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HARVEST OF PROGRESS

**A Quiet Revolution in Latin American
and Caribbean Agriculture**



U.S. Agency for International Development

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Acknowledgments

Special thanks goes to Kenneth D. Weiss, Agribusiness and Trade Advisor for the LAC TECH Project (LAC/RSD/BBEG), who served as the author of this document.

Thanks to Robert Bailey and Lauren Clements, of the LAC TECH Project, and David Gardella and Bill Goodwin of USAID, all of whom were instrumental in launching the NTAE video and booklet. Raquel Cramer and Rebecca Harris provided the technical support, research and design of this publication.

DEDICATION

This publication is dedicated to William R. Goodwin, who devoted his life to helping people through his contributions to United States development assistance programs.

Bill spent more than twenty years working on rural development problems in Latin America and the Caribbean. He cared deeply about the region's development and worked tirelessly to personally contribute to this end. Bill touched the lives of those with whom he worked and he influenced the thinking of his colleagues, who had the privilege to be stimulated and challenged by his discerning word.

In his final months, he gave extravagantly of his diminishing energies to tell this story - the contribution of non-traditional agricultural exports (NTAEs) to sustainable development. He believed passionately in what USAID contributes in this area but insisted on empirical rigor in evaluating accurately its impact. His devotion to NTAE development that benefits the poor, protects the environment and contains within itself the seeds of its own self-sustainability served as an inspiration to his colleagues in Washington and in the field.

We the staff of the LAC Bureau, dedicate this publication in memory of Bill and in recognition of his final special contribution to the people of Latin America and the Caribbean.

Forward by Mark Schneider, Assistant Administrator:

The U.S. Agency for International Development (USAID) is the foreign assistance arm of the United States government. It works in developing countries in all regions of the world and has, at present, five main areas of activity:

- Promoting broad-based, sustainable economic growth
- Conserving natural resources
- Building democratic institutions
- Improving health and family planning
- Disaster relief

Latin America and the Caribbean region offer great potential for broader-based development, but face serious problems of poverty, malnutrition, disease, illiteracy, political instability and war. Activities to promote economic growth are focussed mainly on improvement of policies and regulations, microenterprise, and human development. Most of the microenterprises in rural areas of LAC countries are family farms. USAID encourages these farmers to increase their incomes, and therefore the well-being of their families, by using some of their land to grow non-traditional crops such as fruits, vegetables and flowers for foreign markets. These products, known as "Non-traditional agricultural exports" or simply "NTAEs," are the focus of this publication.

This type of U.S. assistance creates jobs and fights poverty. It gives poor farmers a chance. It also improves health, education, and welfare in sometimes troubled lands. At the same time, our assistance helps expand U.S. business and creates jobs here at home. The problems faced by these countries cannot be solved overnight. It requires our long-term commitment, but it is money well spent.

TABLE OF CONTENTS

- I. Introduction
- II. Agriculture in LAC Countries
 - A. Historical Background (Traditional Agriculture)
 - B. Growth of Free Trade in the Hemisphere
 - C. Nutrition, Income, Employment, Poverty
 - D. Non-traditional Crops for Export
- III. Role of USAID in Providing Assistance in Agriculture
 - A. Traditional Objectives in Agriculture and Natural Resources
 - B. Development of Non-traditional Agricultural Exports
- IV. Benefits of Non-traditional Agricultural Exports
 - A. To Producers and Farm Workers
 - B. To Agribusiness Firms in Producing Countries
 - C. To the General Public of Producing Countries
 - D. To U.S. Suppliers of Agricultural Inputs and Trade Services
 - E. To U.S. Food Distribution and Processing Companies
 - F. To U.S. Consumers
- V. Challenges and Responses
 - A. Lack of Capital, Land, Infrastructure, Organization
 - B. Lack of Knowledge, Information, Sophistication
 - C. Agricultural Risk and Business Risk
 - D. Agricultural Chemicals and Other Challenges
- VI. Future of NTAEs--Building on Past Successes
 - A. Success Stories
 - B. Future Development Strategies
- VII. Conclusion

I. INTRODUCTION

This booklet was prepared by the Office of Regional Sustainable Development for Latin America and the Caribbean (LAC/RSD/BBEG), of the U.S. Agency for International Development (USAID). It was designed to answer numerous questions about USAID's recent work in agricultural diversification. Much of this work has contributed to the development of non-traditional agricultural products for export, or NTAEs. The term "NTAEs" normally refers to fruits, vegetables, flowers, plants and miscellaneous products that were not grown for export until recently. Briefly, we try to explain the factors that led USAID to become involved with NTAE's, the effects that have been felt at the host country and household producer level in USAID-assisted countries, and some of the benefits that U.S. consumers and producers have garnered. Where we have seen challenges for the future, they have been noted for future project initiatives.

Since the 1970s through several administrations, there has been a belief that the poor majority in Latin America could benefit from expanded trade opportunities, especially in agriculture. There was a sense that the root problems of poverty, malnutrition and inadequate foreign exchange earnings could be met better through introduction of high value, land- and labor-intensive crops than strictly through improvements in production of traditional basic grains. During the Carter administration USAID helped a U.S. company, ALCOSA, begin producing non-traditional vegetables for export in Guatemala and laid plans for the Caribbean Basin Initiative (CBI), that was to facilitate economic growth in the Caribbean states. A few years later, during the Reagan administration, a similar initiative was started in Jamaica with involvement by the Land of Lakes organization, which exported surplus dairy products and used the proceeds to form production and marketing organizations for small farmer, labor-intensive crops.

After the 1976 earthquake in Guatemala many donors, including USAID, began pilot programs with NTAEs. They worked primarily through established cooperatives. In the late 1970s and early 1980s, USAID in Honduras joined a major fruit company in experiments with winter fruits and vegetables. A project, named "Non-Traditional Agricultural Exports," began in Ecuador in 1985 and was soon replicated in other countries. Perhaps the best known and most successful

such project has been PROEXAG, later called EXITOS, an NTAE project that began serving four countries and was later extended to all seven countries of the Central America isthmus.

It quickly became apparent that appropriate agricultural, commercial, and macroeconomic policies were critical to the growth of NTAEs. Even well designed projects to promote winter fruits and vegetables from the Caribbean region could not be successful if currencies were not easily convertible, if phytosanitary standards were not in place and applicable, or if the basic marketing infrastructures--refrigerated trucks, roll-on-roll-off capacity, and roads that did not degrade produce quality were not available. USAID and other international donors began influencing Latin American and Caribbean (LAC) governments to eliminate customs duties on inputs for export agriculture; establish "one window" facilities to approve export shipments; allow realistic rates of currency exchange; and implement other policies in the areas of market reform and development of legal and contractual environments to facilitate exports of non-traditional agricultural products.

