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**PARTNERSHIP FOR FOOD INDUSTRY DEVELOPMENT—FRUITS & VEGETABLES**

# **PARTNERSHIP FOR FOOD INDUSTRY DEVELOPMENT— FRUITS & VEGETABLES**

## **FINAL PROJECT REPORT**

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## Executive Summary

The Partnerships for Food Industry Development – Fruits & Vegetables (PFID-F&V) was conceived along with other PFID programs to meet USAID/EGAT’s Strategic Objective (SO) 933-009 – “Science and Technology Developed to Improve Agricultural Productivity, Natural Resource Management, Markets and Human Nutrition.” Under this Strategic Objective, research and training activities were designed to address problems associated with value chains for vital commodities for developing countries and focused especially on meeting international standards for food safety and quality. To this end, research and training/capacity building activities under PFID-F&V specifically targeted an interrelated set of constraints for small-scale farmers to build linkages with the private sector. Managing these constraints were intended to render significant increases in market access for small- and medium-scale producers in developing countries, supporting higher income earning capabilities and alleviating poverty.

The Leader Award for PFID-F&V supported the development of products and services to pave the way for more advantageous market linkages for the small-and medium-scale fruit and vegetable producer, as well as strengthened institutional capacity and access to systematic information on agrifood market development. Over the nine-year course of PFID-F&V, USAID country missions and regional programs supported project Associate Awards in Ghana, Central America (Region), India, Nicaragua, South Africa, and Southern Africa.

During this nine-year life cycle of program implementation and execution, the PFID-F&V program grew to become a highly successful partnership of NGOs, educational/training institutions, and private companies in the food industry aimed at assisting small and medium producers to expand their engagement and become more competitive in the fruits and vegetables exports. Indeed, what has come to be known as the PFID-F&V model is one that has targeted improvements in smallholder competitiveness through enhanced market information, farm-based upgrades, increased numbers of producer-buyer linkages, and capacity building on grades and standards for improved food safety and quality throughout the value chain. PFID-F&V’s major distinction relative to other market-led initiatives can be summarized as a strong market-driven approach with tangible contributions from demand-side actors involved in the process, and supplemented by critical information access. In this report, the implementation of the PFID-F&V project is described as it several important programmatic phases as follows.

### **Implementation of Phase 1 Activities (2000-2004)**

The first phase of the program was heavily geared to improving grades and standards in the fruit and vegetable sector. Four countries were identified as having the greatest potential for improving standards: namely Guatemala, South Africa, Bangladesh and Kenya. Core funds were used to generate interest in the PFID-F&V program for all countries except Bangladesh. Of those four, Guatemala and South Africa's USAID missions bought into PFID-F&V with Associate Awards in July and October 2003, respectively. During these early years of PFID-F&V, the Leader Award funded training module development and pilot testing of new training approaches in new country contexts. Training and outreach such as this served as "attention getters" for USAID Missions that, based on experiences gleaned during such training activities, often elected to "buy into" the project through full-fledged Associate Awards. Export preparedness and food safety continue to be topics of great Mission interest.

### **Implementation of Phase 2 (2005-2010)**

In Phase 2, the previously completed applied research, market intelligence, global strategies and numerous drivers were incorporated into the project approach. At the same time, Phase 2 streamlined its approach from five to three program objectives, as follows:

- Market opportunities for sale of F&V identified and expanded in selected countries.
- Institutional capacity strengthened to ensure sustainable supply of high value products.
- Systematized information on agrifood market development made available to the public.

