

- 🌾 *Pastoral herders in East Africa began receiving critical market and climate information through the Global Livestock Collaborative Research Support Program (GL CRSP) Livestock Early Warning System (LEWS) led by Texas A&M University. The system reduces drought and market-induced risk to livestock producers and improves production efficiencies.*
- 🌾 *Advisory councils were established in Mexico and Uganda to promote agriculture as a vehicle for trade and economic growth through strengthened ties between higher education and the agribusiness sector. Agribusiness degree programs are being developed to meet local needs. The advisory councils work with the Association Liaison Office for International Development and the Ohio State University in partnership with Makerere University in Uganda and Mexico's Colegio de Posgraduados en Ciencias Agrícolas.*
- 🌾 *Decision makers in Albania believe that agribusiness is critical to the country's economic future and that Albanian products can compete with imported products and in selected export markets. The Assistance to Albanian Agricultural Trade Associations (AAATA) project, sponsored by the International Fertilizer Development Center (IFDC), aims to strengthen the Albanian agribusiness sector by increasing agricultural production and processing, helping trade associations, and increasing exports. The project has successfully established eight agricultural trade associations.*
- 🌾 *Trade of approximately 50,000 metric tons of cereals within West Africa and the export of 500 head of Malian livestock to Guinea was facilitated by the West Africa Traders Network, a business forum for exchanging market information, assessing the food situation, and initiating commercial negotiations. The network reduces transaction costs and other impediments to trade. It represents a major step forward in regional economic integration.*
- 🌾 *Improved agricultural marketing in Peru is the goal of PRISMA, an NGO supported by USAID. PRISMA creates farmer organizations and establishes market information systems to provide farmers with Internet access to market pricing, packaging, and buyer information. In FY 2001, PRISMA assisted 793 farmer organizations, facilitating market participation by over 13,000 food-insecure farmers, resulting in productivity gains and price increases averaging 30 percent.*
- 🌾 *Working closely with African businesses, the Africa Trade and Investment Initiative (ATRIP) has helped create many promising agribusiness trade linkages. ATRIP also supports the creation of a business environment conducive to economic growth in the private sector.*
- 🌾 *Connecting agricultural and environmental research networks together using Internet technologies is supported by AfricaLink. In 2001, 521 scientists and researchers were connected, for a total network of 2,083. Information management and exchange were enhanced through a website development workshop to assist ten national agricultural research systems (NARS) in getting their research information online.*

5 STANDARDS AND QUALITY

Small-scale agricultural producers can increase their production incomes in the long run through increased sales of high-value commodities such as higher-quality livestock, dairy products, fish, fruits, vegetables, spices, and ornamentals. Products such as these are typically perishable, must meet high standards of quality, and are increasingly sold through specialized markets with direct links to consumers. Access by small-scale producers to these markets is increasing rapidly. However, these markets are also becoming vertically integrated, requiring small-scale producers to meet the same quality standards as larger, commercial farms. USAID and its Title XII partners are helping to address these emerging constraints by increasing assistance to rural producers and developing countries.

In addition to quality standards, the Agreement on the Application of Sanitary and Phyto-Sanitary (SPS) Measures ensures that scientific measures are used to protect human, animal, and plant health. Sanitary and phyto-sanitary measures protect against risks associated with plant or animal-borne pests and diseases, additives, contaminants, toxins and disease-causing organisms in food, beverages, and feed stuffs. Meeting these requirements of import markets is an important first step that producers and countries must take to sell agricultural commodities in export markets. USAID provided \$12.3 million between 1999 and

2001 to strengthen sanitary and phyto-sanitary measures in developing and transition countries. This assistance supported activities to establish process and production methods; testing, inspection, certification, and approval procedures; statistical methods and sampling procedures; risk assessment methods; and quarantine treatment.

Illustrative activities supporting standards and quality capacity building include:

- ☛ *Reducing insecticide treatments, and, thereby increasing farmers' ability to meet critical marketing standards for onions and other produce, is being researched by the Integrated Pest Management Collaborative Research Support Program (IPM CRSP) in the Philippines. Results to date show that the amount of insecticide applied against the onion cutworm (*Spodoptera litura*) was substantially reduced when insecticide sprays were properly timed using sex pheromone-baited traps. A single application at the proper time produced the same yield as weekly sprays.*
- ☛ *An international sanitary and phyto-sanitary standards awareness and capacity building project in East, West, and South Africa was implemented under the Africa Trade and Investment Initiative (ATRIP) using \$1.2 million in leveraged funds and \$200,000 from USDA. During 2001, a training workshop in pest risk assessment brought together over*

100 African policy and technical officials.

- ☛ *Gall midge interceptions at Jamaica's two ports of exportation decreased from over 100 cases in 1998 to just one case in 2000. Gall midge is a pest of hot peppers in the Caribbean, and infestations have disrupted exports to the United States and other countries in recent years. This success was made possible by the Integrated Pest Management Collaborative Research Support Program's (IPM CRSP) research and training on gall midge control.*
- ☛ *Standard operating procedures were created for sending, receiving and analyzing plant materials from Africa to the U.S. market. Natural product small-scale commercial farmers were trained in Ghana and South Africa as part of the Agribusiness for Sustainable Natural African Plant Products Project (ASNAPPP).*
- ☛ *Tanzania's Sokoine University of Agriculture provided training facilities for 16 people on phyto-sanitary services. This short course on strengthening phyto-sanitary services and distributing disease-free crop seed was organized in collaboration with the UN Food and Agriculture Organization (FAO) and the Tanzanian Ministry of Agriculture. It used a biotechnology laboratory at Sokoine equipped by the Bean/Cowpea Collaborative Research Support Program (CRSP).*

🌿 *The first strategic plan for the Guyana National Bureau of Standards, a key institution for helping Guyana meet sanitary and phyto-sanitary requirements under the WTO and the planned Free Trade Area of the Americas (FTAA), was developed with USAID assistance.*

6 TRADE-RELATED CAPACITY BUILDING²

USAID is committed to working in partnership with developing countries and transition economies to remove obstacles to development, among which are barriers to trade. Trade positively affects economic growth because it provides access to imported inputs and new technology; utilizes a country's comparative advantages; allows producers to exploit economies of scale; opens production to international competition, thereby stimulating innovation; and provides consumers with access to a greater variety of products at lower prices. USAID recognizes that increased multilateral trade liberalization via a rules-based trading system must be coupled with trade capacity-building measures. Agriculture is a large part of the national economy of many developing and transition countries, and agricultural trade is correspondingly important to their economic growth.

Local, regional and international trade has expanded dramatically in countries where trade liberalization has occurred and has stalled in those countries that maintain tariff and other non-tariff barriers to trade for

import or export. In tandem with trade expansion and removal of trade barriers, conditions in developing countries are indeed improving: the total food available has increased 27 percent worldwide since 1960 and the number of malnourished children (under 5) has dropped by 37 million since the 1970s, representing a decrease from 47 to 31 percent in the fraction of young children who are malnourished.³ While food in developing countries still comes predominantly from local production, domestic, regional and international food trade are now instrumental in reducing or eliminating chronic seasonal food shortages. The expansion of trade has significantly reduced the cost of purchased food for all segments of society.

USAID activities focus on trade capacity building with a particular emphasis on the World Trade Organization (WTO) Agreement on Agriculture, bilateral and regional trade agreements and trade facilitation.

WTO Agreement on Agriculture

Agricultural trade issues played a central role in the GATT Uruguay Round of trade negotiations. Each signatory country made a number of commitments on market access, reduced agricultural support levels and reduced export subsidies. WTO members also agreed to reduce the value of direct export subsidies. In the case of developing countries, the reductions are two-thirds those of developed countries over a ten-year period, with no reductions applying to the least developed countries.

🌿 *USAID provided \$15.6 million to assist developing countries in complying with their commitments under the WTO Agreement on Agriculture between 1999 and 2001. Assistance supported data gathering and analysis critical to determining levels at which tariffs should replace non-tariff barriers and aided in the crafting of national legislation on agricultural imports and exports that is WTO-consistent.*

🌿 *In 2001, the U.S. government undertook a survey of its FY 1999-2000 programs and activities that promote trade-related capacity building in developing countries and transition economies around the world. Details of survey findings were presented at the 4th WTO Ministerial in Doha, Qatar, in November 2001. This report dramatically outlines how building the capacity of developing and transition countries to address trade issues has a significant impact not only on agricultural performance but also on overall economic performance.*

As a result of commitments made by U.S. and other international donors at Doha, the need for current trade capacity-building data and a focus on trade for development has become dramatically clear, especially in the realm of agriculture, where a new round of international agriculture negotiations has been launched.

Bilateral and Regional Trade Agreements

The African Growth and Opportunity Act ✦ AGOA ✦

First implemented in May 2000, AGOA provides select sub-Saharan African countries with duty-free, quota-free access to the U.S. market for a wide variety of commodities.

- ✦ *In 2001, African exports related to AGOA reached over \$7.5 billion. Imports of textiles and apparel from sub-Saharan Africa grew by more than 25 percent, although benefits were confined to only a few countries (Nigeria, South Africa, Angola, and Gabon).*
- ✦ *In 2001, USAID worked closely with regional organizations such as COMESA and ECOWAS to significantly increase awareness of AGOA and the potential of tapping into U.S. markets.*
- ✦ *At the annual AGOA consultation in Washington in Sep-*

tember, 2001, President Bush announced that USAID would establish three regional trade “hubs” for improving competitiveness in Africa. These hubs are to enable many sub-Saharan Africa countries to address the constraints that keep them from taking full advantage of opportunities such as AGOA: poor access to finance, lack of market intelligence, and limited capacity for exporting non-traditional goods.

There has been a significant push to expand AGOA's application to African agriculture. The real impact on poverty of increased trade with the U.S. will be seen only after such changes are in place, since most of the poor depend predominantly on agriculture.

Free Trade Area of the Americas

✦ FTAA ✦ Progress has continued on drafting the text for the FTAA chapters. When fully implemented in 2005, the FTAA will include over 34 countries and 800 million people. In FY 2000, USAID approved a Special Objective to

assist developing countries in maintaining their participation in the FTAA process. In FY 2001, USAID launched activities funded under this Special Objective.

- ✦ *In FY 2001, the FTAA approved guidelines aimed at promoting the participation of smaller and less developed countries in the free trade process. The FTAA Consultative Group on Smaller Economies works to ensure that the concerns and interests of smaller economies are addressed and included in all negotiations, determines small economies' needs for FTAA trade-related technical assistance, and facilitates the mobilization of donor, public, and private support for trade capacity building under the FTAA Hemispheric Cooperation Program. The Group has also established publicly accessible databases on its findings and has created a Trade Education Database (TED) of training opportunities.*

Trade Facilitation

The trade and investment environment comprises trade and investment institutions, processes, personnel, and policies; trade support infrastructure, such as customs; transportation infrastructure; the tax system; the financial sector; standard-setting organizations; land and labor policies; and the general commercial and regulatory environment. In various ways, and to varying extents, this environment constrains the competitiveness of producers. Trade facilitation seeks to reduce the constraints that limit a country's competitiveness.

Working with both the public and private sectors, USAID programs strengthen the capacity of public agencies to design and implement sound policies that promote economic growth and to provide reliable and timely market information and statistics; foster representation of private trade associations; build linkages between developed country enterprises and companies and associations in developing countries and transition economies; bring information technology within reach of small entrepreneurs; and promote technology transfer and adoption of standards.

Illustrative trade facilitation activities include:

- ☛ *An analysis of the impact of rice tariffs on the rural and urban poor in Indonesia, undertaken by the Indonesia Food Policy Support Project, provided the Government of Indonesia with information to support the reduction of tariffs.*
- ☛ *In Mali, the USAID Office of Development Credit, the Banque Internationale pour le Commerce et l'Industrie au Mali (BICIM) and Bank of Africa (BOA) set up a Portfolio Guarantee system. Partial guarantees made available to BICIM and BOA assist in mobilizing credit for medium and large agribusinesses operating in Mali. The guarantee stimulates the growth of lending in the agricultural sector by demonstrating that lending to agribusiness can be profitable when risk is prudently managed.*
- ☛ *The Market Access Program (MAP) provides support for policy development in areas affecting the private sector. Support activities include strengthening institutions, increasing adherence to international product standards, establishing internationally accepted trade data collection procedures, and supporting advisory services to develop and implement a policy agenda for the private sector. In the West Bank/Gaza, one of MAP's focuses is wood products and agriculture.*
- ☛ *Through the newly launched Global Alliance for Improved Nutrition (GAIN), local food manufacturers will be more competitive in domestic and export food markets. Working in all regions, GAIN is assisting local industry in building capacity to produce nutritionally enhanced and thus more competitive food products. Specific GAIN fortification activities include helping countries to implement commercially sustainable programs for fortification; develop recommendations, guidelines, and standards for export food commodities; develop legislation, regulations, policies and regulatory control programs for food fortification, both locally and cross-border; train local food companies in fortification processes and business practices; provide quality control and monitoring systems; develop monitoring*
- ☛ *The Integrated Pest Management (IPM) CRSP is working on institutionalizing Guatemala's certified pre-inspection program for trade expansion in the NTAE sector. Activities include the development of performance protocols, source tracking, and enforcement policies; technology transfer; and grower training. Research undertaken by IPM CRSP scientists has reduced reliance on chemical pest control, improved economic returns to growers, and enhanced the incomes of non-traditional agricultural export sector households.*
- ☛ *Country-level programs are encouraging private firms to make use of programs such as USAID's Global Technology Network (GTN) and providing training at the firm level on basic export practices and marketing strategies.*



systems for fortified foods; and support social marketing activities to promote consumer acceptance.

In 2001, USAID Launched the Partnerships for Food Industry Development (PFID), a collaborative assistance program between U.S. universities and the food industry designed to strengthen food industries in developing countries and promote their producers' effective participation in the global trading system. These partnerships provide a range of specific tools to help farmers, fishermen, herders, and other USAID beneficiaries better meet the challenge and reap the benefits of participation in global trade.

Louisiana State University and Michigan State University are partnering with the private sector and non-governmental organizations to help small-scale producers access markets in meat and seafood and fruit and vegetables, respectively. Michigan State University has been particularly successful in identifying market opportunities via retail and supermarket chains. The extremely rapid rise of supermarkets in developing countries in only a single decade represents a sea change with profound implications for poor rural households and small farms and firms. Linking small farms and firms to supermarket chains is an ongoing activity in Latin America, East/Southeast Asia, Eastern/Southern Africa, and Central/Eastern Europe.