Non-traditional crops for export have numerous advantages for both exporting and importing countries. One is that they can often be produced by small farmers on portions of their land. NTAEs also can create employment and substantially increase farmers' earnings. Studies have shown that increased earnings lead to higher standards of living. This was recently summarized by Joachim von Braun and Eileen Kennedy of the International Food Policy Research Institute (IFPRI) in a publication entitled, *Commercialization of Agriculture, Economic Development, and Nutrition*:

...Specialization and the development of markets and trade that characterize commercialization are fundamental to economic growth. The significant advantages of market-oriented policies and the powerful forces of trade for development are unquestionable. However, the risks of policy and market failures, deficiencies in knowledge and information of actors in production and markets at all levels, and household-level complexities and intrahousehold conflicts are also determinants of inefficiencies and inequalities during the transformation of traditional agriculture.

In addition, cultivation of non-traditional crops for

export is facilitated by, and in turn impels modernization of, agricultural and commercial policies and infrastructure. Developmental success can substantially increase a country's foreign exchange earnings. Unlike industrial "maquilladora" operations, in which only about 10 percent of foreign exchange receipts may stay in the producing country, with NTAEs a much smaller percentage ends up abroad. The 10 percent to 30 percent that does leave LAC producing countries is typically spent in the United States for planting materials and other agricultural inputs.

U.S. firms and consumers, both individual and industrial, benefit from non-traditional agricultural exports in the LAC region. U.S. shipping and transportation companies carry and deliver much of the produce.

U.S. produce brokers and customs house brokers handle the shipments. U.S. producers, wholesalers and retailers deal in NTAEs to keep their merchandise channels filled year round, rather than only during the U.S. harvests. Therefore consumers also benefit by enjoying year round availability. Finally, U.S. exporters of agricultural equipment and supplies have realized steadily increasing sales to the LAC region. This steady increase in two-way trade will help further the goal of creating a hemispheric free trade area.

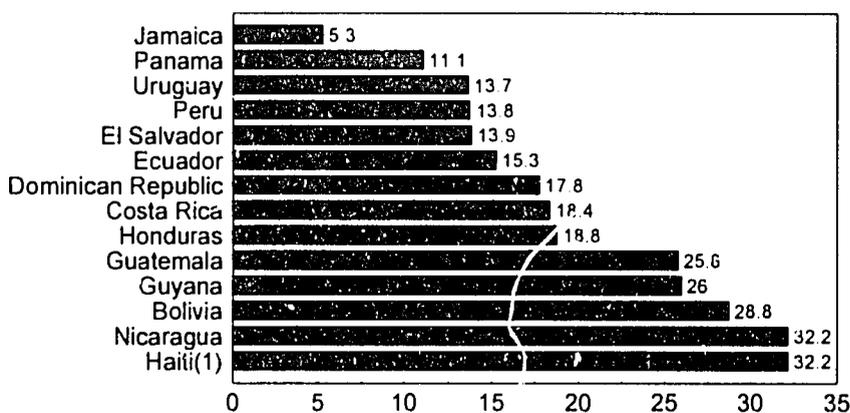
There is a consensus that participation of small farmers in NTAE development projects can be a risky and expensive business. They are alleged to result in destruction of agricultural land and forests and changes in local traditions and cultures. In addition, there is potential for poor working conditions including poisoning of farm workers by agricultural chemicals. In trying to sort fact from fiction, USAID and other organizations have studied the nature and extent of these problems and are initiating measures to address them where such measures are needed.

II. AGRICULTURE IN LAC COUNTRIES

A. Historical Background/Traditional Agriculture

Agriculture has always been a large and vital part of the economy in most Latin American and Caribbean countries. Before colonization most LAC countries were essentially agricultural, and afterward, traditional crops such as coffee and sugarcane were mainstays of several national economies. Agriculture is still extremely important, contributing about 18 percent of the gross domestic product (GDP) in most LAC countries in 1992 and more than 30 percent in Nicaragua and Haiti. Graph 1 shows the contribution of agriculture to GDP in 14 LAC countries for the most recent year for which it is available (1992 for most countries).

GRAPH 1: Contribution of Agriculture to GDP in USAID-Assisted LAC Countries, 1990
(measured as percentages, valued in local, constant prices)



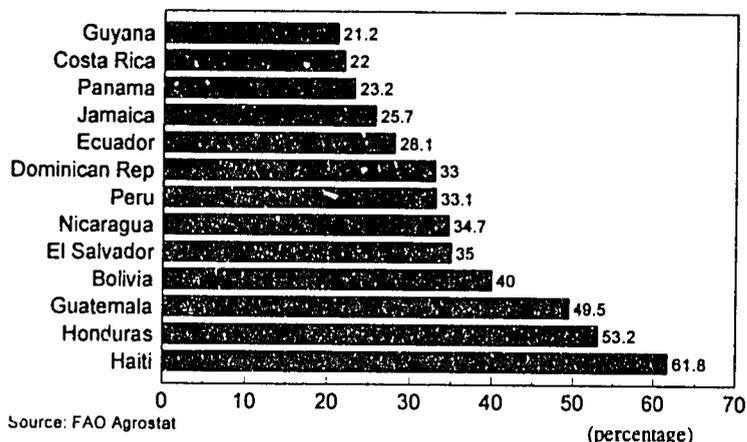
(1) Latest available data 1989

Source: World Bank data base

Also, the percent of the labor force employed in agriculture is very high in the LAC region, ranging in 1993 from about 21 percent in Guyana to 62 percent in Haiti. Graph 2, on the following page, illustrates this important fact.