### **Summary of Programs under PFID-F&V Core and Country Buy-ins**

This final report provides a summary of the execution of programs under the PFID-F&V Core Program as well as a summary of each Associate Award that was carried out during the life of the PFID-F&V project. The implementation of these programs along with the successes and challenges, lessons learned and public-private partnerships are highlighted in each section. Some highlights for purposes of this Executive Summary include:

### **PFID-F&V Core Program (Leader Award)**

The PFID-F&V Leader Award was awarded to Michigan State University and approved on October 1, 2000. From its inception, PFID-F&V succeeded in establishing an increasing number of linkages with the private sector for the purpose of expanded market access for small and medium-scale producers in developing countries. Core Program funds financed research and training activities aimed at establishing longer-term projects (“buy-ins”) with the USAID bilateral and regional missions. Several efforts were launched and a high success rate was obtained, ultimately resulting in buy-ins for over \$US 24 million dollars in total, with the USAID Missions in Ghana, Guatemala, Nicaragua, India and the USAID Regional offices in Central America and Southern Africa. The total value of all PFID-F&V program budgets combined represented a value of over \$US 28 million. The initiatives where the Core Program made significant investments without a long-term buy-in from USAID missions or other funding were Kenya, Ecuador, Peru, Morocco, Senegal and Azerbaijan.

At the Core Program level the project experienced fast-paced growth as exceptional opportunities for positive and significant program impact were encountered. In most cases where buy-ins were obtained the results led to long-term PFID-F&V engagements while in others, long-term commitment for expanded programs could not be obtained despite significant Core Program funding and effort. The following paragraphs provide some highlights on the country buy-ins executed.

### **Ghana Public-Private Partnerships (GHPPP)**

The GHPPP was the first PFID-F&V Associate Award funded in 2002. The GHPPP was designed as a two-year project with the purpose of creating a partnership between Michigan State University, Royal Ahold (a Dutch Supermarket and food service company), private sector consulting firms, and local NGO’s involved in addressing technical and training needs of both the government and the private sector. The goal of the partnership was increased agricultural productivity, marketing and investment with the purpose of: (1) enhance demand for Ghanaian fruits and vegetables through linkages with retailers; and (2) enhance supply by incorporating more small farmers into the market, thereby raising their incomes. A notable impact of the implementation of this project was the broader exposure of local farmers to international markets. The long-term impacts of GHPPP were expected to be significant on the Ghanaian horticultural industry and indeed the entire export sector as they came into full maturity over time.

## **Nicaragua Market Access for the Farmer**

The PFID-F&V/Nicaragua associate award began in July 2003 with the participation of Technoserve as a single partner. A second phase then followed with a five-fold grant increase from October 2004 to September 2005, expanding the alliance with three faith-based, international NGOs – Catholic Relief Services (CRS), Lutheran World Relief (LWR) and World Relief Corporation (WRC). PFID-F&V provided tailored technical assistance to participating small and medium-scale producers aiming at improved competitiveness on cost, quality, food safety standards application and an overall capacity to access more profitable local, regional, and export markets. PFID-F&V/Nicaragua's foremost achievement was in its unsurpassed market expansion for over 4,000 beneficiaries. This success was attributed to the project's emphasis on demand side activities, a needed element in so many previous supply-focused initiatives. Many activities were carried out successfully during the course of the four project years. Recent exchanges with the USAID Mission in Nicaragua confirm that the impact of the PFID-F&V project has been sustained, as other initiatives (with USAID and MCC funding) have continued to replicate PFID-F&V model and activities in other parts of Nicaragua.

## **Central America Access to Market Program (AMP)**

The USAID/G-CAP Cooperative Agreement was awarded to MSU in January 30, 2004 for a period of two and a half years. This Central America regional project was granted in a moment of great need for capacity building to address sanitary and phytosanitary issues impeding increased fruit and vegetable exports and trade from and within the region. Under the parameters of this Cooperative Agreement, PFID-F&V implemented a ten-month bilateral project in Guatemala. A parallel bilateral project was developed in partnership with the "Market Led Rural Diversification Project" (MLRD) under the applicable provisions of a grant issued by USAID in May 2003 to the Association of Exporters of Non-Traditional Products of Guatemala (AGEXPRONT) by the United States Agency for International Development (USAID). The bilateral project undertook demand-side activities on specific tasks and training aimed at establishing a Business Development Unit (BDU) located in AGEXPRONT. Although originally planned for 16 months, the actual duration of the project was 10 months ending in September, 2004. AMP resulted in more and better income opportunities for small and medium Central American farmers by increasing access to high value markets through compliance with international standards for Good Agricultural Practices.