Markets and Trade: Future Directions

USAID programs have been effective in addressing the trade and marketing constraints faced by agricultural producers and rural industries in developing and transition countries. However, there is still much work to be done. At the World Food Summit: *Five Years Later*, the United States committed to expand farmers' commercial opportunities to ensure adequate returns and to improve international trade opportunities. In partnership with other countries, USAID committed itself to improving domestic market and international trade opportunities in the following ways:

- 🌿 *Promote the effective functioning of markets for inputs and products by*
 - *facilitating free entry and exit of firms to markets;*
 - *supporting interventions to strengthen women's participation in markets;*
 - *ensuring honest weights and measures and other standards of commerce;*
 - *facilitating accurate, prompt, and open exchange of price and other market information; and*
 - *expanding technical assistance to address sanitary, phyto-sanitary (SPS), and hazard analysis and critical control points (HACCP)/ food safety issues.*

- 🌿 *Support technologies and practices that reduce food waste and post-harvest losses and that improve efficient storage and distribution systems.*

- 🌿 *Encourage value-chain analysis for commercial markets.*

- 🌿 *Provide policy analysis and project assistance to governments and to the business development sector as well as agricultural producers to strengthen market and trade capacity to respond to domestic, regional, and global trade opportunities.*

Over the next year, USAID intends to expand on the directions of the draft interim agriculture strategy with stakeholder consultations with its Title XII partners. These consultations will provide guidance to the Agency as it refines the strategic themes. The next Title XII report will focus on theme four: Promoting sustainable agriculture and sound environmental management. The report will also highlight USAID's World Summit on Sustainable Development (WSSD) commitments in the Water Initiative, the Initiative to End Hunger in Africa (IEHA), and the Geospatial Information for Sustainable Development (GISD) Partnership.

Endnotes

¹ FAOSTAT data, 2002, www.fao.org/waicent/portal/statistics_en.asp/.

² The table at page 26 provides a breakdown by country of USAID funding to trade-related capacity building. This list is not comprehensive. Other trade capacity-building activities not coded as agricultural activities may also be important for agricultural trade.

³ Diaz-Bonilla and Thomas, "Trade and Food Security", 2020 Focus 8:4/13, Aug 2001, IFPRI.

USAID SUPPORT (US\$) TO AGRICULTURE-RELATED TRADE CAPACITY BUILDING BY COUNTRY AND REGION

COUNTRY	1999	2000	2001
Albania			42,600
Armenia	101,000	5,040,000	1,760,000
Azerbaijan	0	2,400,000	0
Bangladesh	0	1,300,000	896,500
Bolivia	0	0	1,200,000
Bulgaria	224,280	160,500	155,870
Ecuador	56,000	50,000	65,000
Egypt	133,000	8,928,000	8,162,000
El Salvador	0	0	1,742,180
Georgia	0	0	1,308,000
Ghana	7,215,448	7,010,510	1,081,713
Guatemala	220,000	180,000	225,000
Haiti	6,800,000	7,500,000	5,800,000
Honduras	359,946	2,884,508	3,332,423
Indonesia	137,246	232,183	334,695
Jamaica	156,000	96,000	309,390
Kenya	0	550,000	50,000
Lebanon	0	4,910	72,160
Macedonia	0	12,000	45,000
Madagascar	377,500	433,300	301,000
Mali	2,407,050	5,144,000	1,437,000
Moldova	0	0	50,000
Mongolia	0	0	132,131
Mozambique	2,492,200	2,205,000	0
Nepal	15,000	15,000	15,000
Philippines	483,800	1,289,000	5,123,250
Romania	399,707	699,816	699,989
Russia	383,000	350,000	0
Senegal	0	250,000	1,037,600
Serbia	0	0	161,000
South Africa	67,500	84,000	96,050
Sri Lanka	16,400	124,800	10,000
Uganda	36,000	39,000	517,500
Ukraine	0	0	50,000
West Bank/Gaza	0	0	669,450
Windward Islands	200,004	75,946	0
Zambia	1,200,000	1,200,000	1,720,480

USAID SUPPORT (US\$) TO AGRICULTURE-RELATED TRADE CAPACITY BUILDING BY COUNTRY AND REGION
(CONTINUED)

REGIONAL PROGRAMS	1999	2000	2001
Andean Pact	0	0	290,094
COMESA	80,000	720,000	0
Caribbean	0	0	185,345
Global	500,000	647,840	561,600
Sub-Saharan Africa	5,461,372	6,068,000	3,351,500
Western Africa	0	0	735,520
USAID TOTALS			
Agreements on Agriculture	2,245,878	9,315,602	4,000,709
Sanitary & Phyto-Sanitary Measures	962,522	4,888,706	6,462,141
Agriculture	26,314,052	41,490,005	33,264,190
Total	29,522,452	55,694,312	43,727,041

Source: 2001 USG TCB Survey, Development Information Services.

TCB Database: <http://quesbd.cdie.org/tcb/index.html>.

Reported in US dollars.



ANNEX ONE

BIFAD Report: Activities and Recommendations

The Board for International Food and Agricultural Development (BIFAD) is a White House-appointed board authorized by Title XII of the Foreign Assistance Act, as amended. The Board's responsibilities include participating in the planning, development, and implementation of, initiating recommendations for, and monitoring the activities of Title XII. BIFAD advises and assists the Administrator of USAID as requested.

BIFAD members are selected from universities, agribusinesses, private voluntary organizations and foundations. The Board normally meets at least twice a year. The single meeting of 2001 (the 134th) was held March 29-30, with the Collaborative Research Support Programs (CRSPs) to discuss globalizing university contributions to a "new agriculture". Chairman G. Edward Schuh's remarks and summary of Board recommendations were printed in the 2000 Title XII Report, *Agriculture in the New Century*.

USAID's recommendations for a new BIFAD were sent to the White House by the Administrator late in 2001. When the President's appointments are announced, BIFAD will resume its role.

BIFAD committees have remained active. They are the Strategic Partnership for Agricultural Research and Education (SPARE) and the Food Security Advisory Committee (FSAC), which was created to advise the Interagency Working Group (IWG) on Food Security on its policies and positions in preparing the U.S. Action Plan on Food Security. FSAC is comprised of BIFAD members and representatives of civil society.

FOOD SECURITY ADVISORY COMMITTEE (FSAC)

FSAC met twice during 2001, in March and September, in preparation for the World Food Summit: *five years later* (WFS:fy).

Recommendations from the Meeting of the Food Security Advisory Committee

September 19, 2001

The U.S. Food Security Advisory Committee (FSAC) met on the above date in the expectation that there was to be a meeting of the Interagency Working Group (IWG) shortly thereafter. That meeting was cancelled, but the events leading to its cancellation added importance to the issue of global food security.

On September 19, FSAC members heard the results of the recently completed study assessing the U.S. government's follow-up to the 1996 World Food Summit. The study identified a number of limitations with the U.S. follow-up to the Summit. In addition, the Committee heard the results of a second study identifying the costs and benefits of food security measures. FSAC recommended that the results of these two studies be considered when the IWG prepared the U.S. Action Plan on Food Security.

STRATEGIC PARTNERSHIP FOR AGRICULTURAL RESEARCH AND EDUCATION (SPARE)

SPARE is a recently created subcommittee of BIFAD which reports to both BIFAD and the National Association of State Universities and Land Grant College's (NASULGC) Board on Agriculture (BOA). This arrangement provides a direct linkage for NASULGC member institutions to USAID on issues of concern to the U.S. university community with respect to its relationship to the Agency.

The primary objectives of SPARE are to improve communication and broaden the basis for involvement of the U.S. university community in the activities of USAID through BIFAD. SPARE collaborates with USAID staff and BIFAD to recommend priorities, review ongoing CRSPs and other activities, and provide reports to

ANNEX ONE: BIFAD Report: Activities and Recommendations *continued*

USAID and BIFAD on those reviews. The scope of the partnership's activities includes food security, agricultural modernization, nutrition, rural development, natural resources, food systems, agribusiness, agricultural trade, intellectual property rights, and sustainability.

The Charter for SPARE was signed in June 2000 after extensive review in the Agency. The USAID Administrator made initial appointments to the six-member SPARE in September 2000. The following individuals were founding members of SPARE: Emmanuel Acquah (University of Maryland, Eastern Shore); David Atwood (Office of Agriculture and Food Security, USAID); Robert Evenson (Yale University); Terry Hardt (Office of Agriculture and Food Security, USAID); David Sammons (Purdue University); Dennis Weller (Africa Bureau, USAID). David Sammons was elected Chair of SPARE and Terry Hardt was elected Vice Chair for 2000-2001.

SPARE MET FIVE TIMES DURING FY 2001:

- 🌿 *In October 2000 and January 2001, SPARE held organizational meetings to develop SPARE review guidelines for CRSP reviews and identify future SPARE agenda items and activities.*
- 🌿 *In February 2001, SPARE held a two-day meeting to review the BASIS CRSP for a five-year extension and receive a briefing from the Agency on non-CRSP USAID agricultural and related activities.*
- 🌿 *In March 2001, SPARE held a two-day meeting to review the INTSORMIL CRSP and Peanut CRSP for five-year extensions.*
- 🌿 *In August 2001, SPARE held a two-day meeting to review ongoing agricultural activities in USAID and discuss new challenges and opportunities for the U.S. university community and the proposed Agency response. SPARE forwarded its recommendations for improving the Agency response to BIFAD.*

ANNEX TWO

FY 2001 Agricultural Obligations

Overview

Agricultural activities at USAID are carried out in accordance with the strategic priorities of its regional and functional bureaus. The four regional bureaus are Africa, Latin America and the Caribbean, Asia and the Near East, and Europe and Eurasia. The functional bureaus include the Global Bureau, the Bureau of Humanitarian Response, and the Bureau of Policy and Program Coordination. The relevant activities of the Global Bureau, the Bureau of Humanitarian Response, and the four regional bureaus in FY 2001 are summarized in the following subsections. The Bureau for Policy and Program Coordination's funds are used for food security and agricultural research and analysis.

During FY 2001, USAID invested approximately \$303

million in activities that address the objectives of the 1961 Foreign Assistance Act and Title XII, through the Development Assistance (DA), Child Survival and Development (CSD), Development Fund for Africa (DFA), Economic Support Fund (ESF), Assistance for Eastern Europe and the Baltics (AEEB) and the Freedom Support Act (FSA) accounts. Recorded obligations for agriculture programs in the last four years remained relatively stable. Development Assistance accounted for about 53.4 percent of the total, and the Economic Support Fund provided 29.2 percent, with the balance coming from the special Europe and Eurasia regional accounts. Title II (P.L. 480) obligations were funded separately through the Farm Bill.

TABLE 1: USAID AGRICULTURE OBLIGATIONS BY BUREAU, 1995-2001 (THOUSAND \$)*

Bureau ¹	FY 95	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
AFR ²	111,734	80,123	80,186	77,912	83,161	97,734	102,187
ANE	114,329	93,569	56,828	131,906	130,420	113,710	86,122
E&E	60,983	32,109	31,525	34,200	40,938	32,432	48,800
LAC ³	50,182	32,682	28,958	27,478	34,867	34,341	24,864
G ⁴	85,016	64,040	42,663	37,738	38,777	29,518	35,171
BHR ⁵	12,286	5,302	2,736	4,239	1,941	2,083	5,957
PPC	0	0	1,858	2,300	3,100	406	414
Total	434,530	307,825	244,754	315,773	333,204	310,224	303,515

*Data for FY 1995 through FY 2000 are from FY 2000 Title XII Report to Congress. Data for FY 2001 are from the bureaus. Obligations include new obligating authority from Development Assistance and other appropriations, carryover, and recoveries. The table does not include International Narcotics Control funds, funds for sustainable agriculture activities coded as environment activities, funds obligated under Title II (P.L. 480) or funds from the International Disaster Assistance account.

¹ AFR- Africa, ANE-Asia and Near East, E&E-Europe and Eurasia, LAC-Latin America and the Caribbean, G-Global, BHR-Bureau for Humanitarian Response and PPC-Policy and Program Coordination.

² FY 1999 updated figures.

³ FY 1998, 1999 and 2000 updated figures.

⁴ Global Bureau began obligating for sustainable agriculture activities coded as environment activities in FY 1992. In FY 1995, the Global Bureau's obligations for sustainable agriculture activities coded "environment" were \$23,563,000; in FY 1996, \$16,195,000; in FY 1997, \$11,457,359; in FY 1998, \$15,478,017; in FY 1999, \$13,161,056; in FY 2000, \$27,880,711; and in FY 2001, \$25,470,000. These amounts are not included in the table above.

⁵ Not included are BHR obligations under P.L. 480 (see table 7), which was re-authorized in the 1996 Farm Bill, or obligations from the International Disaster Assistance account, which funds OFDA agricultural activities.

ANNEX TWO: FY 2001 Agricultural Obligations

continued

Global Bureau

The Global Bureau houses a number of USAID's technical offices. While most of the Agency's agricultural programs are carried out by the Office of Agriculture and Food Security (AFS) in the Center for Economic Growth and Agriculture Development (EGAD), the Center for the Environment and the Center for Human Capacity Development also house a few agricultural activities, as do the Office of Microen-

terprise Development and the Office of Development Credit in EGAD.

AFS provides technical leadership to the Agency and field support to USAID missions worldwide on all aspects of agricultural development, including technology development and dissemination, agribusiness development, trade and marketing, and overall food security, in support of one of EGAD's three strategic objectives:

TABLE 2: GLOBAL BUREAU'S OFFICE OF AGRICULTURE AND FOOD SECURITY OBLIGATIONS FY 1999-2001 (THOUSAND \$)*

Program	FY 1999 ¹	FY 2000	FY 2001
Consultative Group on International Agricultural Research (CGIAR) ²	26,450	26,600	26,650
Collaborative Research Support Programs (CRSPs)	18,050	20,050	21,246
International Fertilizer Development Center (IFDC)	2,100	2,000	2,300
Biotechnology and Biodiversity Interface Program (BBI)	0	0	2,000
Postharvest Collaborative Agribusiness Support Program (CASP)	250	0	0
Partnerships for Food Industry Development (PFID)	0	0	1,000
Agricultural Biotechnology for Sustainable Productivity (ABSP)	869	39	2,377
Food Security II (FSII)	527	400	400
Agricultural Policy Analysis Project III (APAP III)	33	114	61
Rural and Agricultural Incomes with a Sustainable Environment (RAISE) ³	207	252	281
Program Support ⁴	1,340	1,772	1,728
BIFAD Support ⁵	[150]	[150]	[150]
Child Survival Initiative	1,128	872	0
Utah State Directive	0	0	1,000
Dairy Directive	0	800	1,598
Sub-Total	50,954	52,899	60,641
Additional Dairy ⁶	984	4,500	0
Total	51,938	57,399	60,641
(Minus sustainable agriculture activities coded as environment activities)	-13,161	-27,881	-25,470
Total	38,777	29,518	35,171

*This table includes obligations coded as environmental activities.

¹ Updated figures.

² Includes \$2 million from the Africa Bureau for CGIAR research activities.

³ Includes Environment Center contribution to joint financing of this activity.