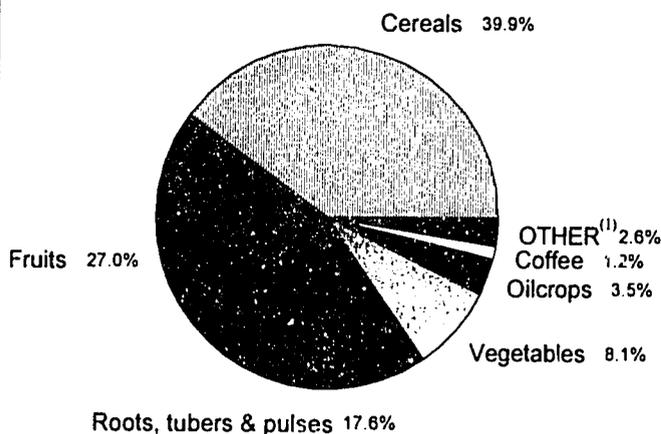
The bulk of LAC agriculture has been in basic grains for local consumption and in traditional export commodities such as cotton and coffee. Farmers have been reluctant to abandon the traditional crops because of tradition itself, concern for food security, and lack of knowledge of suitable alternatives. This production has gradually become less profitable because of declining world prices and less sustainable because of soil depletion and chemical contamination. The result has been insufficient food, income, and employment in

GRAPH 2: Percent of Labor Force in Agriculture 1993



rural areas. Graph 3 gives the approximate distribution of LAC agricultural production by type of crop. These figures are based on area planted, not value harvested or marketed, which would understandably reorganize this list. Sugarcane has been excluded because of its dominance in the weight of production in the region. Surprisingly, tropical fruits and vegetables now account for over one third of the weight of LAC's (non-sugarcane) agricultural production, and when combined with basic grains represent three fourths of the total tonnage produced.

GRAPH 3: Distribution of Agricultural Production
(percent of total tonnage, excluding sugar cane)



(1) OTHER includes sugar beets, tree nuts, cocoa beans, tobacco leaves and fibre crops
Source: FAO Agrostat

B. Growth of Free Trade in the Hemisphere

NTAEs can prosper best in an environment of free trade in which equipment, supplies, and produce can move freely and specialization can take place according to each country's comparative advantages. Also, NTAEs can foster freer trade. The need to produce competitively encourages countries to lower barriers to importation of equipment and supplies, and the existence of produce for export encourages countries to enter into negotiations about import duties and other barriers. Since tariff and trade concessions are usually bi- or multi-lateral, the general level of import restrictions declines. This, of course, follows the strong trend toward liberalization of trade in the Americas.

As Latin American food exports to North America have increased, these countries' imports from the United States have increased as well. According to U.S. Department of Agriculture (USDA) figures, exports of U.S. consumer-ready agricultural products to the LAC region increased from about \$3 billion in 1987 to nearly \$7 billion in 1993, and this trend shows no sign of abating.

Employment is also lacking in rural areas, and this is a primary cause of uncontrolled rural to urban migration in most developing countries. Small-scale subsistence farmers usually employ family labor, and large farmers that cultivate traditional crops usually have high levels of mechanization. Most employment growth in agriculture is created by medium size farmers who grow labor-intensive, high value crops.

C. Nutrition, Income, Employment, Poverty

In much of Latin America, population has grown faster than food production and GDP. This has increased the incidence of poverty and reduced food security. In fact, Latin America is said to have a higher proportion of its people living below the poverty level than any other major world region.

In Guatemala, for example, nearly half the children aged 12-23 months are probably inadequately nourished, largely because their families do not have enough income to provide an adequate diet. While

food shortages come and go, they have been increasing in number and intensity and are expected to continue worsening in the future.

Slow growth in food production can be attributed to many problems including policies that discriminate against agriculture, poor land tenure systems, soil erosion, and the lack of credit at interest rates farmers can afford. These problems can hardly be solved unless the value of agricultural production is high enough to make solutions affordable. For example, soil is more likely to be conserved if the crops produced on it are valuable enough to pay for the costs of conservation.

contributed to both foreign exchange earnings and employment, but until recently very little was done with production of other cash crops for domestic or export sale.

POVERTY AND MALNUTRITION

Low labor and land productivity result in lower levels of food supplies, low levels of marketing of surplus food, and cash incomes that are too low to stimulate demand for additional farm and non-farm goods and services. Poverty and the underinvestment in and maldistribution of social services also means that many of the USAID assisted LAC countries still have relatively high child mortality rates and percentages of malnourished children.

Roberta Van Haeften, Food Policy Advisor, LAC TECH Project

Work has been carried out through in-country agricultural research and extension programs, and also through USAID's sizable annual contribution to the Consultative Group on International Agricultural Research, which coordinates programming among the primarily grain-related world experiment programs.

For several years USAID advisors in fields such as forestry and fisheries have been concerned with preservation of the natural resource base. Natural resource issues have

D. Non-traditional Crops for Export

Faced with declining incomes and employment in traditional agriculture, farmers in LAC countries began looking at the potential to grow non-traditional crops for export. Some of the early limitations were uncertainty about which crops to plant and how to acquire good seeds of suitable varieties, lack of experience in producing these crops, inadmissibility of most fresh fruits and vegetables to the United States, and lack of contacts in developed country markets. Gradually, with assistance from USAID and other international organizations, these limitations have been partially overcome.

III. ROLE OF USAID IN PROVIDING ASSISTANCE IN AGRICULTURE

A. Traditional Objectives in Agriculture and Natural Resources

While USAID priorities have varied over the years and different U.S. government administrations, production and productivity of basic grains traditionally have been given high priority because they were important determinants of both rural income and food security. Significant progress was made in the 1970s during what was called the "green revolution."

Some attention has been given to increasing production of basic export commodities such as coffee, which



Deforestation is increasingly becoming a problem in the LAC region.

become subjects of USAID programming, and projects in certain countries with severe soil erosion have begun to emphasize preservation and/or restoration of natural resources. Then, in 1993, the Earth's environment and natural resources became one of the four pillars of USAID programming.

Agriculture and natural resources are highly interrelated. Although they sometimes compete for the same land, most agriculture requires soil, water and, in some cases, shade. Cutting trees on hillsides, for example, can greatly decrease availability of water for agriculture in the valleys below.

B. Development of Non-traditional Agricultural Exports

Because of factors such as low profitability of basic grains and expanding demand in developed countries for fresh fruits and vegetables, USAID programming began in the mid 1970s to include support to development of non-traditional agricultural products for export. Interventions of this type have been undertaken in all world regions in which USAID works, often with remarkable success. Recently the focus has been sharpened to crops that are relatively high in value, labor-intensive, and sustainable from both the economic and environmental points of view.

Since the definition of non-traditional agricultural products (NTAEs) varies from country to country, it is hard to measure them using statistics published by international organizations such as the Food and Agriculture Organization of the United Nations. The best sources are those published by export promotion organizations in specific countries. Graph 4, for example, shows the explosive growth in NTAEs in Guatemala between 1986 and 1993.