## **South Africa**

In 2002, with the award of a sub-agreement to the University of Fort Hare (UFH) and the creation of the Fort Hare Farmers (FHF) group, PFID-F&V initiated a set of Core Pilot

Program activities. Shortly thereafter, in September 2003, MSU/PFID-F&V signed a cooperative agreement with USAID/South Africa to: (1) increase market access of historically disadvantaged emerging farmers in the Eastern Cape to quality commercial contracts, and (2) enhance capacity for sustained market development. The entire period of the associate award spanned approximately two years and 10 months. Notable results included an increased land area in crops sown that are destined to primary markets; increased use of good agricultural practices; decrease of production costs over time; implementation of sorting and grading produce; increased access to diversified markets; and an increase in average net profit by participating producers.

PFID-F&V efforts aimed to achieve a win-win scenario for both producers and retailers alike. This initiative not only served to increase market access for the participating farmers; it also improved the Pick 'n Pay supermarket chain's produce procurement system in the Eastern Cape, at the same time furthering its corporate social responsibility mission, with the company's commitment to the project coming from the very top of the management structure.

### **Southern Africa**

The PFID-F&V Southern Africa Regional (RCSA) project was originally commissioned in September of 2004 with the granting of a USAID associate award for a period of five years ending in September 2009. The goal of the PFID-F&V/RCSA project was to develop business linkages, provide technical assistance, build indigenous capacity, and develop and apply information technologies. The goal also included educational activities and the provision of training in market development for small-scale producers, producer associations/cooperatives, food processors, exporters and the public sector. In terms of building partnerships and fostering supply chain linkages, MSU provided valuable technical leadership and assistance, particularly in South Africa, Zambia, Malawi and ultimately in Botswana. PFID-F&V was able to develop a good reputation with market stakeholders, particularly in establishing that MSU PFID-F&V experts have a good understanding of what they require, especially from potential small producers. Due to this reputation, over the years major food industry partners such as Freshmark, ShopRite, Woolworth and Pick 'n Pay demonstrated a sustained willingness to work with small producers associated with the MSU PFID-F&V projects.

### **India**

The "Mango Market Development" project in the state of Maharashtra in India began in September 2004. This was a three-year project that responded to the barriers that stringent sanitary and phytosanitary standards, as well as traceability requirements represented for the export of Indian mango and mango pulp. To this end, this project

focused on enhancing the ability of growers and processors to meet the international requirements for grades and standards, strengthening the market linkage for domestic and export markets, promotion of India mangoes and enhancing profitability and sustainability of small farmers. The strategy used by PFID-F&V to meet these objectives was focused on building capacity among mango farmers and processors to meet high standards for product quality and safety and then matching those producers and processors with higher-value markets. The PFID-F&V project team assessed the short-term economic impacts of the various marketing interventions employed in the project and found that growers who were able to produce GAP-certified produce received 20-30% greater returns on mangoes in the high-value domestic market (relative to prices in the mandi) and approximately 50-60% greater returns on mangoes sold to exporters. Farmers who participated in direct sales (mango festivals, MSAMB kiosk direct sales) also received approximately 20-30% greater returns than the wholesale market.

### **Focus on Knowledge and Resource Sharing**

The final three years (2007-2009) of project execution were marked by PFID-F&V's transformation back into a focal node for innovation and the transfer of leading practices to facilitate linking small and medium sized farmers to local, regional and international markets. Constant exchange with a broad base of partnerships built during the earlier years indicated that these newly trained individuals did not have the tools, time, or ability to share their newly acquired knowledge with their subordinates at a sufficiently high standard or rate to make it worthwhile. Thus the knowledge imparted through the PFID-F&V training programs was not getting fully disseminated throughout the rural community to the level that it should have been. It was not being "scaled up" to have the level of impact that it potentially could. As a result, the PFID-F&V team in discussions with USAID leadership recognized that a new mechanism was needed to facilitate learning, knowledge acquisition and transfer of best practices within the horticultural sector as described in this report under the heading, *Food Safety Knowledge Network (FSKN)*.