⁴ Increased in FY 1999 due to CRSPs line item exclusion for staff support funding.

⁵ Included in Program Support.

⁶ Funds transferred from Management Bureau's Budget Office.

ANNEX TWO: FY 2001 Agricultural Obligations

continued

increased productivity, efficiency, and sustainability of agricultural and food systems. The overarching objective is the alleviation of hunger and enhancement of global food security through increased agricultural productivity and linking smallholders to markets.

AFS manages two major global agricultural research programs on behalf of the Agency: the Consultative Group on International Agricultural Research (CGIAR) and the Collaborative Research Support Programs (CRSP). These programs have a significant impact on the development of improved crop and livestock technologies globally and contribute materially to scientific advances in agriculture and natural resource management. AFS works in close partnership with the U.S. uni-

versity and agribusiness communities, the international agricultural research system, and interested NGOs.

Funding obligations for agricultural activities carried out in the Global Bureau amounted to approximately \$60.6 million in FY 2001, including sustainable agriculture activities coded as environmental activities. Over 80 percent of these resources, managed by AFS, supported agricultural research and education collaboratively through the CGIAR and the CRSPs. These two major programs represent the Global Bureau's partnerships with the international agricultural research centers, the university community and other private and public organizations within the United States and in developing countries.

AFR Africa Bureau

Through its 23 bilateral and 3 regional field missions, the Africa Bureau continues to promote and manage programs that address food security, hunger and poverty in Africa. Partnerships with U.S. universities, international organizations, local and sub-regional organizations, NGOs, entrepreneurs, and governments have helped to strengthen USAID's capacity to effectively implement various programs and activities related to developing technology and market systems, rural enterprises, and producer support services.

Hunger and malnutrition continue to plague much of sub-Saharan Africa. To make matters worse, this region is the only one where hunger is projected to rise over the next 20 years. The problem of hunger in Africa can be directly traced to poverty, particularly to low per capita incomes from agriculture, a principal source of employment and income growth.

In response to the challenge of fighting hunger in Africa, several new African and U.S.-led initiatives were drafted in FY 2001. The year witnessed a renewed spirit of optimism and commitment among African governments, donors, U.S. universities, and the private sectors in the United States and Africa to revitalize agricultural growth in order to reduce hunger, food insecurity, and poverty in Africa. In July, the African-led New Partnership for African Development (NEPAD) was

formed, which stressed the need to achieve food security in African countries by addressing the problem of inadequate agricultural systems so that food production can be increased and nutritional standards raised.

Also in FY 2001, the U.S.-based Partnership to Cut Hunger and Poverty in Africa pressed for renewed emphasis on revitalizing investments in agriculture and pro-poor growth strategies. As an indication of this renewed U.S. leadership, poverty and agriculture, particularly in Africa, were on the agenda of the summer 2001 meeting of the G-8 in Genoa.

Under a broad coalition of U.S. universities and organizations and African partners, the Partnership witnessed the passage of the Hunger to Harvest Resolution in the U.S. House of Representatives (H. Con. Res. 102). Drafted by Bread for the World, the resolution asks the President to develop a plan to increase poverty-focused programs in Africa. In response to the new Administration's focus on agriculture, an operational plan was formulated that will refocus attention on rural-based agricultural growth as a first step to reducing hunger and poverty in Africa. Congress allocated an additional \$18.5 million to help finance some start-up activities of the new initiative in FYs 2001 and 2002. Included is a new capacity-building component, which will begin developing both short- and long-term training programs for African agriculturalists.

ANNEX TWO: FY 2001 Agricultural Obligations

continued

Science and technology applications are also an important part of this refocus. Investment in biotechnology in Africa more than tripled in FY 2001. This includes assessing the benefits and risks associated with biotechnology development and its potential for alleviating hunger and poverty in Africa.

**TABLE 3: 1999-2001 AGRICULTURE OBLIGATIONS
FOR AFRICA (THOUSAND \$)***

Bilateral	FY1999	FY 2000	FY 2001
Angola	4,620	0	1,443
Congo (DROC) ¹	0	500	3,000
Eritrea	1,850	2,500	3,528
Ethiopia	7,764	3,000	5,694
Ghana	4,248	7,000	3,775
Guinea	0	0	500
Kenya	2,000	6,700	6,797
Liberia	1,589	2,399	3,270
Madagascar	0	349	500
Malawi	10,211	7,885	4,493
Mali	7,562	5,391	6,179
Mozambique	9,200	10,715	11,798
Nigeria	1,000	7,349	4,700
Rwanda	3,000	4,900	3,884
Senegal	1,263	0	762
Sierra Leone	0	0	1,000
South Africa		2,400	3,699
Tanzania	2,000	2,000	0
Uganda	7,500	12,500	5,867
Zambia	2,000	5,500	4,181
Zimbabwe	1,500	699	0
Regional			
REDSO/ESA & GHAI ²	3,147	3,300	3,297
SA Regional ³	2,820	3,100	0
WARP ⁴	1,470	2,000	2,559
Africa-Wide (AFR/SD & DP) ⁵	6,417	7,546	21,261
CGIAR ⁶	2,000	0	0
Total	83,161	97,733	102,187

*Data for FY 1999 and FY 2000 are from FY 2000 Title XII Report to Congress. Data for FY 2001 are from the Africa Bureau. This table does not include Title II (P. L. 480) funds, which can be significant for some countries (see Table 7).

¹Democratic Republic of the Congo.

²Regional Economic Development Support Office/East and Southern Africa; Greater Horn of Africa Initiative.

³Southern Africa Regional.

⁴In FY 2001, the West Africa Regional Program (WARP) was established, absorbing and expanding the activities of the Sahel Regional Program.

⁵Africa Bureau, Office of Sustainable Development and Office of Development Planning.

⁶Consultative Group on International Agricultural Research.

ANNEX TWO: FY 2001 Agricultural Obligations *continued*

ANE Asia and the Near East

Funding for agriculture in the ANE Region (excluding food aid) has steadily declined from \$300 million in the early 1980s to under \$100 million today. The ANE Bureau is currently engaged in a variety of agriculture-related activities. It obligated \$86 million to agriculture in FY 2001, of which \$75.6 million was funded from ESF (Egypt, \$53.0 million, Jordan, \$14.5 million, and East Timor, \$8.1 million.) In Egypt, these resources support agricultural policy reform, agribusiness development, and increased export competitiveness for agricultural products. Funding in Jordan supports improved water resource management. In East Timor, USAID is funding the development of coffee cooperatives. Development Assistance (DA) funding for agriculture is more limited because of the overall scarcity of economic growth funds. In Asia,

DA funding is used for improving agricultural policy in Indonesia, supporting growth of agribusiness and improved management of aquatic and tropical forest resources in Bangladesh, encouraging adoption of higher value farming/fishing products and techniques in Mindanao, Philippines, and supporting increased sustainable production of forest and high-value agricultural products in Nepal.

Other programs not strictly coded as agricultural nevertheless deal with agricultural issues in ANE. For example, USAID/Philippines' Coastal Resource Management Program is improving local food security by helping communities manage their fish and other seafood resources sustainably. In Morocco, water management programs classified as environmental benefit mainly the agriculture sector. In Lebanon, ESF resources are supporting rural development, including rehabilitation of agricultural infrastructure (farm-to-market roads, irrigation), assistance to agricultural cooperatives, and livestock improvement. The Global Bureau also funds research in biotechnology and integrated pest management in selected ANE countries.

TABLE 4: ANE BUREAU AGRICULTURE OBLIGATIONS BY COUNTRY (THOUSAND \$)*

Country	FY1999	FY 2000	FY 2001
Bangladesh	2,800	3,303	2,050
East Timor	0	0	8,072
Egypt	100,142	72,291	53,019
India	0	0	337
Indonesia	2,412	4,093	4,975
Jordan	20,000	27,390	14,469
Laos	1,500	0	0
Lebanon	0	2,250	0
Mongolia	0	1,596	0
Nepal	1,000 **		500
Philippines	0	500	1,000
Regional Program	1,566	0	1,700
Sri Lanka	1,000	0	0
West Bank/Gaza	0	2,287	0
Total	130,420	113,710	86,122

* Data for FY 1999 and FY 2000 are from the FY 2000 Title XII Report to Congress; data for FY 2001 are from the bureau. This table does not include Title II (P. L. 480) funds, which can be significant for some countries (see table 7).

** Funds for agricultural activities in Nepal are coded under environment.

ANNEX TWO: FY 2001 Agricultural Obligations
continued

E&E Europe And Eurasia Bureau

The primary focuses of USAID's agricultural assistance to the countries of the Former Soviet Union (FSU) and Central and Eastern Europe (CEE) remain land reform, agribusiness and trade development, and the improvement of quality standards of products for both local and export markets. Agricultural extension, agricultural reform and agricultural credit are being supported to a lesser degree.

Agricultural programs in several countries enhance the management of agricultural and urban land through improved titling and registration systems. These systems enable farmers and landowners to consolidate productive land holdings, transfer them by sale or leasing, or use their land for collateral. Land privatization and titling programs are being implemented in Ukraine, Moldova, Georgia, Armenia and the Kyrgyz Republic. In Albania, the University of Wisconsin's Land Tenure Center will soon complete a seven-year land market development program. As part of this effort, detailed maps of all privately owned and registered land parcels were prepared.

TABLE 5: E&E BUREAU AGRICULTURE OBLIGATIONS BY COUNTRY (THOUSAND \$)*

Country	FY2001
Albania	2,300
Armenia	10,300
Azerbaijan	700
Bulgaria	800
FRY & Serbia	1,000
Georgia	3,500
Kazakhstan	1,300
Kyrgyzstan	1,500
Macedonia	3,200
Montenegro	500
Moldova	5,500
Romania	1,600
Russia	6,800
Tajikistan	400
Turkmenistan	100
Ukraine	4,800
Uzbekistan	1,200
CEE Regional	2,600
Eurasia Regional	700
Total	48,800

*FY 2001 data provided by the E&E Bureau.

ANNEX TWO: FY 2001 Agricultural Obligations *continued*

LAC Latin America and Caribbean Bureau

USAID's core program in the LAC region is based on the objectives established at the Summit of the Americas, agreed to by President Bush and the other leaders of the Western Hemisphere. The most important objective is reducing poverty in Latin America. In spite of concerted efforts to address poverty, income distribution in the LAC region remains the worst in the world and became even more skewed during the 1990s in some countries. Nearly 40 percent of the population lives in dire poverty on less than \$2 per day.

In order to reduce poverty, the United States must help accelerate growth rates substantially through hemispheric trade and increase participation by the poor in growing economies. USAID's agricultural efforts seek to promote trade as an engine of growth for

LAC, and protect the region's environment and natural resources in order to enhance income for the poor and LAC's competitiveness. USAID's agricultural assistance portfolio is currently focused on expanding access and opportunities for the poor by linking their production to higher-value markets. As the Free Trade Agreement of the Americas (FTAA) moves forward under the Summit of the Americas process to create a hemispheric free-trade area by 2005, USAID is providing support for the integration of smaller economies. For example, assistance has been provided to help LAC countries meet World Trade Organization requirements. A substantial portion of USAID's environmental efforts is also focused on protecting and enhancing agriculture as a source of income for the poor.

TABLE 6: LAC BUREAU AGRICULTURAL OBLIGATIONS BY COUNTRY (THOUSAND \$)*

Country	FY 1999	FY 2000	FY 2001
Bolivia	400	0	1,575
Ecuador	0	550	0
El Salvador	3,205	2,533	2,105
Guatemala	8,525	8,175	4,180
Haiti	10,154	6,826	7,900
Honduras	2,333	978	1,943
Jamaica	0	2,170	0
Nicaragua	5,500	5,929	5,165
Peru	1,535	5,920	1,396
Caribbean Regional	0	500	0
LAC Regional	3,215	760	600
Total	34,867	34,341	24,864

*Data for FY 1999 and FY 2000 are from FY 2000 Title XII Report to Congress; data for FY 2001 are from the LAC Bureau. This table does not include Title II (P. L. 480) funds, which can be significant for some countries (see table 7), or International Narcotics Control (INC) funds currently coded as Economic Support Fund (ESF).

ANNEX TWO: FY 2001 Agricultural Obligations *continued*

BHR Bureau of Humanitarian Response

The Bureau of Humanitarian Response (BHR) carries out agricultural activities through its Office of Food for Peace (FFP) and Office of Foreign Disaster Assistance (OFDA).

OFFICE OF FOOD FOR PEACE: P.L. 480, TITLE II FOOD FOR PEACE, NON-EMERGENCY PROGRAM

The P.L. 480 Title II program is one of the main sources of funding for agricultural and food security activities in the Agency. Priority is given to activities that improve household nutrition and agricultural productivity. Title II activities promote more productive and diversified farming systems, improve postharvest management and marketing, provide microfinance credit, and improve natural resource management. Title II programs are integrated and involve activities to address access, availability, and utilization of food, in accordance with the Agency's Food Aid and Food Security Policy Paper (1995) (http://www.usaid.gov/hum_response/ffp/fspolicy.htm).

To ensure sustainability, Title II grantees implement their programs in partnership with local communities, governments, national NGOs, and research institutions. Partners also include IARCs and universities. Michigan State University, Tufts University, and the Academy for Educational Development provide ongoing assistance in targeting and measuring the impact of food aid programs.

In FY 2001, food assistance programs, including Title II, accounted for 22 percent of U.S. foreign assistance. Of the \$915.2 million channeled through Title II programs, \$468.8 million was for non-emergency (i.e., development) activities and \$446.4 was for emergency activities. The development activity budget was divided as follows: \$170.5 for Africa, \$161.6 for Asia/Near East, and \$111.9 for Latin America/Caribbean. Nearly two-thirds of the 38 countries receiving Title II development funding in FY 2001 were in sub-Saharan Africa. In FY 2000 and 2001, the same 20 countries were the largest recipients of Title II assistance (Table 7).

ANNEX TWO: FY 2001 Agricultural Obligations

continued

**TABLE 7. P.L. 480 TITLE II EMERGENCY AND NON-EMERGENCY FUNDING:
20 LARGEST RECIPIENT COUNTRIES IN FY 2001 (THOUSAND \$)***

Country	Emergency	Non-Emergency	Total
Ethiopia	79,423	27,439	106,862
India	0	79,192	79,192
Bangladesh	0	68,805	68,805
Kenya	40,283	9,342	49,625
Peru	0	42,797	42,797
Sudan	40,976	0	40,976
Angola	28,531	5,697	34,228
Balkans	33,978	0	33,978
Sierra Leone	33,449	0	33,449
Uganda	14,425	17,765	32,190
Afghanistan	30,318	0	30,318
Tanzania	28,322	934	29,256
Mozambique	0	25,539	25,539
Haiti	0	23,986	23,986
Ghana	0	19,012	19,012
Bolivia	0	17,071	17,071
Guatemala	480	15,958	16,438
Congo	14,525	0	14,525
Tajikistan	13,148	0	13,148
Indonesia	0	12,144	12,144
Other**	88,550	103,079	191,629
Total	446,407	468,762	915,169

* Data are from the U.S. International Food Assistance Report 2001, September 2001.