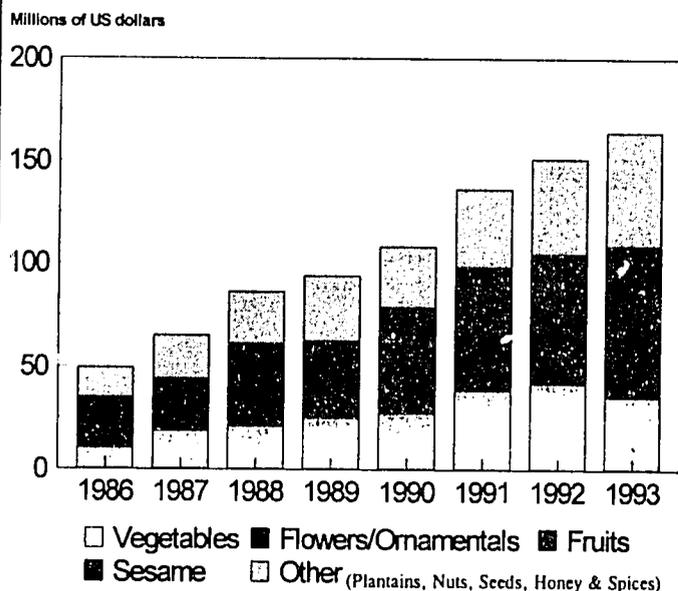
According to USDA's International Agriculture and Trade Report on the Western Hemisphere, published in June, 1994

...during the 1970's less than 5 percent of U.S. agricultural imports from the CBI region were non-traditional and the aggregate value averaged only \$100 million annually. Since the inception of the CBI, the value of U.S. imports of these products has increased steadily at 5 to 10 percent per year while imports of traditional products have been flat.

Graph 5 shows the breakdown of NTAEs from Caribbean Basin Initiative (CBI) countries to the United States, 1991-93 average, in millions of U.S. dollars.

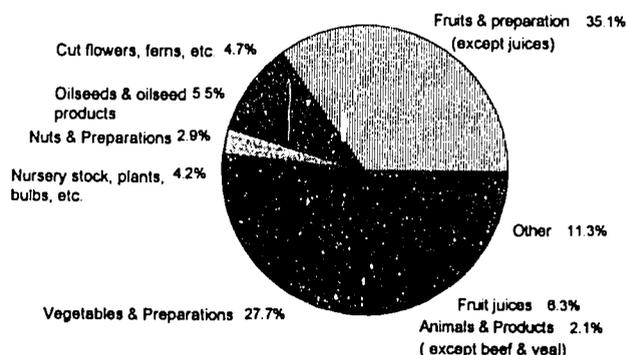
For USAID-assisted LAC countries as a whole, growth has been substantial. Graph 6 (on the next page) shows the growth in fruit and vegetable exports from 1982 through 1992 in the Caribbean countries of the Dominican Republic, Haiti, Jamaica and the Eastern Caribbean States; all seven Central American coun-

GRAPH 4: NTAEs from Guatemala to the World 1986-1993



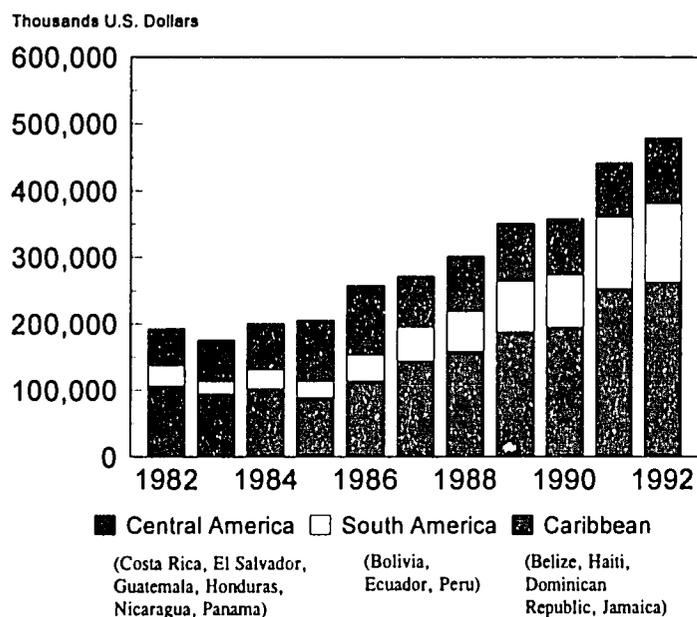
Source: Non-Traditional Products Exporters' Association (GEXPRONT)

GRAPH 5: CBI NTAEs to the U.S., 1991-1993 Average



Source: U.S. Department of Agriculture data base

GRAPH 6: Trends in NTAEs in Latin America and the Caribbean



Source: FAO Agrostat

(NTAEs=Fruits & Vegetables, minus Bananas)

tries, and the South American countries of Bolivia, Ecuador and Peru. NTAEs have nearly quadrupled, from a 1979-81 average of \$105 million to a 1993 total of \$418 million. Thus, NTAEs have prevented a disastrous situation with regard to export earnings from agriculture. This is shown clearly by the following examples of average annual growth in exports from 1987 to 1992:

Country	Traditional Exports	NTAEs (Fruits & Vegetables minus Bananas)
Costa Rica	4.4%	26.5%
Haiti	-25.5%	6.4%
Jamaica	1.7%	12.5%
Nicaragua	-9.8%	28.2%
Ecuador	11.8%	26.7%

Although the NTAE industry is now important in several LAC countries, it has not yet created all the policies, institutions, and linkages needed for it to be sustainable without outside assistance. Some possible exceptions to this are winter vegetables in the Dominican Republic and Guatemala, melons in Honduras, flowers and other products in Costa Rica, and flowers

in Ecuador. To be sustainable, these fledgling industries require time and extended funds in order to profit from the lessons learned and to continue their development.

In the paper "Agro-Exports and the Rural Resource Poor in Latin America: Policy Options for Achieving Broadly Based Growth," published in June, 1993 by Michael Carter and others of the University of Wisconsin, the following conclusion is presented:

The impact of export growth on the Rural Resource Poor in the real world ... depends critically on the interacting effects of differential adoption, induced structural change and labor absorption. The interaction can be positive, with structural shifts in land to small-scale producers who thus benefit directly and who also generate more employment per hectare. The interaction can also be negative... The growth booms of contemporary Latin America present a varied experience which includes both broadly-based and highly exclusionary growth processes.

From this it follows that USAID's role in NTAE development is to design NTAE interventions that will allow the fullest possible participation by small farmers. The challenge is to thoroughly understand the nature of existing tenure systems, poverty, participation and organizations and the resulting implications for the kinds and amounts of assistance that are needed, the kinds of crops that should be promoted, for example, short or long cycle, and the resulting effects on both income and employment.

IV. BENEFITS OF NON-TRADITIONAL AGRICULTURAL EXPORTS

A. To Producers and Farm Workers

The vast majority of farmers in the LAC region work on a small-scale. Yet, because of their numbers they contribute importantly to production of cash crops for domestic and export markets. Small farmers are successfully producing non-traditional crops for export in many countries. Some examples are papayas in Belize, mangoes in Haiti, cut flowers in Ecuador, and snow peas in Guatemala.

IMPROVED STANDARD OF LIVING

"The women ... have improved their standard of living in a personal way as well as for their families. ... In 1985, I arrived here and you could see in the town of Cayambe people walking around without any shoes on. Today you cannot see that." **María del Carmen Valasquez, Ecuador**



NTAEs help improve the lives of small-scale farmers.

The goal of small farmers is to maximize, in sustainable ways, the net income from their land and labor. NTAEs can do that.

A 1989 study by the International Food Policy Research Institute showed that the net profit per hectare from growing snow peas was as much as 10 times as high as profit from growing traditional maize.

Also farmers who grow non-traditional crops for export must follow certain guidelines, for example, as to the use of pesticides. They thus become more sophisticated and may begin to farm in ways that do not deplete their land. Small farmers have a natural advantage with many non-traditional crops in that they do not lend themselves easily to mechanization. Flowers, for example, must be cut and sorted by hand. Some flowers, such as anthuriums from Jamaica, are valuable enough to warrant careful handling of each individual bloom.

Other crops are appropriate for small farmers because they are destined for small-niche markets in the United States or other countries. This is the case with miscellaneous oriental vegetables such as Japanese eggplant. Even a few boxes of such products can be included in a container of compatible goods, shipped, and sold.

Small farmers are beginning to benefit also from the trend toward organic production of non-traditional crops. They are growing organic coffee and sesame seed in El Salvador, organic lettuce in Ecuador, organic cocoa in Bolivia, etc. The production processes used in organic farming make it hard for larger operators to find cost advantages from economies of scale.

A recent series of seven country case studies by USAID's Center for Development Information and Evaluation concluded that small farmers were major beneficiaries of USAID-supported agribusiness programs. These same studies concluded that NTAE industries often provided substantial amounts of seasonal employment.

Many of these jobs, in both agricultural production and processing, are held by women. For some jobs, such

USAID MAKES A DIFFERENCE

"...after the war and the era of the Sandinistas that Nicaragua lived through, Nicaragua was left isolated from other Central American countries, which now are 10 to 15 years ahead of us in the cultivation of non-traditional products. USAID's assistance has made it possible for us to start this program through this institution, and we think it has an excellent potential because of the resources this country has." **Patrick Bolanos, Association of Producers and Exporters of Non-traditional Crops, Nicaragua**

as packing flowers, women have shown to be more adept than men. Studies have shown that involvement in NTAE activities increases the total time that women spend working because they still have their normal household duties. Their income, however, is generally well spent and improves their relative standing in their families and communities.

B. To Agribusiness Firms in Producing Countries

The NTAE business requires suppliers of seeds, fertilizers and other agricultural inputs as well as assembly, transport, packing, and exporting services. Surplus or second quality produce feeds local retailers and processors. As a country develops, the agribusiness sector tends to grow as the percent of GDP from agriculture declines, so that in advanced developing countries agribusiness generates more income than agriculture itself.

This was shown, for example, in studies done in the mid 1980s in Pakistan and the Philippines and reported in a 1993 presentation to USAID by Larry C. Morgan. These studies show that as an economy develops and the agricultural sector declines as a percent of gross national product (GNP), the backward and forward vertical linkages to agriculture become more important. It was estimated that the total value added by agribusiness in both Pakistan and the Philippines was about 50 percent of the total economies, roughly double the percent of value added by agriculture alone.

In some cases, the number and variety of NTAE producers have helped break monopolies on input supply. This is true, for example, in Guatemala. In a few cases, new exporters have sprung up to handle NTAEs. Some of these, such as ACOPAI in El Salvador, are owned by small producers. Benefits to processing firms are many and varied. One example is TropiFrutas in Ecuador which has been able to add passion fruit concentrate to its product line because of increased availability of this product.

Also, the direct linkages to and from NTAE producers lead to important secondary linkages. For example, the varied kinds of fertilizers required by NTAE crops have caused suppliers to begin or increase mixing in

TROPIFRUTAS IN ECUADOR

TropiFrutas is an Ecuadorian firm that produces pulps and concentrates of passion fruit, mango, papaya, pineapple, and bananas. Established near the city of Guayaquil in 1990, TropiFrutas has worked actively with USAID-supported projects to increase agricultural production of raw materials so it can operate closer to its installed capacity. Its products are shipped mainly in 55 gallon drums to Europe.

LAC countries. The need for instant communication in the produce business has led to sales of fax machines in isolated rural areas. The main backward linkages to NTAE cultivation are to production and importation of planting materials, agricultural chemicals and other inputs, while the main forward linkages are to packing, transportation, value-added processing, marketing, and exporting operations.

C. To the General Public of Producing Countries

To ensure the future of their NTAE business, producing countries are working with the USDA's Animal and Plant Health Inspection Service to develop new quarantine procedures that will allow exports of additional products. Some of these procedures are fumigation, hot water treatment, cold treatment, and radiation. LAC countries are experimenting also with techniques such as integrated pest management and organic farming.

NTAE industries often lead to development of commercial infrastructure such as transportation and communications. When a road into a region is improved so the region's products can be taken out faster and in better condition, everyone benefits. Development of cold chains and improvement of ports often follow. Improvements in both are being made now in Nicaragua and various other countries.

Increasing demand for services, and infrastructures to support them, usually gives rise to new service industries. Trucking, for example, is a service whose basic entry requirement is simply the ability to buy or rent a truck. Trucking companies develop quickly wherever there is effective demand for their services and adequate infrastructure.

As the NTAE industry develops it is fostered by and also leads to improvements in government policies and regulations. Successful exporting requires realistic rates of currency exchange, for example, and this helps all of a country's exporters. Exporting also leads to new regulations, as on use of pesticides, which can help make a country's domestic food supply safer.

Since not every produce item has the quality and condition required for export markets, some of the new products become available to local industries and consumers. Some food stores in Central America now carry snow peas and seedless watermelons, and the

NTAEs FOR LOCAL MARKETS

"...before, here, you wouldn't eat eggplant. Now people are starting to eat them, and that is not traditional. Cucumbers too - now they are starting to eat them. We're waiting to see how the squash goes. We have to try it; we have to eat it; it's not poison." **Carlos Miranda, Nicaragua**

flower market in La Paz, Bolivia, has been enriched by new supplies of roses and carnations.