** Includes other countries, Institutional Strengthening Assistance (ISA) grants, unallocated preposition, plus other unallocated.

ANNEX TWO: FY 2001 Agricultural Obligations *continued*

OFDA Office of Foreign Disaster Assistance

The mandate of the USAID Office of Foreign Disaster Assistance (OFDA) is to save lives and reduce human suffering. While the majority of its international disaster assistance funding supports response to natural and human-caused disasters, a portion of its resources is spent on mitigation and preparedness. Maintaining food security during times of crisis is a critical component of disaster prevention and mitigation. Through direct funding to international agricultural research centers (IARCs), OFDA improves food security in disaster-prone areas of the world by enabling researchers within individual countries to ascertain immediate needs of farmers during crises and to respond using suitable technologies and methodologies.

Disaster preparedness can be increased dramatically by developing strategies in advance to mitigate and prevent loss of food security. In arid regions, for example, programs that provide drought-resistant, locally adapted cultivars of staple crop plants can keep productivity at an acceptable level during times of water stress, reducing the need for foreign food aid. The development of early warning systems and regional strategies for coping with drought can also reduce food insecurity in arid zones.

In FY 2001, OFDA supported a range of agricultural activities, focusing primarily on crop productivity and small farmer seed systems in Africa. As a result, the sustainability of many smallholder farms has been significantly improved.

TABLE 8:
FY 2001 OFDA OBLIGATED FUNDS ALLOCATED TO
AGRICULTURE AND RELATED ACTIVITIES (THOUSAND \$)*

AFRICA	
Angola	700
Burundi	4,351
Chad	52
Democratic Republic of the Congo	5,752
Ethiopia	336
Guinea	196
Kenya	663
Republic of the Congo	463
Sierra Leone	5,094
Somalia	78
Sudan	9,632
ASIA & NEAR EAST	
Afghanistan	4,992
Bangladesh	625
Cambodia	361
China	100
India	3,394
Indonesia	1,779
Laos	99
Mongolia	25
Philippines	423
EUROPE & EURASIA	
Kosovo	400
Macedonia	975
Tajikistan	734
LATIN AMERICA/CARIBBEAN	
Guatemala	25
Honduras	175
Nicaragua	500
GLOBAL PROGRAMS	
	1,700
TOTAL	43,624

*Data are from the Office of Foreign Disaster Assistance.

ANNEX THREE: New Activities in FY 2001

Partnerships with U.S. Universities, International Agriculture Research Centers, Governments, and the Private Sector

WORLD IRRIGATION INFORMATION NETWORK • IRRINET

USAID launched the World Irrigation Information Network (IrriNet) at the International Irrigation Center (IIC) at Utah State University in FY 2001. IrriNet is a prototype activity to develop and test a new methodology to provide access to irrigation technology without requiring mission-level investment in facilities and personnel. The network will facilitate integrated, interactive, and participatory electronic collaborations from anywhere in the world.

NEW DIRECTIONS IN BIOTECHNOLOGY RESEARCH

In response to the Congressional biotechnology directive specified in the FY 2001 Foreign Operations appropriations legislation, the Agency initiated several new programs:

Biotechnology and Biodiversity Interface • BBI

BBI is a five-year competitive grants program in biosafety research designed to address the interface between the use of agricultural biotechnology, particularly genetically engineered crops, and natural biodiversity in developing countries. It brings together agricultural and environmental organizations and promotes the use of biotechnology in an environmentally responsible manner. In FY 2001, awards totaling \$1.879 million were made to the University of Minnesota; the International Rice Research Institute (IRRI), Philippines; Washington University, St. Louis; Cornell University; and the International Center of Insect Physiology and Ecology (ICIPE), Kenya.

Biofortification of Crops

USAID initiated two programs to address micronutrient malnutrition in developing countries in FY 2001:

- ✦ *In India, the Agriculture Biotechnology Support Program led by Michigan State University in collaboration with Monsanto is developing beta carotene-enhanced mustard oil.*
- ✦ *A collaborative effort involving U.S. universities, international agriculture research centers (IARCs), and possibly U.S. industry will improve the nutritional value of staple foods in Africa via genetic engineering and plant breeding. In particular, the program seeks to increase the amount of vitamin A, zinc, and iron in rice, wheat, maize, cassava, sweet potatoes, and beans.*

Research and Technology Development in Africa

USAID is supporting a number of research initiatives using biotechnology as a tool for addressing disease and pest resistance in cassava, cowpea, cocoa and other tree crops (West Africa), papaya (Tanzania), and banana (Uganda). To build leadership in biotechnology, the Agency is engaging governments in South Africa, Nigeria, Zambia, Kenya and Uganda through bilateral assistance.

ENHANCING FOOD INDUSTRY TRADE CAPACITY

Food industries are increasingly global, integrated, and responsive to consumer demands for high-quality, safe and responsibly produced food products. Recognizing the new environment, in 2001 USAID launched the Partnership for Food Industry Development (PFID) to mobilize both private sector and public sector expertise to promote competitive participation by developing and transition economy countries in the new global food trading system. PFID's objectives are: to promote science-based legal, regulatory and policy frameworks for international trade in food products, to adapt and apply food processing and marketing technologies to create value-added projects, and to improve food product safety and quality.

ANNEX THREE: New Activities in FY 2001*continued*

Leading this effort are U.S. universities in partnership with international food industries, a development alliance that represents a new direction in university-led foreign assistance. Michigan State University leads a public-private sector partnership that will focus on the fruit and vegetable sectors to improve quality and safety standards in the context of a global marketplace. Louisiana State University leads a public-private sector partnership that will focus on the meat and seafood sectors to develop support systems, business networks and high standards of quality for food industry competitiveness. In 2001, these two university-led partnerships were awarded four-year cooperative agreements to support field operations that strengthen food industries in USAID host countries and promote competitive participation in the global trading system.

PFID's Food industry partners and collaborators include international industry associations such as the World Food Logistics Organization and the Produce Marketing Association, as well as individual food companies. PFID partner firms include specialty product wholesalers like Melissa's World Variety Produce in California, and retail food businesses like Royal Ahold, with over 9,000 food retail and service units on four continents, including 1,600 in the United States. Regardless of their size, all of PFID's private sector partners are enthusiastic and engaged—sharing a common vision of establishing long-term collaborative relationships with developing country food producers and processors to improve the quality of food products and the quality of life in these countries.

ANNEX FOUR

Highlights of FY 2001 Accomplishments

Highlights of FY 2001 accomplishments are presented in the areas of access to assets, agribusiness and marketing, agricultural policies, agricultural research and technology transfer, and agriculture and the environment. Successes in these areas have come through partnerships with U.S. universities, with the International Agricultural Research Centers, and through other types of Agency activities. Notable throughout these programs is the application of new approaches to address major problems faced by agriculturalists in developing countries.

I. Access to Assets

Poverty reduction and economic growth in developing countries depend on improving access to assets. A critical component of Agency development programs is improving access to land, credit, information about best farming practices, and other services that will enable an individual or family to generate income and wealth. Three programs focused specifically on access to assets: the BASIS Collaborative Research Support Program, the Development Credit Authority, and the Broadening Access and Strengthening Input Market Systems (BASIS) Indefinite Quantity Contract (IQC).

A. PARTNERSHIPS WITH U.S. UNIVERSITIES

The Broadening Access and Strengthening Input Market Systems • BASIS • *Collaborative Research Support Program* (www.basis.wisc.edu) • BASIS CRSP identifies policies and strategies to promote economic growth through improved access to and efficient use of land, water, labor and financial markets. In FY 2001:

- ✦ *BASIS researchers studied rural households in Nicaragua, where laws regulating use, ownership, and transferability of rural land have undergone major changes. They found that gaining access to land improves the quality of life of the rural poor in many ways. Data analysis confirmed that providing land titles to women promotes household expenditures on food and education. Research results were incorporated into the World Bank's Policy Research Report on land policy.*
- ✦ *In Tanzania, BASIS case studies demonstrated the importance of village-level training in financial management and reporting for leaders of irrigators' organizations. The research findings influenced the Traditional Irrigation and Environmental Development Organization's decision to emphasize financial management in its training program.*
- ✦ *In Ethiopia, a BASIS case study found that limited involvement of local informal institutions was a key constraint to participatory natural resource management and the reduction of conflict in managing forest, pasture and irrigation lands. A policy brief was distributed to policy makers, the government and NGOs.*
- ✦ *BASIS research in Eastern Europe and the former Soviet Union tested the viability of an index to measure land privatization, for use by national policy makers and international development agencies. BASIS methodology is being used in the USAID Center for Development Information and Assessment's study on land markets and property rights. In Georgia, the USAID-funded Land Market Development Project is developing indicators based on land price, type of transaction, and location.*
- ✦ *In El Salvador, BASIS research showed that remittances do not change the structure of consumption for households and have positive impacts on schooling and education. BASIS work also resulted in the establishment of the Sustainable Rural Roads Program, which has enabled children to receive more education and provided greater access to income-earning opportunities.*

B. OTHER AGENCY ACTIVITIES

1. *Development Credit Authority:* • Supported by USAID's Office of Development Credit, the Development Credit Authority (DCA) allows USAID missions overseas to partner with lending institutions to make resources available for investments that support development objectives. The goals of DCA are to mobilize private capital to finance development

initiatives abroad and demonstrate the economic viability of such investments to local banking and other sources of private capital. In FY 2001:

- ✦ *Agroindbank SA is one of three local banks participating in a loan guarantee program in Moldova designed to assist agricultural producers, processors and other trade-related businesses in securing financing to purchase inputs and make capital improvements. Banks in Moldova had resisted lending to the agricultural sector because of the inherent risks. The USAID guarantee improved their comfort level and enabled them to offer loans to rural credit and savings associations. Agroindbank fully used its guarantee limit during the first year of operations. The program was crafted as a follow-on activity to USAID's privatization effort in Moldova, which resulted in the successful privatization of over 90 percent of the country's collective farms.*

2. The Broadening Access and Strengthening Input Market Systems • BASIS • *Indefinite Quantity Contract* • IQC • During FY 2001, BASIS IQC provided the Agency with specialized services to improve the accessibility, efficiency and integration of markets for land, water, labor and financial capital in order to alleviate poverty and contribute to broad-based, environmentally sustainable economic growth. Task orders included:

- ✦ *an Albania Land Market Project Evaluation, which assessed the first registration process and the institutional capacity of the local registration agency;*
- ✦ *the Mali Communes Analytical Study, which measured the effectiveness of village communes to carry out decentralized activities, including local resource management, and to develop a monitoring system to measure commune effectiveness;*
- ✦ *assistance to the Georgian Ministry of Agriculture with reorganization and policy development. Stage I, consisting of the Ministry assessment, reorganization strategy, and policy advice on land taxation, was implemented.*

ANNEX FOUR: Highlights of FY 2001 *continued*

II. Agribusiness and Marketing

Agribusiness and marketing play a critical role in promoting the sustainable, broad-based income opportunities that people need to overcome poverty. They also hold the key to making cheaper, safer and more healthful food available to the world's neediest consumers. While many Agency programs address agribusiness and access to markets, highlighted here is one activity that draws upon the business and market experience of the U.S. dairy industry to address the needs of dairy farmers and the dairy industry in developing countries.

Dairy Enterprise Initiative • Dairy Directive • The Dairy Enterprise Initiative partners the U.S. dairy industry with dairy producer groups and processors in developing countries. In FY 2001:

- ✦ *Partners of the Americas, together with the Caribbean Research and Development Associates (CARESDA), is building the capacity of the Guyanese dairy industry to address poverty, food insecurity and malnutrition. The project is targeting approximately 5,000 small and medium-size milk producers. It will train 800 farmers per year in sustainable dairy farming practices, identify 10 model farms, and establish 6 regional dairy farm organizations. A baseline of industry information was developed to measure project effectiveness. The project provides training and technical support to dairy farmers, enhances elementary education, provides milk through the schools, studies nutrition and milk consumption in Guyana, and strengthens the infrastructure of agencies and associations providing services to dairy farmers at all levels through outreach and capacity building.*
- ✦ *Land O'Lakes conducts monitoring and evaluation for strategic action plans developed by cooperatives and self-help groups. The project delivered a management course for officials and managers of six cooperatives, raised awareness among self-help group members on the need to market milk collectively, and conducted planning workshops for farmers. Baseline surveys were conducted to provide data for monitoring and evaluation and to design farmer-training programs. The project also held meetings on marketing and participatory planning for cooperatives.*

ANNEX FOUR: Highlights of FY 2001

*continued***III. Agricultural Policy**

Agricultural policy cuts across all the categories of programs highlighted in this annex. USAID supports the development of agricultural and environmental policies, regulations, and institutions that foster good governance, promote the adoption of technologies that improve productivity in the agricultural sector, and result in environmentally sustainable rural growth. The two projects highlighted here illustrate USAID's commitment to addressing policy issues at multiple levels (national, regional, and international).

A. PARTNERSHIPS WITH U.S. UNIVERSITIES*The Food Security II • FS II • Cooperative**Agreement with Michigan State University •*

The Food Security II program carries out a broad array of applied food and agricultural policy research, outreach, and capacity-building activities throughout Africa. In FY 2001:

- 🌿 *FS II country-level researchers and host-country collaborators in Kenya, Zambia, Mozambique and Rwanda integrated findings from their outreach work on input and output market reforms and on the relationships between smallholder income and land access into country-level poverty reduction strategy papers (PRSPs).*
- 🌿 *FS II provided substantial assistance to the Partnership to Cut Hunger and Poverty in Africa through contributions to the Partnership's Diagnostic Assessment, Strategic Framework and Action Plan. FS II also assisted in organizing an intensive review process by African and U.S. members of the Partnership. These activities culminated in the June 2001 Partnership Conference, which brought together high-level African and U.S. political leaders and representatives of business, university, NGO and foundation communities from both continents. FS II researchers helped develop a short video on the conference that is being widely distributed in Partnership countries and throughout Africa.*
- 🌿 *As part of a continuing effort to foster improved market information and related policy analysis services in selected African countries, host-country staff from Mozambique and Zambia attended the West African Regional Agricultural Market Outlook Conference in March in Bamako, Mali*

and visited the Mali market information system in Bamako and Segou. This prompted team members to work more effectively with their own Ministry colleagues to seek ways to achieve sustainability and improved design of market information systems and to build linkages to private sector farm and market-level users.