Finally, NTAEs earn foreign exchange, which helps the exporting country as a whole. It is estimated that local value-added accounts were from 60 to 90 percent of the free on board/vessel value of non-traditional agricultural exports. In some other industries, such as textile assembly, local value-added can be as low as 5 to 10 percent.

D. To U.S. Suppliers of Agricultural Inputs and Trade Services

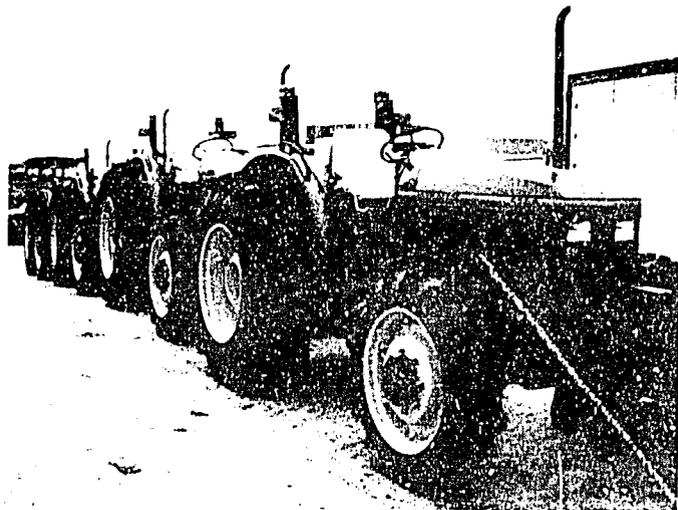
The NTAE industry requires equipment, supplies, and services on an ongoing basis, and much of this merchandise is being supplied by the United States. According to the U.S. Department of Commerce, U.S. exports of food processing and packaging equipment to Latin America will increase from about \$100 million in 1986 to nearly \$700 million in 1994, and this extraordinary rate of growth is continuing. One of the fastest growing markets for U.S. tractors is the LAC region.

U.S. EQUIPMENT SELLS

"So we have a product and the consumer spends money for that product. ... A good portion of that money stays in the United States ... They buy tractors from a reliable tractor company in Tifton. ... They buy farm chemicals ... made by U.S. firms. So those same tax dollars are coming back into the United States and generating more tax dollars. ..." **Dr. Doyle Smittle, Agronomist, Tifton, Georgia**

From 1989 to 1993 U.S. exports to the LAC region of walk-behind rotary tillers increased in volume by 130 percent. Exports of one category of irrigation equipment for agricultural or horticultural use have quadrupled in the same time period.

U.S. exporters have done well also with supplies such as seeds and packaging materials. Exports of onion seeds to the LAC region increased by 85 percent from 1989 to 1993. In the same time period, exports of



U.S. tractors for export to LAC producers.

non-corrugated folding cartons went up 130 percent. Growth in NTAE industries has made LAC agribusiness leaders more aware of the importance of protecting intellectual property, and in turn has improved the attitudes of American businessmen toward sending registered seeds to LAC countries.

Some services, too, are in high demand because of NTAEs. Perhaps the best example is transportation, including air and ocean freight carriers and ports and airports in the United States. One airline, Challenge Air Cargo, exists because of NTAEs from the LAC region. It has pioneered ways of preventing illegal drugs from being shipped with legitimate cargo. Sea Land and other U.S.-owned steamship lines have improved and increased their service in order to handle NTAEs.

The Pompano Beach area of Florida provides clear evidence of the impact of NTAEs on the U.S. Cargo handlers, local truckers, and others have found productive employment handling fruits, vegetables and flowers from the LAC region. The Port of New York recently built a huge refrigerated warehouse to help increase its share of the fresh produce trade.

E. To U.S. Food Distribution and Processing Companies

Just 10 years ago, the average U.S. supermarket carried only about 40 fresh produce items. Now there are more than 200 in large food stores. Moreover, many of these items are in stock year-round. This lets the supermarket devote a constant amount of shelf space to fresh produce, rather than enlarging the space in spring and decreasing it in winter. It also increases profits because fresh produce carries higher margins than other food store lines.

Supermarkets are supplied by wholesalers, importers and import brokers, all of whom benefit from having fresh produce to handle all year-round. Some U.S. farmers have become importers so they can enlarge their product lines and become year-round suppliers. One example is Georgia Vegetable Company which grows sweet onions in the United States and imports them as well. Georgia Vegetable is so satisfied with the onions it imports that it is maintaining close contact with its supplier and has prepared a list of other horticultural products it would like to import from the country of Nicaragua.

One of the most profound effects of NTAE development has been on sales of flowers and plants in U.S. supermarkets. Improved year-round availability of flowers and plants, at reasonable prices, has gone far toward changing them from a "shopping good" to a "convenience good." This has let supermarkets add special sections for flowers and plants and has led to expanded markets and increased sales.

Food service organizations, such as restaurants and school cafeterias, also benefit from having fresh produce available at all times. In addition some U.S.

LOCAL AND EXPORT MARKETS

"We have an organic vegetable farm which produces specifically lettuce, carrots, and spinach. ... We have achieved a local market and an export market. Locally we distribute to four different places including supermarkets, restaurants, and hotels. As for our export market, we are selling to Miami three times a week. PROEXAG, which is funded by USAID, has helped us a great deal to find a market in Miami." **Maria Pacheco de Samayo, Guatemala**

food processors have been able to level out their production, and therefore their employment, by using imported raw materials. Among these are producers of hot pepper sauce and strawberry jam. Each year the United States imports about a billion pounds of fresh tomatoes, as well as large quantities of tomato paste and puree, and much of that is for processing.

F. To U.S. Consumers

The biggest beneficiary of the NTAE industry is clearly the U.S. consumer. Delicious, healthful fresh produce is now available throughout the country and throughout the year. The availability of these foods made it possible to implement the "5-a-Day" campaign to encourage increased consumption of fresh fruits and vegetables.

Because of many factors including the "5-a-Day" campaign and promotions by firms such as Del Monte,

THE "5-A-DAY" PROGRAM

The "5-a-Day" program, sponsored by the National Cancer Institute (NCI), is the first nationwide health promotion to focus on the positive role of produce consumption in reducing the risk of cancer and other chronic diseases. The goal of the program is to increase fruit and vegetable consumption to 5 servings a day by the year 2000.

per capita consumption of fresh fruits and vegetables in the United States has increased from about 190 pounds per year in 1970 to about 230 pounds in 1993. It is expected to keep on increasing.

Recent scientific experiments are confirming the link between fresh produce and better health. It is not just the vitamins in fruits and the fiber in vegetables that helps people stay healthy; apparently, there are chemical substances in some kinds of produce that can actually neutralize or retard the expansion of cancer cells, and thus improve health and longevity.



Organizations help farmers reap the benefits of NTAEs.

V. CHALLENGES AND RESPONSES

A. Lack of Capital, Land, Infrastructure, Organization

One criticism of development interventions in NTAEs is that they require too much in the way of factors of production, infrastructure, and organization. That is, they are too costly to both the farmer and the society in which the farmer lives.

It is true that some kinds of NTAEs require large amounts of investment per hectare and that small farmers do not have ready access to financing. As a result of this, there is now renewed interest in small farmer credit programs. Additional applied research for small- and medium-scale farms would make NTAE development much more sustainable. There are also cases in which large farmers contract with smaller ones to supply much of what they need to grow high value crops and then to buy their produce.

It is also true that most small farmers are using all the land at their disposal. To begin producing non-traditional crops they must displace or reduce production of basic grains, thereby risking a decrease in their level of food security. Yet, there have been many cases in which farmers have put parts of their land into NTAE produc-

tion and have increased their incomes while also increasing yields of more traditional basic grains.

Where rural areas do not have adequate physical infrastructures and farmers are not organized, it is harder for them to enter the NTAE business. Yet, higher value cash crops can justify the costs of improving infrastructures and can encourage farmers to organize. One of the recent Center for Development Information and Evaluation case studies concluded that contract farming works better if the farmers who enter into contracts have their own association. Development planners should identify areas for potential NTAE production and, given their

high employment and income earning potential, target these zones for field trials and for transportation, energy, water and communications infrastructure.

Small farmers in the LAC region have begun to form producers' associations, to reduce risk by assisting with production and marketing. These associations are essentially democratic institutions and thus further the USAID goal of increasing and improving Democracy in the world. NTAE farmers are reducing risk in other ways too, as by entering into fixed price contracts and setting up small processing facilities to absorb the risks associated with agricultural chemicals through better information, training, residue testing, etc.

B. Lack of Knowledge, Information, Sophistication

It is said also that developing country farmers, especially small illiterate and indigenous farmers, lack the knowledge, information, and sophistication to participate in a complex, international industry. NTAE development usually includes technical assistance and

transfer, training and new information systems, from either the private or public sector, to help bring traditional farmers into the modern world.

For example, small farmers in Costa Rica and El Salvador were relatively uninformed about world coffee prices when they

SMALL FARMERS ADVANCE

"Since I received my parcel of land from the government, I have spent five years planting primarily 'chayote' and working with the cooperative. After I became a member of the cooperative, my situation stabilized a great deal. I have a car. I tried to buy a car before, and I wasn't able to. Now I am working and have a better income. The children are studying. One of them is in school." **Alberto Sanchez Soto, Guatemala**

were merely producing a commodity. Those who are now producing high quality gourmet coffee and organic coffee have come to understand the costs and requirements of international shipping and distribution.

In Central America, a USAID-supported project has set up a commodity price data base that makes it much easier to analyze price histories and decide which produce items, varieties, seasons, and markets in the United States are the most profitable. Export development organizations in all seven countries can help their members obtain this information and use it in making business decisions.

MARKET DIVERSIFICATION

"The truth is that we have always understood that the local market can never be abandoned, for nothing in the world. We don't ignore our corn or beans. In terms of export products, we count on a fairly wide variety." **Miguel Angel Socop, General Manager, Cuatro Pinos, Guatemala**

With improved protection of intellectual property rights, new and improved fruit and vegetable planting materials can be interchanged with supervision by the Animal and Plant Health Inspection Service. This release of genetic material and research results will continue to spur on experiments in genetic improvement.

C. Agricultural Risk and Business Risk

NTAEs have been criticized on the grounds that they are new crops with which farmers are not familiar and whose cultivation requires nearly perfect conditions and cultural practices. There are also hazards common to all agriculture such as wind storms and droughts.

THE NEED FOR IMPROVEMENT

"...snow peas already had its Golden Era, as we call it. For the first few years it was an excellent business, but as other countries continued to produce snow peas and as Guatemala's volume grew to approximately 30 million pounds a year, we needed to become more competitive, have higher quality standards, and better yields." **Ricardo Santa Cruz, GREMIAL, Guatemala**

It is true that NTAE crops place new demands on farmers and on agricultural researchers to test and develop new crops and varieties. Part of the gap has been filled by USAID-supported market information and agricultural research projects, by private sector organizations in producing countries, and by importers in developed countries who have become active in creating and refining new sources of supply. Normal risks common to agriculture apply to NTAEs, however, some crops are high enough in value to make ways of countering these risks economically viable. Such devices as drip irrigation systems, wind barriers, and terraces to reduce erosion can be put in place if profitability is sufficient to justify them.

Agricultural research has served to reduce risk by creating plant varieties that are resistant to natural risks such as pests and diseases. Increasing knowledge about the use of soil conditioners, fertilizers and chemicals, and irrigation also reduces risk to farmers. Finally, improved method of processing, cooling, packing, and transportation also lessen the risk that products will arrive at the market in unacceptable condition. Some of these new technologies have been developed by the private sector in LAC countries, and others by the public sector.

There are several elements of business risk in the NTAE business, the most important of which may be falling prices due to market saturation. This risk can be partially avoided if one has enough information about historical prices and current areas under cultivation in both market and supplying countries. This information is becoming more available, but much remains to be put in place. Some kind of international organization, such as an association of LAC growers, could be a useful vehicle for sharing information about production and prices.

D. Agricultural Chemicals and Other Challenges

Perhaps the major criticism of the NTAE industry is that it often requires heavy use of agricultural chemicals. This is true especially where monocrop systems are employed in regions that do not have winters cold enough to kill insect pests. It should be noted that some traditional crops, such as cotton, also receive heavy doses of agricultural chemicals. Chemical residue controls are vital to both the safety of farmers in producing countries and the safety of consumers in the market countries.



Proper testing ensures worker safety and health.

NTAEs have brought considerable attention to chemicals and their use. This is due partly to increased awareness of working conditions and partly to import controls of market countries. In 1993, when snow peas from Guatemala were rejected by the U.S. Food and Drug Administration because of illegal pesticide residues, the business and government communities took concerted action to police the industry in an attempt to prevent the problem from recurring.



Small-scale farmer applying a pesticide.

Most producing countries have increased controls on importation, registration, and use of hazardous chemicals. These countries have passed laws on the use of agricultural chemicals, set up better enforcement mechanisms, and organized special training courses in pesticide use. In Central America, much of the training has been sponsored jointly by USAID, USDA, and the Environmental Protection Agency .