B. OTHER AGENCY ACTIVITIES*Agricultural Policy Development • APD • Project*

During FY 2001, the APD Project initiated a study to update the September 1998 estimate of the costs of meeting the Rome Food Summit target of cutting world hunger in half, and assessed the economic opportunity costs of not doing so. The assessment, "Costs and Benefits of Meeting the Food Summit Target" (September 2001), included the extent to which instability and conflict could be avoided if the targets were met and what the cost savings would be in terms of reduced humanitarian interventions, emergency food aid, and costs stemming from reduced deployments of military, peacekeeping and humanitarian interventions, as well as costs of foregone agricultural and economic production, and health-related costs of malnutrition and food insecurity.

The APD Project also commissioned a White Paper by John Mellor entitled "Meeting the OECD Poverty Targets – An Approach Paper for USAID". This paper confirms the efficacy of focusing Agency efforts on stimulating rural agricultural growth in order to meet international poverty-reduction targets.

IV. Agricultural Research and Technology Transfer

Without agricultural research and technology transfer, the constraints to increasing agricultural productivity in developing countries will never be overcome. Highlighted in this section are programs engaging an international community of scientists in projects that generate (1) crop varieties for improved nutrition, better pest resistance, and reduced stressful abiotic conditions (drought, heat, or low soil fertility), (2) management plans that use limited natural resources more wisely and sustainably, and (3) vaccines and other methods to reduce disease in animals. An integral part of these programs is technology transfer, including the development of human resources and institutional capacity within developing countries.

ANNEX FOUR: Highlights of FY 2001

*continued***A. PARTNERSHIPS WITH U.S. UNIVERSITIES**

1. Collaborative Research Support Programs ✦ One mechanism by which USAID partners with the U.S. university community in research and technology transfer is through Collaborative Research Support Programs (CRSPs). These collaborations involve U. S. universities, developing-country National Agricultural Research Systems (NARS), International Agricultural Research Centers (IARCs), U.S. agribusiness, private voluntary organizations (PVOs), developing-country colleges and universities, private agencies, USAID/Washington, USAID Missions, and other U.S. federal agencies such as USDA. Through collaborations among these partners, the CRSPs address issues of agricultural productivity and sustainability, food quality, and natural resource management in programs that benefit both developing countries and the United States.

Bean/Cowpea Collaborative Research Support Program (<http://www.isp.msu.edu/scripts/CRSP.pl>) ✦

The Bean/Cowpea CRSP seeks to overcome malnutrition, stimulate economic growth, promote environmental stewardship, and improve the well-being of people, especially women and the poor, by generating technologies and knowledge that enhance the production, commercialization, and utilization of beans and cowpeas. Bean/Cowpea CRSP scientists use cutting-edge research and teaching technologies, including molecular tools of biotechnology to address production and utilization constraints in Latin America and Africa. In FY 2001:

- ✦ *An updated genetic linkage map for cowpea containing more than 400 genetic markers was developed by Bean/Cowpea CRSP scientists and collaborators at the Universities of California-Riverside and Davis, and at the University of Virginia. The map will facilitate the development of marker-assisted selection protocols that will significantly enhance the efficiency of cowpea breeding and the cloning of resistance genes to facilitate their use through genetic engineering. A CRSP cowpea breeder at the Institut Sénégalais de Recherches Agricoles (ISRA) is preparing to use molecular markers to screen for important traits.*
- ✦ *Three cowpea lines (IT93-K503-1, IT93K-2046 and UCR 779) were found by researchers at the University of California-Riverside to possess strong recovery resistance to cowpea aphid. This is the first case of an induced type of resistance to cowpea aphid, and the resistance is strong enough to be of considerable agronomic value in California. CRSP host-country collaborators will test the utility of this resistance against various aphid biotypes in Africa.*
- ✦ *Research by Bean/Cowpea CRSP scientists at Clemson University and the Savanna Agricultural Research Institute in Ghana showed that Neemix, a commercial formulation of neem, effectively reduces feeding and survival of the Southern green stinkbug, Nezara viridula, while increasing cowpea yields by 30 percent. Neem inhibits damage to pods and seeds and is less harmful to natural enemies of pests than many chemical insecticides.*
- ✦ *Collaborative bean-breeding efforts between Bean/Cowpea CRSP scientists at the University of Puerto Rico and the Escuela Agrícola Panamericana-Zamorano resulted in several advanced-generation small red lines, which were tested and validated throughout Central America, Panama and Haiti. The most promising lines were selected under moderate to severe disease and abiotic stress factors, which often reduce bean yields in Latin America.*
- ✦ *Molecular techniques, polymerase chain reaction (PCR) and nucleic acid hybridization were developed for the detection and identification of five bean-infecting begomoviruses through collaborations between Bean/Cowpea CRSP scientists at the Cellular and Molecular Biology Research Center, University of Costa Rica, and the University of Wisconsin. These detection methods were used to evaluate tissue samples of plants from Central America, Mexico, the Caribbean, Brazil and Florida. They will assist in the understanding of the epidemiology and diversity of geminiviruses and facilitate resistance breeding, cultivar selection and the development of control strategies.*

ANNEX FOUR: Highlights of FY 2001

*continued***Global Livestock** • **GL** • **Collaborative Research Support Program** (<http://glcrsp.ucdavis.edu>) •

The GL CRSP aims to increase food security and improve the quality of life for people in developing countries while bringing an international focus to the research, teaching and extension efforts of U.S. institutions through collaboration between U.S. land-grant institutions and national and regional institutions abroad that are active in livestock research and development. In FY 2001:

- ✦ *Analysis of data collected by the GL CRSP Child Nutrition Project in Kenya showed that adding a small amount of animal-source foods to the diet of school children leads to statistically significant improvements in cognitive function, physical activity, positive behaviors, classroom attention, physical growth and biochemical micronutrient status. The study also showed that meat and milk interventions are not equivalent in effects.*
- ✦ *The GL-CRSP Pastoral Risk Management Project created a pilot project under the auspices of the Southern Tier Initiative developed by USAID/Ethiopia to promote a sustainable capacity for risk-management intervention in the southern rangelands of Ethiopia. Forty-one development agents from government and NGOs were trained in Participatory Rural Appraisal (PRA), 30 communities were visited, and six community demonstration-project proposals were submitted.*
- ✦ *Carbon flux measurements from Central Asian rangelands are being compared with the carbon fluxes of steppe and semi-desert rangelands of the western United States and used to inter-validate flux models.*
- ✦ *Integrated assessment techniques and analyses supported by the GL-CRSP are currently being applied in the western United States. Problems similar to those researched in East Africa involving conflicts between wildlife and livestock production systems are now being addressed using the GL-CRSP integrated assessment approach at Yellowstone National Park and Rocky Mountain National Park.*

- ✦ *The U.S. Grazing Lands Conservation Initiative will benefit from the nationwide application of the GL-CRSP Livestock Early Warning System (LEWS). The system will reduce drought- and market-induced risk to U.S. livestock producers and improve production efficiencies, both objectives of the new Farm Bill and the Funds for Rural America Program.*

Integrated Pest Management • **IPM** • **Collaborative Research Support Program** (<http://www.ag.vt.edu/ipmcrsp>) •

The IPM CRSP utilizes collaborative and participatory methods to develop and implement economically and environmentally sustainable crop protection technologies. In FY 2001:

- ✦ *In Uganda, powdered fish bones used as bait increased predatory ant activity by 90 percent and suppressed termite damage to maize by 54 percent compared to untreated control plots. Fish bone bait is inexpensive to produce, can be prepared locally, is easy to apply, and does not require high-input technology.*
- ✦ *In Mali, experimental trials on a CRSP-designed IPM treatment (neem extract and colored traps) proved more profitable for green bean cultivation than the use of chemical pesticides. The cost of the IPM treatment is estimated at 15,780 F CFA (\$22.29)/ha with an additional net profit of 3,704,000 F CFA (\$5,224.26)/ha on trial plots.*
- ✦ *In Ecuador, impacts of changes in pest management technologies in potato were measured. In the Central Region of Ecuador, the net present value of IPM control of the Andean weevil is estimated at \$357,000.*
- ✦ *The IPM CRSP/Bangladesh site explored grafting of susceptible plants onto resistant rootstocks to overcome bacterial wilt. Grafting efforts had success rates of more than 91 percent for cultivated eggplants and 98 percent for tomatoes. Under field conditions, eggplant grafts produced 40-63 percent and tomato grafts 7-14 percent higher yields than the non-grafted plants.*

ANNEX FOUR: Highlights of FY 2001

continued

- ☛ *IPM CRSP research in the Philippines showed that the amount of insecticide applied against the onion cutworm (*Spodoptera litura*) was substantially reduced when insecticide sprays were properly timed using sex pheromone-baited traps. A single application at the proper time resulted in the same onion yields as weekly sprays. This has great potential for reducing insecticide treatments on onions.*
- Peanut Collaborative Research Support Program (<http://www.griffin.peachnet.edu/pnutcrsp.html>)*** • The Peanut CRSP seeks to increase the global production and use of peanuts. It focuses on food safety, production efficiency, postharvest technology and marketing, and socio-economic research to enhance economic development. In FY 2001:

 - ☛ *The 2001 BIFAD Chair's Award for Scientific Excellence was awarded to Dr. Timothy Phillips, based on his discovery of aflatoxin-binding clays. The simple addition of low levels of hydrated sodium calcium aluminosilicate (HSCAS) clays to aflatoxin-contaminated feed adsorbs aflatoxin in the digestive tract of animals and removes it through the feces without affecting vitamin A metabolism. All other solutions to aflatoxin so far have involved costly technologies not feasible for developing countries; therefore aflatoxicosis leads to lost productivity and the collapse of export industries. This technology, and its local adaptations, is now used to treat 10 percent of all commercially produced animal feeds on a world scale. U.S. farmers, as well as farmers in South America, Asia, Africa, Europe and Australia all exploit this discovery. The benefits to farmers of all scales as well as its contributions to food security and development rank this as a major achievement that satisfies completely the vision of the framers of the Title XII legislation.*
 - ☛ *In a collaborative effort involving the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Malawi Ministry of Agriculture, and the University of Georgia, a variety with early maturity and resistance to groundnut rosette disease was released in Malawi. A similar activity is underway in Uganda, where lines with resistance are being multiplied with CRSP support to accel-*
- erate the impact of ICRISAT-developed materials. In Nigeria, lines with rosette resistance (SAMNUT 21 and SAMNUT 22) were released from lines developed as a result of earlier collaboration between the CRSP, Amadou Bello University, and the Institute for Agricultural Research (IAR), Nigeria.*
- Pond Dynamics/Aquaculture (PD/A)*** • PD/A • ***Collaborative Research Support Program (<http://pdacrsp.orst.edu>)*** • The PD/A CRSP works to enhance the development and sustainability of aquaculture production systems to improve food supplies and human nutrition. In FY 2001:

 - ☛ *A pond soil classification system was developed with data from five years of PD/A CRSP pond soils research at 12 sites. This system, which will be integrated into the existing system of soil taxonomy, establishes a uniform method of describing pond soils from different areas and will be useful in predicting the limitations of pond soils in developing countries and in pond aquaculture in general.*
 - ☛ *PD/A CRSP collaborators in Mexico and the United States identified over 100 genes not previously identified in tilapia. They also announced a research breakthrough, showing induction of an Mx gene, which is important to tilapia immune system functions. This result may be useful for investigating the health of this important aquaculture species. Additionally, cDNA libraries were established, and the researchers identified other important biomolecules involved in sex differentiation.*
 - ☛ *In a test of sex-reversal technologies, PD/A CRSP researchers in Thailand used ultrasound to increase the transport of three synthetic hormones from water into tilapia. This immersion technique resulted in a more consistent and higher rate (98 to 100 percent) of masculinization of tilapia fry, and decreased the amount of time needed for successful sex reversal (two hours). Ultrasound may replace the costly, inefficient, and risky technique of feeding synthetic testosterone for sex reversal of tilapia. Ultrasound also lowers the amount of hormones needed, which benefits both hatchery workers and the environment.*

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🌿 *PD/A CRSP research in Peru led to the development of diet recommendations for captive gamitana and paco, two Amazonian fish species troubled by inconsistent spawning due to inadequate nutrition. The guidelines recommend feeding the fish less protein and supplementing Vitamins C and E, imitating their natural diets. Making these changes should not only increase spawning success and the quality of resulting fry but should also be more economical for farmers in the Amazon region.*

🌿 *Nine tilapia farmers on Luzon Island in the Philippines participated in PD/A CRSP on-farm trials. This research activity demonstrated that reducing feed rations by one-third can effectively lower tilapia grow-out costs without compromising growth or yield.*

Soil Management • **SM** • **Collaborative Research Support Program** (<http://tps.hawaii.edu/sm-crsp/>) • The SM CRSP works to improve soil fertility by helping to resolve nitrogen and phosphorus deficiency, soil acidity, water deficiency, and soil erosion and degradation. In FY 2001:

🌿 *Models for predicting landslide hazards were developed and validated using pre- and post-Hurricane Mitch data in Honduras. Geographic information system analysis of the post-Mitch aerial photos showed that incidences of landslides are highest in cultivated fields with little or no ground cover. Landslide incidence also increased sharply when slopes attained steepness of 12 to 30 percent or more. These models enable policy makers and farm households to minimize soil loss by choosing practices that reduce erosion and by selecting sites that are not susceptible to landslides.*

🌿 *An existing decision support system for assessing tradeoffs between agricultural production and environmental impacts of agriculture was converted to a new, more generic version. The new software was renamed the TradeOff Analysis (TOA) Model. This model provides decision makers with information on tradeoffs between key sustainability indicators under alternative*

policy and technological scenarios, links data and models in a geographic information system (GIS) framework, utilizes minimum data, can be adapted to a wide range of applications, and extrapolates in a GIS framework. A participatory process ensures that the data collected and the results are of value to decision makers.

🌿 *In field trials conducted in 16 countries by 20 collaborators, a new liquid inoculant of the symbiotic nitrogen fixing *B. japonicum* performed better than the conventional peat carriers of this micro-organism. The best liquid inoculant increased soybean grain yield by 760 kg/ha above the uninoculated control and 102 kg/ha above the peat carrier. High-performance liquid inoculants are needed in Africa and Asia where the conventional peat-based inoculum is generally unavailable or too expensive.*

The Sorghum/Millet • **INTSORMIL** • **Collaborative Research Support Program** (<http://intsormil.unl.edu>) • The INTSORMIL CRSP supports mutually beneficial collaborative research of scientists in the national agricultural research system (NARS) and U.S. land-grant universities to remove constraints to sorghum and millet production and to develop sorghum and millet research capabilities and products that alleviate hunger. The goal of this research is to increase sorghum and millet productivity while conserving and sustaining the value and diversity of natural resources. In FY 2001:

🌿 *Purdue University released three *Striga* resistant varieties in Ethiopia, Texas A & M University released an improved food quality sorghum variety in Mali, and breeding lines with resistance to midge, greenbug, and downy mildew were released in Zambia, Botswana, and South Africa.*

🌿 *INTSORMIL food scientists in Niger and the United States (Purdue University and Texas A & M University) collaborated on pilot-plant production of high-quality flour, couscous, and degue (a breakfast food) from NAD-1 hybrid sorghum, a hybrid sorghum now commercially produced in Niger as a result of INTSORMIL plant breeding research.*

ANNEX FOUR: Highlights of FY 2001

continued

✿ *In Central America, Kansas State University scientists and collaborators identified the main diseases of sorghum as anthracnose and rust and initiated research to develop strategies and tactics to reduce crop losses to these two pathogens.*

✿ *Research supported by INTSORMIL University of Nebraska scientists in Niger demonstrated the potential to use a profusely tillering variety of millet to produce both grain for human consumption and forage for livestock. Tillers can be harvested for livestock feed without reducing grain yield, thus providing Sahelian millet farmers with a more economically rewarding cropping system.*

West Africa National Resource Management

✿ *NRM* ✿ *InterCRSP (<http://filebox.vt.edu/admin/international/resdev/entry.html>)* ✿

The broad-scale transfer of appropriate NRM technologies in West Africa is complicated by the harsh biophysical and socioeconomic realities and the limited research and technology transfer resources of the region. The West Africa NRM InterCRSP is responding to these constraints through an integrated regional program of collaborative adaptive research and technology transfer activities involving CRSP scientists from the United States and researchers from Cape Verde, Senegal, The Gambia, Mali, Burkina Faso, Niger, Chad, Cameroon, and Ghana. In FY 2001 InterCRSP principal investigators from the United States and across the region met in Mali to prepare a synthesis document describing the results of four and a half years of fieldwork. Achievements include:

✿ *Establishment of a well-functioning regional research and technology transfer infrastructure. In creating this infrastructure, the InterCRSP complemented and supported the development of other regional institutions and programs, notably the NRM regional programs of the Sahel Institute (INSAH) and the NRM Research Pole. Researchers and technology transfer agents in nine West African countries are involved in the project.*

✿ *Development of three distinct models for facilitating regional NRM research and technology trans-*

fer activities. The relative efficacy, achievements, and lessons learned from these models will be valuable in the future as West Africa and other regions seek to stimulate and support regional research and technology transfer programs.

2. University/International Agricultural Research Centers Linkage ✿ *UNIARCL* ✿ *Program* ✿

In 1998, seven U.S. land-grant universities began projects with seven international agriculture research centers (IARCs) on eight identified constraints to attaining African Food Security initiative goals of increasing incomes and improving child nutrition. Three of the projects completed their work in FY 2001. These were: Clemson University and the International Center for Tropical Agriculture (CIAT) project to develop tools for isolating and cloning cassava genes for resistance to African cassava mosaic virus and white flies; Tuskegee University and the International Potato Center (CIP) project to develop cultivars for resistance to sweet potato feathery mottle virus; and Washington State University and the International Livestock Research Institute (ILRI) project to develop vaccines against babesiosis. Results of these collaborative projects include the following:

✿ *Five regenerable South African sweet potato cultivars were identified that could either form embryogenic calli or embryos that subsequently regenerated into plantlets.*

✿ *A protocol was developed to make Bacterial Artificial Chromosome (BAC) clones from cassava. Using the protocol, a BAC library containing 73,728 clones was constructed using the strain MECU72 that carries resistance to the white fly pest *Aleurothachellus socialis*. A second BAC library is now under construction for cassava using the clone NGA2 that contains resistance to the African cassava mosaic virus.*

✿ *The genetic characterization of babesial parasite loci enables the development of new strategies to control babesiosis, the most prevalent of the tick-borne protozoal diseases of livestock, through the targeting of genes required for invasion, replication, and transmission of the disease.*

ANNEX FOUR: Highlights of FY 2001

*continued***3. The Recombinant Rinderpest Vaccine Project** ✦

This project supports University of California-Davis scientists in the development of a diagnostic test and a vaccine for rinderpest, a scourge of cattle, buffalo and some species of wildlife. In FY 2001, the production and quality testing of the vaccine was completed. Antigen was produced for the diagnostic kits and scientists continued to work on optimizing the kits. A workshop was held in Senegal where the diagnostic kit was tested, with good results. Plans for expanded field testing at the Kenyan Agricultural Research Institute (KARI) are proceeding.

B. PARTNERSHIPS WITH THE INTERNATIONAL AGRICULTURAL RESEARCH CENTERS*The international agricultural research centers (IARCs)*

have been instrumental in making improved crop varieties available to poor farmers, thus improving food security and reducing poverty. The IARCs work to develop new varieties to address constraints to agricultural production, such as poor soils, pests and drought. Research is also focusing on developing new crop varieties that can provide important micronutrients and thereby improve nutritional status of the world's poorest citizens, including children. The IARCs are committed to increasing crop production in conjunction with environmentally sound natural resource management. Research on the biological control of pests and the development of disease-resistant plant varieties has helped to reduce pesticide use in developing countries.

1. Consultative Group on International Agricultural Research ✦ CGIAR ✦

The 16 international agricultural research centers of the CGIAR continue to make significant contributions to improving food security and reducing poverty. Farmers in developing countries are now growing more than 300 CGIAR-developed varieties of wheat and rice and more than 200 varieties of maize. Future success in developing new crop varieties with higher yields and other valuable traits depends on access to plant genetic resources. The CGIAR holds in trust the world's largest collection of plant genetic resources comprising over 600,000 accessions of more than 3,000 crop, forage, and pasture species. The genetic resources held in trust are used to continually improve crops to respond to changes

in the growing environment, such as pests and diseases.

American scientists (the largest single nationality grouping at the CGIAR centers) are active researchers in the CGIAR systems. Fifty U.S. universities and other institutions engage in nearly 90 cooperative research and development programs with the centers. Each center allocates 8 percent of its annual USAID core funding to support research collaboration with the U.S. research community. Another important mission of the CGIAR is to assist developing countries in strengthening national agricultural research capacities. More than 75,000 scientists and technical personnel from developing countries have received training at the CGIAR centers. FY 2001 highlights include:

- ✦ *Two new maize varieties developed by the CGIAR's International Maize and Wheat Improvement Center (CIMMYT), in collaboration with southern African researchers, will provide grain when other varieties fail. Named "Grace" and "ZM521," they have qualities especially valued by smallholder farmers. In trials stretching from Ethiopia to South Africa, ZM521 produced on average 34 percent more grain than currently grown varieties, and its advantage under stress conditions was as high as 50 percent.*
- ✦ *New research at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has shown that applying small doses of fertilizer at the right time can boost yields by 50 to 100 percent. Using a commonly found object—a soda bottle cap—farmers drop six grams of fertilizer into the planting hole with the seed. This technique has been tested on 5,000 small farms.*
- ✦ *Reducing pesticide use has become an urgent issue in many rice-growing countries. Scientists at the CGIAR's International Rice Research Institute (IRRI) have developed innovative and successful approaches to the problem. Already successful in Vietnam and now being extended to Thailand, the program uses billboards, handouts and humorous radio programs to discourage farmers from applying pesticides when they are not necessary. The goal is to reduce pesticide use by one-half.*

ANNEX FOUR: Highlights of FY 2001

continued

- ✦ *The Rice-Wheat Consortium for the Indo-Gangetic Plains, which includes scientists from CIMMYT and IRRI as well as partners from the national agricultural research programs of South Asia, has developed a low-till planting method for wheat following rice. Farmers in Bangladesh, India, Nepal, and Pakistan are taking advantage of low-till's numerous benefits, including saving water, increasing harvests, and reducing greenhouse gas emissions. The area sown to low-till has increased from a modest 3,000-plus hectares in 1998-99 to more than 100,000 hectares in 2000-2001.*
 - ✦ *The Agricultural Research Service (ARS) of USDA cooperated with the International Livestock Research Institute (ILRI) to understand genetic relationships and disease resistance in sheep. This research has shown that native American breeds have an African genetic background. This points to the importance and uniqueness of the native African sheep and the need to protect and conserve them for their disease-resistant traits.*
 - ✦ *Thousands of people confronting drought and crop failures in Ethiopia, India, and Pakistan face permanent paralysis from eating grasspea, a legume crop typically fed to animals. Grasspea is typically the last plant standing in times of drought. While harmless to humans in small quantities, a steady diet of grasspea seeds over a three-month period causes a neurological disorder that frequently results in paralysis. Researchers at the International Center for Agricultural Research in the Dry Areas (ICARDA) have developed grasspea lines that are completely safe for human consumption. The improved grasspea lines will be distributed to countries most in need.*
 - ✦ *Mahogany is one of the world's most valuable timber species, but it is threatened by mismanagement and overexploitation. Through research performed at the Center for International Forestry Research (CIFOR), much has been learned about the silviculture of mahogany. Mahogany depends on periodic natural catastrophes that open the canopy. The best technique for mahogany regeneration was found to be slash and burn, which yielded a 49 percent survival rate. The findings*
- are being applied in Mexico, where Mayan Indians are being encouraged to plant mahogany in their slash and burn fields.*
- ✦ *Research on mungbean at the Asian Vegetable Research and Development Center (AVRDC), an independent international research center, has led to new, high-yielding types, which are being rapidly adopted in Pakistan, northern India and Bangladesh. The new mungbean can produce over 2 tons per hectare, more than doubling current yields and helping to make this nutritious crop a more attractive economic choice for farmers. Mungbean is an important source of iron in a region where 70 percent of women are anemic. AVRDC's work with Indian nutrition institutes has demonstrated that cooking mungbean and tomato together more than doubles iron bioavailability. A program to increase nutritional awareness among low-income consumers is being carried out.*
- 2. International Fertilizer Development Center** ✦
- IFDC ✦ IFDC, an IARC that works closely with the CGIAR, receives an institutional support grant from USAID. Under the grant, IFDC works to improve household food security, achieve sustainable agricultural production systems, improve resource utilization, and stimulate market-based agro-enterprise development in developing and emerging market countries. FY 2001 highlights include:
- ✦ *As part of its West African Program, IFDC extended the Integrated Soil Fertility Management (ISFM) initiative designed to reverse soil-nutrient mining and environmental degradation. ISFM technologies are now being tested in seven countries covering 15 pilot sites in 70 villages involving more than 1,500 farmers. Initial results indicate that the farmers have nearly tripled their yields with ISFM technologies*

IFDC completed a fertilizer-sector assessment in Uganda in collaboration with the Sasakawa Africa Association. The study recommended that, because of the small Ugandan market, the Uganda fertilizer dealers source supplies in Kenya rather than globally. This has resulted in a 35 percent reduction of fertilizer prices to smallholder farmers.

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- ✦ *IFDC provided Engro Chemical Pakistan, Ltd. with on-site technical assistance on capacity, environmental issues, energy consumption, raw materials usage, and safety in the startup of its new urea-based nitrogen-phosphorus-potassium (NPK) plant.*
- ✦ *A study was completed by IFDC on "Implications of the Uruguay Round Agreements for Agriculture and Agribusiness Development in Bangladesh." Among the report's conclusions was that Bangladesh should strengthen its institutional capacity in developing market information and infrastructure.*
- ✦ *The Information and Decision-Support System (IDSS) was extended, providing a mechanism to assess the socioeconomic and environmental impacts of agricultural research investments. The IDSS permits long-term sequential cropping simulations at different technology levels to be compared with the biophysical sustainability of a system. Economic information is generated to support decision makers in designing and implementing agricultural policy.*
- ✦ *In greenhouse studies on the use of low-cost calcined iron-rich phosphate rocks as phosphorus (P) and iron (Fe) fertilizers for grain crops grown on alkaline soils in which P and Fe nutrients are limiting crop growth, grain Fe density was increased by 17 percent for wheat and 21-35 percent for barley having low phytic acid traits. Thus, combined plant breeding programs and the use of Fe-rich P fertilizers can be effective in increasing grain yield and Fe density of food crops grown on alkaline soils.*

V. Agriculture and the Environment

Globalization, trade liberalization, and demographic shifts are transforming agriculture, creating challenges and opportunities for maintaining the healthy natural resource base on which sustained productivity depends. Population growth creates increased demand for food, while urban demographic shifts and higher incomes generate markets for more diverse and higher-quality products. To remain competitive, small producers in developing countries must acquire the capacity

to meet food safety and product quality standards.

Population growth in rural areas drives poor farmers to convert forest to farms and to cultivate fragile hillsides to meet increasing food needs. Erosion depletes soil fertility, leading to a downward spiral toward poverty. At the same time, pockets of natural forest and wildlife are isolated, further threatening the natural resource base, and there is an increasing competition for water. Approximately 80 percent of the world's freshwater supply is used in agricultural production, often in irrigated systems that are inefficient and environmentally unsustainable, while demand for potable water continues to expand. Three interdisciplinary USAID teams, water, biodiversity, and forestry, offer in-house technical capability in strategy formulation, program design, evaluation, and implementation support for agricultural and environmental activities.

A. Partnerships with U.S. Universities

1. Coastal Resources Management II Cooperative Agreement ✦ CRMII ✦

In 1985, USAID began a cooperative agreement with the Coastal Resources Center at the University of Rhode Island to assist developing nations in implementing CRM projects. The activity launched integrated coastal management (ICM) pilots in Asia and Latin America (Ecuador, Sri Lanka, and Thailand) to identify principles for developing workable coastal management programs in different economic, social and political settings. ICM was recognized as a promising response to environmental deterioration of the world's coasts at the 1992 U.N. Conference on the Environment and Development (UNCED). After UNCED, many donors, governments, NGOs, and universities added coastal management to their research, policy and program agendas. Following UNCED, many international agreements now identify ICM as one mechanism to address critical coastal degradation issues.

A follow-up cooperative agreement (CRM II) was approved in 1995. A second generation of projects was begun in Indonesia, Kenya, Mexico and Tanzania that addressed the following issues: integrated, transparent, participatory governance; destruction of critical habitats, including mangroves, marshes, coral reefs, and lagoons; over-fishing of fish and shellfish; degradation of

water quality; loss of aesthetic quality important to both residents and tourists; loss of access to commonly held resources; and escalating conflicts among user groups.