Partly because of NTAEs, there is renewed pressure in the United States to restrict exportation of pesticides that are banned in this country. Also, federal government agencies have increased their willingness to help the developing countries comply with U.S. regulations.

Critics of interventions to develop NTAEs have said also that these new crops contribute to deforestation, soil erosion, declines in soil fertility, concentration of land ownership, exploitation of child labor, loss of traditional cultures, and other undesirable outcomes.

ABANDONING CHEMICALS

“When we clean the coffee, like now, we hire about 100 women to work on this. We have been processing organic coffee for the past two years. We get about 30 percent more for our coffee than the traditionally grown coffee. What we before invested in chemicals, we now invest in new personnel. Organic farming is more labor intensive, and it is better to work with organic fertilizers than to work with chemicals.” Jose Antonio Navarro, El Salvador

Research in these areas has usually found the opposite--increased soil protection, expansion of land holdings by small farmers, and increased incidence of school attendance by small children.

Wherever abuses are found, USAID interventions should be designed to eliminate them or at least reduce their severity. In some cases it is the visibility of NTAEs that has brought these problems to the surface and led to consideration of possible solutions. Among some Ecuadorian Indians, for example, the new sophistication that comes from producing and selling NTAE crops has helped them call attention to the creeping destruction of their culture and their environment. At the same time, the economic importance resulting from NTAEs has increased their ability to keep possession of their lands.

VI. THE FUTURE OF NTAEs--BUILDING ON PAST SUCCESS

A. Success Stories

Throughout Latin America, macroeconomic policies have been changed to liberalize and open national economies to the world. The formative NTAE industries were surely not the only cause of these changes, but they have clearly been a contributing factor.

Improvements in physical and commercial infrastructure are being made to support NTAE industries. One example is Puerto Cortez in Honduras, which has

FROM PROEXANT PROPOSAL TO THE GOVERNMENT OF ECUADOR, MAY 1992

The Export Promotion Policies and Strategy proposal presents steps that should be taken to facilitate increasing the value of exports, diversifying products and markets, increasing local value-added in export products, and increasing employment. These steps include clear and appropriate policies, incentives to exporters, removal of "red tape," access to credit, and foreign trade information.

been improved to handle melons for export. Another is the cool rooms and fumigation station at the airport in Kingston, Jamaica.

Farmer organizations have been set up or improved in LAC countries, partly in response to the demands of NTAE industries. The best known example is perhaps the Cuatro Pinos cooperative in Guatemala, however, there are many others. Some are specialized, such as the association of flower growers in Cochabamba, Bolivia, and others are more general such as the Belize Agribusiness Company.

The melon industry in Central America is perhaps the best known example of success in developing local production technology based on local research and testing. Large quantities of cantaloupes, honeydews, seedless watermelons, and other varieties are now grown in the region.

Success in marketing has been equally difficult to achieve, but there are many impressive examples. One is sales of melons through Lindemann Farms, a

California company that now buys from every country in Central America. On the other extreme there are direct sales of herbs, by small producers, to The Rock Garden in Washington, D.C.

An outstanding example of overall success at least to date, is the sweet onion business in Nicaragua. Large and small producers, government officials, and others have come together to make this business successful despite the political and economic problems that still afflict that country. Exports of onions, which were negligible when the Sandinista government was voted out of office, rose to nearly 100,000 boxes, worth \$1.6 million, in the shipping season from October 1993 to May 1994. The volume and value are expected to continue increasing.

And, on a higher level, the country of Costa Rica is now considered successful enough, politically and economically, to be "graduated" from USAID assistance. Growth of the NTAE industry has contributed to this country's success.

WOMEN IN MELON INDUSTRY

Women are especially well suited for working with some kinds of agricultural produce, such as berries and delicate flowers. Even heavier crop production, such as melons, however, opens up opportunities. Women work in the fields, growing and harvesting the crop, and many more work in the packing houses to sort and wash the melons and to pack them for shipment to foreign markets. A high percentage of this new income is used for the good of their families.

B. Future Development Strategies

NTAE development in the future should concentrate on products other than the more common fruits, vegetables, and flowers. There are opportunities with such produce as oriental vegetables, organic produce, herbs and spices, ornamental plants, and the products of forests and aquaculture. There are also opportunities for more foods that have undergone advanced processing such as cutting, canning, freezing, and drying. To seize these opportunities, applied research in agriculture should be increased.

There should also be concentration on new markets for NTAE products. Emphasis to date has been on the United States, western Europe and Japan; however, there are other potential markets such as South Africa, eastern Europe, the Middle East, the "tigers" of East Asia, and the more rapidly developing LAC countries. The alternative development project in Cochabamba, Bolivia has already targeted regional markets, and trade liberalization in Central America should lead to increased intra-regional trade in many products including NTAEs.

The relatively new term, partnering, should become an integral part of interventions in NTAE development. For example, Lindemann Farms of Nevada works as a partner to melon producers and exporters in all Central American countries. Lindemann provides technical and/or financial assistance, depending on the situation, and is responsible for marketing the produce. Its inspectors at the U.S. port of entry determine where to sell each lot of melons to receive the best price, according to market conditions and the product's quality and stage of maturity.



NTAEs offer new opportunities for women.

More attention is needed to meeting the challenges of NTAEs, especially regarding crop selection and production/post-harvest handling technology including the proper use of agricultural chemicals. In some cases, chemical use may be reduced by changing to low input, natural, or even organic production.

There must also be more attention to helping small farmers become full participants in the NTAE business. This will result from increased attention to training, information infrastructure, credit, organization of

farmers and contract farming. They can be organized into cooperatives, water user groups, crop associations, etc. Of utmost importance is to help them begin working together, thus building democracy as they improve their economic futures.

VII. CONCLUSION

The quiet revolution in NTAEs has already changed the lives of people in both Latin and North America and has the potential to change the lives of more

farmers and their families in the LAC region. Development of NTAE industries has helped stem economic declines in rural areas of the LAC region, and USAID-sponsored interventions have greatly facilitated this development.

Non-traditional agricultural exports have great advantages for both producing countries and importing countries. Those who benefit the most are probably the U.S. consumers, who can now eat delicious, healthful fresh fruits and vegetables all year-round.

As with any new economic activity, there are numerous challenges involved in the development of NTAEs. Perhaps the major one is to assure that only correct agricultural chemicals are used and that they are used correctly. Steps are being

taken in nearly all LAC countries to help achieve this.

Future development strategies should concentrate on diversification of both products and markets. They should also focus on making sure small farmers participate fully in NTAE industries by helping them to obtain knowledge and working capital and to work together more effectively.