2. The Sustainable Agriculture and Natural Resource Management • SANREM • Collaborative Research Support Program (www.sanrem.uga.edu) • The

SANREM CRSP supports the development and adoption of sustainable agricultural production and natural resource management practices. In FY 2001:

- ✦ *In the Ecuadorian canton of Cotacachi, citizen volunteers in 46 communities monitored surface and drinking water from streams, springs and irrigation canals for the presence of fecal coliform bacteria. High levels of coliform bacteria, a significant health hazard, were found in most sites. Communities made changes based on the data, leading to the reduction or elimination of coliform bacteria. Water quality is now being monitored in other cantons in Ecuador and Peru. Partners include Auburn University, Pontificia Universidad Católica del Ecuador (PUCE), the Union of Indigenous and Peasant Organizations of Cotacachi (UNORCAC), Yanapai Group (Peru), and Urpichallay Group (Peru).*
- ✦ *An International Centre for Research in Agroforestry (ICRAF) and SANREM partnership developed and tested tree-based agroforestry systems and component technologies that have contributed to the sound management of the buffer zone of the Mt. Kitanglad Nature Park in the Philippines. The partnership trained and worked with farmers in nurseries established under the Landcare Approach and with farmer-based tree seed associations. Farmers are maintaining over 62,500 seedlings of a variety of timber and fruit tree species. This decentralized approach has increased income and improved living standards in rural communities, reduced dependence on nature regenerants as planting material and on forests for timber and wood, diversified the species base for use on idle lands, and heightened awareness about soil conservation. Other partners include Kitanglad Integrated, a community-based organization; the National Integrated Protected Area System; and the University of the Philippines, Los Baños.*

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- ✦ *SANREM-trained water quality monitors presented evidence of increasing watershed degradation to public officials and decision makers at a meeting hosted by the mayor of Lantapan, Philippines. The findings were presented by a delegation of Tigbantay Wahig (Water Watcher) Association volunteers and a member of Heifer Project International. The presentation resulted in the creation of a Lantapan Watershed Management Task Force, which identified concrete solutions to the problems discussed at the meeting. Other project partners include Auburn University and Central Mindanao University in the Philippines.*

B. OTHER AGENCY ACTIVITIES

- 1. Rural and Agricultural Incomes with a Sustainable Environment** • RAISE • Indefinite Quantity Contract • IQC • RAISE is an innovative field support program that harnesses the skills of over 30 partners, including environmental NGOs, private sector businesses, consulting firms, and U.S. universities, to promote environmentally sound development of agriculture and natural resource-based enterprises. In FY 2001:
- ✦ *USAID's Agribusiness Development Assistance Program (ADAR) in Rwanda is facilitating a revitalization of the agribusiness sector as it shifts from reliance on international relief to more sustainable agricultural production. In addition to initiating exports of Irish potatoes and passion fruit, ADAR has developed a tool to identify quality, environment, health and safety challenges that limit the competitiveness of Rwandan agribusinesses.*
 - ✦ *Following an analysis of 30 years of community-based natural resource management (CBNRM) in Africa, a tool was developed to assist decision makers in evaluating potential micro and macroeconomic returns on investments in CBNRM activities.*
 - ✦ *The Gaza-Kruger-Gonarezhou Trans-boundary Natural Resource Management Initiative is working to improve the management of protected areas straddling the boundaries between South Africa, Mozambique and Zimbabwe. The project*

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is identifying and implementing practices for sustainable management of shared resources, working to resolve impediments to collaborative management of the protected areas, and strengthening capacity to manage the trans-boundary park.

2. Integrated Water and Coastal Resources

Management • Indefinite Quantity Contract

• **Water IQC** • The Water IQC mechanism provides technical expertise to design and carry out strategies and programs in integrated water and coastal resources management via three alliances of business associations, environmental foundations, U.S. universities, and consulting firms. In FY 2001:

- *Urban water demand in Jordan is placing increasing pressure on irrigated agriculture and the sustainability of water resources. The Jordan Water Resource Policy Support activity promotes the successful reform and implementation of water policies that will improve the sustainability of irrigated agriculture through the reuse of treated waste water and a reduction in the over-extraction of groundwater.*
- *The Honduras Upper Watershed Rehabilitation Project worked with communities in the upper watershed areas of the Ulua, Augan and Choluteca rivers to mitigate the ecosystem degradation and human devastation that occurred during Hurricane Mitch. Activities focused on the rehabilitation of infrastructure, the implementation of integrated watershed management practices, forest management, fire control, soil conservation, improvements in hillside agriculture, and improvements in cattle ranching practices.*
- *In Armenia, USAID is using an Integrated Water Resources Management approach to foster the development of water quality and water management policies to address incomplete environmental legislation, water contamination, over-extraction of water from Lake Sevan, and unsafe pesticide practices.*
- *Bolivia's Cleaner Production Program conducted audits of a tannery, a slaughterhouse, and quinoa processors and several training programs in energy efficiency and cleaner production.*

ANNEX FIVE

FY 2001 Activities to Bridge the Knowledge Divide

TRAINING

Education and training through degree and non-degree programs are critical elements of capacity building in developing countries. In the past three years, the number of agricultural specialists and technicians trained through the CRSPs and IARCs has been increasing. In FY 2001, over 5,000 participants received degrees or shorter-term technical training (Table 1). There is a growing trend toward non-degree training and dissemination of technical information through sabbaticals, post-doctoral studies and workshops, as well as field days for farmers and training offered by the private sector.

The Collaborative Research Support Programs (CRSPs) continue to play an important role in human capacity building. During FY 2001:

- ✦ *The Global Livestock CRSP assisted 62 students in degree training programs and trained 514 participants from 11 countries and 120 organizations in non-degree short courses and workshops.*
- ✦ *Twelve Albanian specialists from the Plant Protection Institute, Fruit Tree Research Institute and Agricultural University of Tirana participated in an Integrated Pest Management CRSP-organized statistical short course February 26-March 2, 2001, with Pennsylvania State University taking the lead role.*
- ✦ *The Pond Dynamics/Aquaculture CRSP assisted 19 international graduate and 29 undergraduate students, as well as seven graduate and 12 U.S. undergraduate students, with funding, training, and research opportunities. Researchers and students gave 32 presentations in nine countries to disseminate CRSP results to over 130 host country agencies, researchers, farmers, and students. Two technical workshops were given to 35 Honduran fingerling producers and NGO representatives to discuss production techniques and analyze fingerling demands. Five short courses were given to Kenya Fisheries Department personnel.*

TABLE 1:
DEGREE AND NON-DEGREE TRAINING PROGRAMS*

	FY 1999	FY 2000	FY 2001
Degree training completed (Ph.D., M.S., B.S./B.A.)	120	80	88
Degree training in progress (Ph.D., M.S., B.S./B.A.)	NA**	NA**	218
Non-degree (sabbatical, post-doctoral, workshops, etc.)	1,226	1,910	4,787
Total	1,346	1,990	5,093

*Data from CRSPs, IFDC, RAISE, USAID TraiNet/HAC Reports. Figures are best estimates from several sources.

**Data collection on the number of students continuing in a degree-training program was started in FY 2001.

- 🌿 *A Sustainable Agriculture and Natural Resource Management CRSP project in Ecuador is enhancing both cultural and genetic conservation using the “memory banking” methodology, which documents cultural knowledge and plant materials (especially seeds) of traditional food crops and medicinal plants. Conservation priorities were identified in consultation with local people. Women and youth were targeted for greater involvement in conservation activities. Two hundred and fifty children participated in biodiversity and water quality training, 16 attended workshops on biodiversity gardens, and 16 attended workshops on Andean tubers.*
- 🌿 *Two scientists from the National Veterinary Institute and the Regional Veterinary Reference Lab in Cote D'Ivoire received training at UC-Davis through the Recombinant Rinderpest Vaccine Project.*
- 🌿 *To create a high altitude-adapted milking cow for the impoverished altiplano region of Peru, researchers from the University of Wisconsin-Madison and the Universidad Nacional del Altiplano have established a partnership to cross-breed yaks with cows. This partnership involves capacity building in the areas of in vitro embryo production and transfer and has an ultimate goal of increasing employment opportunities in the rural altiplano region.*
- 🌿 *Texas A&M University System's Texas Agricultural Experiment Station and the three member institutions of the Consorcio Técnico del Noreste de México are collaborating to develop sustainable grazing land production systems in north-east Mexico and south Texas. Faculty and student exchanges will bolster ongoing bi-national research, education, and development efforts.*
- 🌿 *The focus of the partnership of Montana State University-Bozeman with the University of Zagreb and Osijek University is fostering and sustaining Croatia's economic development through the cooperative business movement in the agricultural sector.*

The Center for Human Capacity Development 🌿

HCD 🌿 The Global Bureau's Center for Human Capacity Development (HCD) supports higher education and training programs in developing countries with competitive grants administered through United Negro College Fund Special Programs (UNCFSP) and the Association Liaison Office for International Development (ALO). ALO assists the nation's six major higher education associations build partnerships with USAID and helps their member institutions foster cooperative development partnerships with colleges and universities overseas. UNCFSP supports capacity building in Africa through its Tertiary Education Linkages Project (TELP) and its International Development Partnerships (IDP). In FY 2001, one IDP and six TELP partnerships had an agricultural component. During FY 2001, ALO supported 11 ongoing partnerships with an agricultural focus with a total of \$945,320 in Agency funding and initiated four new partnerships with a strong agriculture focus:

- 🌿 *Iowa State University (ISU) and the Universidad Nacional Agraria “La Molina” (UNALM) in Peru are partnering to strengthen institutional capacity in sustainable agriculture and the building of sustainable rural communities. Faculty and student exchanges and other collaborations are centering on a new Master's program in agricultural innovation and development at UNALM and a new Master's and Ph.D. program in sustainable agriculture at ISU.*
- 🌿 *A joint consultation by USAID and the World Bank's Land Policy thematic group took place during FY 2001. An electronic discussion was first held over a four-week period throughout March, during which 527 registered participants from more than 65 countries exchanged 271 messages. This electronic discussion framed the agenda for the donor consultative meeting in April. Over 100 representatives of bilateral and multilateral donor agencies (World Bank, USAID,*

WORKSHOPS/FORUMS

- 🌿 *In April 2001, USAID, USDA, and the U.S. university community held a one-day forum in Washington to discuss implementation of the recently amended Title XII. The workshop focused on addressing the impacts of globalization; partnerships between U.S. universities, USDA, and USAID; economic cooperation; market development versus subsidy; federal-state cooperation in international trade and development; and reversing the decline in long-term training. The forum produced a concept note entitled “University Alliance to Eliminate World Hunger,” which is under discussion in the university community.*

ANNEX FIVE: FY 2001 Activities to Bridge the Knowledge Divide

continued

DFID, EU, GTZ, FAO, IFC, AusAid), academics and experts on land issues attended the donor consultative meeting. The event facilitated a discussion of approaches to land issues and ways to incorporate them effectively into a policy agenda and assistance programs. It also produced a paper synthesizing best practices in land use. Six BASIS CRSP researchers played key roles in the consultations and the regional follow-up meetings that were held in March and April 2002.

- ✿ An international workshop in Dakar, Senegal on the “Genetic Improvement of Cowpea”, held January 8-12, 2001, was organized by Bean/Cowpea CRSP scientists from Purdue University and attended by 48 scientists and administrators from nine African countries. The purpose of the meeting was to review the state of the art in genetic improvement in cowpeas and to develop coordinated work plans to address constraints to the development and deployment of genetically improved (including transgeneic) cowpeas in Africa.

- ✿ The Global 2000 Sorghum and Pearl Millet Conference, organized by the INTSORMIL CRSP and co-sponsored by the Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias (INIFAP), Mexico and the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), India, was held in Guanajuato, Mexico. The conference reviewed the status of sorghum and millet diseases nationally, regionally, and globally. Participants from 21 countries discussed diseases such as ergot and grain mold, population biology of selected pathogens, integrated management of disease, and effects of disease management on the crop ecosystem.

- ✿ A regional workshop on “Bean Seed Multiplication, Dissemination, Entrepreneurship and Quality Concerns in East Africa: Current Status and Future Needs” was held in Arusha, Tanzania, January 12-14, 2001. The workshop was attended by CRSP scientists from Malawi, Tanzania and the United States, NGOs, and bean breeders from Tanzania, Malawi, Mozambique, and the Centro Internacional de Agricultura Tropical (CIAT). It explored issues surrounding seed multiplication

and dissemination. The Proceedings from the meeting are posted on the East Africa Bean/Cowpea CRSP website (<http://sustainableseedsystems.wsu.edu/proceedings/index.html>).

- ✿ Participants of GL-CRSP Project PLAN (Planificación Local Agropecuaria y de la Naturaleza), University of Wisconsin personnel, and local Madison-area farmers exchanged ideas, strategies and experiences related to improving livestock management in a workshop with collaborators from Mexico, Bolivia and Ecuador.
- ✿ Forty-five participants from Africa attended a regional workshop organized by the Peanut CRSP on “The Detection and Management of Aflatoxin in Food” at the University of Botswana. The workshop focused on improving food safety since people throughout the continent are chronically exposed to this toxin.

INFORMATION DISSEMINATION

- ✿ Bean/Cowpea CRSP scientists at the Crops Research Institute (CRI) and the Savannah Agriculture Research Institute (SARI) in Ghana conducted participatory integrated pest management (IPM) technology testing and adoption activities utilizing Farmer Field Schools and Participatory Action Research Trials. Over 250 people participated in these programs. The programs emphasized integrated crop management, diagnostic and record-keeping skills, alternative management practices for cowpea production, and marketing. Studies in West Africa indicate that farmers can expect at least a 30 percent yield increase in cowpea when IPM approaches are adopted.
- ✿ Bean/Cowpea CRSP scientists in Tanzania and Malawi, in collaboration with Washington State University and Michigan State University, promoted seed dissemination and planting of improved bean varieties to small farmers. The project is working with commercial seed companies and farmers to expand seed production. In Malawi, the Bean/Cowpea CRSP supported the production of 6 metric tons of high-quality seed, which was given to Concern International for fur-

ANNEX FIVE: FY 2001 Activities to Bridge the Knowledge Divide *continued*

ther multiplication and distribution. An additional 7.2 metric tons were distributed to smallholder groups in central Malawi.

- ✦ In collaboration with Honduran NGOs and the Sustainable Development Network-Honduras (RDS-HN), Pond Dynamics/Aquaculture (PD/A) CRSP scientists developed and launched a website (<http://acuacultura-ca.org.hn>) designed to provide information to extension workers and farmers on fish culture and connect them with NGOs and decision makers. In its first five months of operation, the website received 6,800 hits, and more than 300 people registered to receive information. The site features over 100 documents, an Excel-based pond design model, a chat room, and a page from which users can send questions to aquaculture experts.
- ✦ PD/A CRSP research yielded four technical manuals and several training modules. The Thailand Project developed a manual with simple guidelines on fertilization, supplemental feeding, and pond management, as well as basic extension materials. The Peru Project produced a manual on broodstock preparation and selection, ovulation and spawning, and hormonal treatment for inducing reproduction in two Amazonian fish species. The Honduras Project developed a 37-page booklet that describes methods of tilapia production on Central American farms. The Mexico
- Project produced a manual on masculinization of Nile tilapia fry and safe handling procedures. The Kenya Project developed modules for training Fisheries Department extension officers and undergraduates in the Moi University Department of Fisheries.
- ✦ In Bolivia, Peanut CRSP researchers produced, published and distributed a handbook on best practices in peanut production to farmers in the Santa Cruz region. A seed supply system is being established to ensure that adequate supplies of the yield-increasing varieties will be available. Processing arrangements are being investigated.
- ✦ The Sustainable Agriculture and Natural Resource Management (SANREM) CRSP partnered with the U.N. Food and Agriculture organization (FAO) and the Global Forum for Agricultural Research to design and implement an international e-conference on “Integrating Sustainable Food Security Dimensions into the Research Agenda of the National Agricultural Research System (NARS)”. This effort resulted in a publication of guidelines that can be used by the NARS to broaden their participatory research agenda while addressing food security. This publication, “Integrating Food Security Issues into Agricultural Research”, can be accessed from the FAO Corporate Document Repository (<http://www.fao.org/documents>).

Future Directions for Agriculture

USAID Interim Agricultural Strategy

In the developing world, more than 800 million people go to bed hungry each night. Most of these individuals live in Sub-Saharan Africa and South Asia, although there are groups in all regions vulnerable to undernutrition, either continuously or during specific seasons. Many of the hungry are farmers, but they are unable to produce adequate food and income to ensure their household's well-being. Even for the urban poor, safety nets are crisis-oriented, although a limited amount of donor-financed assistance is sometimes available to address the needs of the most vulnerable.

More than two billion children will be born over the next 20 years, and more than 95 percent of them will live in the developing world. To provide diets adequate for a healthy and active population, agricultural producers in developing countries must be able to more than double the current productivity of their land, labor, and water resources.

But agricultural producers cannot do this on their own. Science, training, credit, infrastructure, and external investments must all come together to achieve the needed agricultural transformation at the production level and the sector level. Also, increased integration into global markets is critical for developing and transition countries. Not only will such integration contribute to making available new production and processing technologies, but it will also expand the opportunities for developing country agricultural producers and rural industries to market higher value crops and products competitively and profitably to a broader range of consumers.

Knowledge—and the capacity to harness its opportunities—is now recognized as a major driver of the development process in the global economy. Those without knowledge or skills to participate and compete in this economy are excluded from the potential benefits associated with greater information, commodity, and resource exchange. It is no surprise, then, that the capacity to innovate—to develop new knowledge and apply it productively—defines the countries that are most competitive in global markets.

Fortunately, there is currently a convergence of many elements that could enable agricultural producers and rural industries in USAID-assisted developing and transition countries to better meet the dual challenges of food production (for reducing hunger) and globalization

(for promoting long-term income growth):

- ✦ *The development of agricultural science and technology, especially in the United States, has fostered extraordinary advances in biotechnology, bioinformatics, and expanded applications of geospatial and modeling tools.*
- ✦ *Recent analyses of economic development confirm the importance of agricultural productivity as a critical stimulus to broad-based, rural-led economic growth. These analyses have led to new appreciation of the power of those multipliers to translate agricultural growth into rural development.*
- ✦ *Non-governmental organizations (NGOs) have collaborated with farmers and farmer organizations in developing new approaches to transferring technologies, accessing markets, and tapping new sources of finance.*
- ✦ *Embracing the call for improved democratic governance and responding to the potential of the growing global marketplace, many developing and transition country governments have begun to put in place the economic, legal, and regulatory systems that facilitate greater engagement of agricultural producers in local and regional as well as global markets.*
- ✦ *Finally, USAID has been provided with a new and more positive legislative framework that supports the emergence of a "new agriculture" in developing and transition countries. Revised Title XII legislation passed in FY 2000 restates the United States' commitment to the goal of preventing famine and freeing the world from hunger.*

Over the next five years, USAID will renew its leadership in the provision of agricultural development assistance. This will be framed by a new agricultural strategy that will reflect adaptations to major emerging opportunities including:

- 🌿 *Accelerating agriculture science-based solutions, especially using biotechnology, to reduce poverty and hunger;*
- 🌿 *Developing global and domestic trade opportunities for farmers and rural industries;*
- 🌿 *Bridging the rural knowledge divide through training, outreach, and adaptive research at the local level; and*
- 🌿 *Promoting sustainable agriculture and sound environmental management.*

Providing leadership in promoting a “new agriculture” implies significantly increased investments in agriculture but also renewed commitments from other donors. However, this will not happen automatically. USAID will build on its comparative advantages to provide the needed leadership in restoring a commitment to agriculture and hunger reduction. These comparative advantages include our potential to mobilize significant grant financing resources; our ability to engage multilateral and bilateral partners in common agendas; our capacity to mobilize the U.S.-based, high-quality network of scientific and technological expertise and to partner with the interests and experience of the most competitive entrepreneurial and corporate system in the world; our organizational knowledge, accumulated over 50 years of implementing development programs; and our strong field presence.

Many of USAID’s programs already respond to these challenges individually. However, in order to improve the Agency’s effectiveness as a key foreign policy instrument, the Administration has begun to coordinate and focus Agency resources and capabilities to address hunger and poverty. The new central bureau of Economic Growth, Agriculture, and Trade will provide a new emphasis on the Agency’s total portfolio of agriculture programs and activities with the ultimate goal of creating and cultivating viable market-oriented economies. This central bureau will highlight environmental sustainability, the development of human capital and the interdependence of economic growth and agricultural development.

No development effort is sustainable without economic growth and food security. The Agency will seek to increase support for economic growth and agriculture programs that reduce poverty and hunger, while finding better ways to mobilize and to partner with the private sector. One mechanism the Agency would like to pursue is Global Development Alliances (GDAs). GDAs could become a fundamental reorientation of USAID’s role in providing international development assistance. Using the GDA approach, the Agency could serve as a catalyst to mobilize the ideas, efforts, and resources of the public sector, corporate America, the higher education community, and non-governmental organizations in support of shared objectives. USAID’s extensive field presence and technical expertise give the Agency the ability to integrate, coordinate, and facilitate a public-private alliance among different U.S. actors.

Under each “new agriculture” theme, the Agency also proposes to launch a set of activities that broadly signal a shift in USAID leadership in this sector and may leverage new commitments and funding from others. Selecting the activity most appropriate for a given region, set of households, or group of producers will involve participatory approaches to both research and technology transfer.

Even within individual regions and countries, rural populations are highly heterogeneous. To be cost-effective, the activities identified must be capable of being scaled up, either by private or public sector organizations. Risk is also important, but as the microfinance experience has shown us, it cannot serve as an excuse to avoid reaching down to the poorest.

Equally important, agricultural development is now seen as part, not the whole, of the solution. Investments in infrastructure, health, and education both reinforce and are made more viable by investments in agricultural growth.

Over the next year, we intend to lay a stronger intellectual foundation for USAID agriculture sector programming by developing a new strategy. We assume that the formation of specific Global Development Alliances, the public-private partnership modality that has characterized part of our current agricultural portfolio, will be significantly expanded. Highlights of this new strategy will be included in next year’s Title XII Report to Congress.

Endnotes

¹ As used in Title XII, as amended, “agriculturists” includes farmers, herders, and livestock producers, individuals who fish and others employed in cultivating and harvesting food resources from salt and fresh waters, individuals who cultivate trees and shrubs and harvest non-timber forest products, as well as the processors, managers, teachers, extension specialists, researchers, policymakers, and others who are engaged in the food, feed, and fiber system and its relationships with natural resources.

Annex Seven ACRONYMS

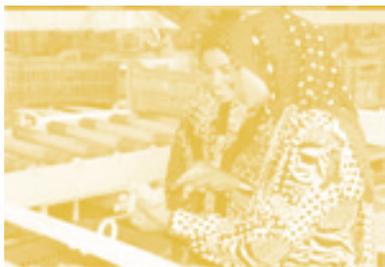
AAATA	Assistance to Albanian Agricultural Trade Associations
ABSP	Agricultural Biotechnology for Sustainable Productivity Project
ADAR	Agribusiness Development Assistance Program
AEC	Agro-Enterprise Center
AFR	Africa
AFSI	Africa Food Security Initiative
AGOA	African Growth and Opportunity Act
ALO	Association Liaison Office
AMIS	Agribusiness and Marketing Improvement Strategies Project
ANE	Asia and the Near East
ANMAT	Adapting Nutrient Management Technologies Project
ARS	Agriculture Research Service, USDA
ASME	Agribusiness small and medium enterprise
ASNAPPP	Agribusiness and Sustainable Natural African Plant Products Project
ATRIP	Africa Trade and Investment Initiative
AVRDC	Asian Vegetable Research and Development Center
AusAID	Australian Government Overseas Aid Program
BASIS	Broadening Access and Strengthening Input Marketing Systems CRSP
BBI	Biotechnology and Biodiversity Interface
B/C	Bean/Cowpea CRSP
BHR	Bureau of Humanitarian Response
BIFAD	Board for International Food and Agricultural Development
BOA	Board of Agriculture, NASULGC
CADEFOR	Amazonian Center for Sustainable Forest Enterprise
CARESDA	Caribbean Research and Development Associates
CASP	Collaborative Agribusiness Support Program
CBNRM	Community-based Natural Resources Management
CEE	Central and Eastern Europe
CGIAR	Consultative Group on International Agricultural Research
CIAT	International Center for Tropical Agriculture
CIFOR	Center for International Forestry Research
CIMMYT	International Maize and Wheat Improvement Center
CIP	International Potato Center
CLUSA	Cooperative League of the USA
CMD	Cassava Mosaic Disease

COMESA	Common Market of East and Southern Africa
CRM II	Coastal Resources Management Cooperative Agreement II
CRSP	Collaborative Research Support Program
CSD	Child Survival and Development
DAC	Development Assistance Committee
DBMC	Dominica Banana Marketing Corporation
DCA	Development Credit Authority
DEI	Dairy Enterprise Initiative
DFA	Development Fund for Africa
DFID	Department for International Development (United Kingdom)
E&E	Europe and Eurasia
EGAD	Center for Economic Growth and Agricultural Development, USAID
ESF	Economic Support Fund
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FEWS	Famine Early Warning System
FS II	Food Security II
FSA	Freedom Support Act
FSAC	Food Security Advisory Committee
FSR/E	Farming Systems Research and Extension
FSU	Former Soviet Union
FTAA	Free Trade Area of the Americas
FY	Fiscal Year
G	Global
GAIN	Global Alliance for Improved Nutrition
GATT	General Agreement on Tariffs and Trade
G/EGAD/AFS	Global Bureau/Center for Economic Growth and Agricultural Development/Office of Agriculture and Food Security, USAID
GIS	Geographical Information System
GISD	Geospatial Information for Sustainable Development
GL	Global Livestock CRSP
GTN	Global Technology Network
GTZ	German Technical Cooperation Society
HACCP	Hazard Analysis of Critical Control Points
HCD	Center for Human Capacity Development
IARC	International Agricultural Research Center
ICRAF	International Center for Research on Agroforestry
ICLARM	International Center for Living Aquatic Resources Management
ICM	Integrated Coastal Management

ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
IEHA	Initiative to End Hunger in Africa
IESC	International Executive Service Corps
IFC	International Finance Corporation
IFDC	International Fertilizer Development Center
IIC	International Irrigation Center
IITA	International Institute for Tropical Agriculture
ILRI	International Livestock Research Institute
IMAS	Integrated Management and Assessment System
INRM	Integrated Natural Resources Management
INTSORMIL	Sorghum/Millet CRSP
IPM	Integrated Pest Management
IRRI	International Rice Research Institute
IQC	Indefinite Quantity Contract
ISFM	Integrated Soil Fertility Management
IWMI	International Water Management Institute
KARI	Kenya Agricultural Research Institute
KIS	Knowledge Information Systems
LAC	Latin America and the Caribbean
LEWS	Livestock Early Warning System
MAMA	Macedonian Agribusiness Marketing Activity
MAP	Market Access Program
MIS	Market Information System
NARS	National Agricultural Research Systems
NASULGC	National Association of State Universities and Land Grant Colleges
NEPAD	New Partnership for African Development
NGO	Non-governmental organization
NTAE	Non-traditional agricultural exports
OECD	Organization for Economic Cooperation and Development
OFDA	Office of Foreign Disaster Assistance
PD/A	Pond Dynamics/Aquaculture CRSP
PFID	Partnership for Food Industry Development
PPC	Policy and Program Coordination
POA	Partners of the Americas
PRARI	Program to Revitalize Agriculture through Regional Investment
PRN	Poverty Reduction Network
PRSP	Poverty Reduction Strategy Paper
PVO	Private Voluntary Organization
RAISE	Rural and Agricultural Incomes with a Sustainable Environment

SANREM	Sustainable Agriculture and Natural Resource Management CRSP
SARRNET	Southern Africa Root Crop Research Network
SCAA	Specialty Coffee Association of America
SPARE	Strategic Partnership for Agricultural Research and Education
SPS	Sanitary Phyto-Sanitary
TED	Trade Education Database
TELP	Tertiary Education Linkages Project
UNCED	United Nations Conference on the Environment and Development
UNCFSP	United Negro College Fund Special Programs
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
WFS:fy1	World Food Summit: <i>five years later</i>
WHO	World Health Organization
WSSD	World Summit on Sustainable Development
WTO	World Trade Organization
ZATAC	Zambian Agribusiness Technical Assistance Center

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The Title XII Report was prepared by the Office of Agriculture and Food Security, Center for Economic Growth and Agricultural Development, Global Bureau, USAID with the assistance of Leslie Hunter, Anne Green, and Barbara Negley.



USAID Mongolia, Mercy Corps/PACT

COVER

CHIMED TUMENDELGER is an 81-year-old herder living in the Gobi desert near the border with China. Until recently, herding was more a way of life than a business venture. Most Mongolian herders did not understand what cashmere processing companies required or how consumer decisions in the United States, Europe, and East Asia affected their livelihoods. Today, thanks to the Gobi Initiative, those factors are key elements of their business planning. The Gobi Initiative's programs enhance herders' understanding of organized goat breeding, enabling them to improve the quality and increase the market value of their product.

To address the financial needs of herders and other rural businesses, the Gobi Initiative created a non-bank lending institution that was later transformed into a full-service commercial bank (XacBank LLC). Formal lending institutions, coupled with the assistance provided by the Gobi Initiative, will help the herders build important links to markets within Mongolia and beyond.

Herders in the remotest regions receive market price information from radio broadcasts, which they then use to determine where and when to sell their products. The Gobi Initiative's monthly magazine, Rural Business News, explains how

to use the market information. The Gobi Initiative reinforces these messages through training to improve their herding businesses.

The Gobi Regional Economic Growth Initiative is a five-year rural development project financed by USAID and managed by Mercy Corps in partnership with Land O'Lakes and Pact. The aim of the Gobi Initiative is to accelerate and sustain market-led economic growth and development in the Gobi region of Mongolia. For more information, please see <www.mercycorps.org>, <www.rbn.mn>, <www.marketwatch.mn>



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