PFID-F&V was one of the primary contributors to the development of FSKN. In short, FSKN is an initiative created in partnership by Michigan State University (MSU) and the Global Food Safety Initiative (GFSI), with the specific aims to:

1. Develop internationally recognized competences in relation to food safety for individuals at all levels and in all sectors of the food supply chain, and
2. Promote knowledge transfer within the food safety community.

FSKN achieves these objectives by harmonizing existing technical food safety training schemes through the development of the competencies of food safety professionals, recognized by international stakeholders, both from the public and the private sectors.

### **Overall PFID-F&V Impact**

PFID-F&V's footprint in the countries where long-term programs were established has been highly regarded by beneficiary producers/suppliers and partner NGOs. PFID-F&V's identification of business opportunities for small farmers and how to help them seize those opportunities in a sustainable fashion became the winning combination for the project. These activities were based largely on the formation of key partnerships and PFID-F&V faculty expertise to assist in the identification of market opportunities and to reduce transaction costs by promoting greater linkages between developing nation producers and downstream stakeholders in the supply chain. Active and ongoing participation by the Core management team allowed PFID-F&V to keep a finger on the pulse of dynamic changes in the food industry, particularly in the fresh fruits and vegetables (FFV) sector. This further enabled PFID-F&V to develop core strategies and programs that met the needs of stakeholders at every point in the supply chain, bolstering the interests and incentives for organizations to participate in PFID-F&V sponsored partnerships.

Another area of impact has been the reinforcing of institutional capacity to ensure the sustainability of producing high value horticultural products. The activities carried out worked toward building sustainable institutional capacity through training programs designed to meet specific needs and enhance supply chain efficiencies. The primary area of concentration was on grades and standards to ensure a continued supply of high-value export products, particularly on compliance related to quality, packaging, pesticide residue levels, environmental impact, worker health and safety, phytosanitation, water quality, labeling and other areas.

### **Generation, Systematization and Dissemination of Information on Agrifood Market Development**

Important research contributions under the leadership of Dr. Lawrence Busch (first PFID-F&V Director) were developed on the role of private standards and its implications for small farmer access to more profitable markets. Related to this topic, Dr. Thomas Reardon (who served as PFID-F&V Principal Economist from 2001 through 2004) spawned a world-wide domain of research on the growth of supermarkets in emerging and developing economies and the implications of this trend on smallholder production. During the PFID-F&V years under leadership of Dr. Dave Weatherspoon (second PFID-F&V Director), and several graduate students financed partially through PFID-F&V core

funds and country programs, provided development practitioners and scholars with cross-cutting views on supermarket development in Africa. Many of these research papers have credited PFID-F&V for their sponsorship. This research has also been an important input in prominent strategic analyses and development policy for USAID during these years. For example, USAID's *Agricultural Strategy: Linking Producers to Markets* published in 2004 was closely guided by this body of work. Another example is found in *Supermarkets: Smallholder Participation in the Global Food Value Chain*, an important policy analysis commissioned by USAID in 2004 (available at <http://agri-alim.redev.info/Actualite/povnet/Povnet2.pdf>). This analysis highlights the importance of the changing structure of the global value chains and the role of smallholders in agriculture markets in Latin America, Asia, and Africa. Perhaps the most important impact of the PFID-F&V-led research has been how USAID and partners have used this information in the design of agricultural development projects around the world, focusing on the constellation of value chains, global and domestic supermarkets as the locus of programmatic activity.

### **Partnerships and Collaborations**

MSU's efforts to foster partnerships and collaborations are aligned with the true spirit of the Land Grant University philosophy. As such, selecting and strategically partnering with key public, industry and NGO collaborators became a PFID-F&V priority from the very start, in program design and inception. The selection of partnership was guided by four major strategic interests. First, PFID-F&V looked for partners that could facilitate access to cutting edge science and technology in the US and abroad. Second, PFID-F&V aimed at engaging partners with available and stable technical staff capable of covering a diversity of subject matter, from natural resource management to agriculture, manufacturing and marketing. Third, PFID-F&V sought the collaboration of partners that, like MSU, would have a vested not-for-profit interest in supporting our country programs. And fourth, PFID-F&V placed special emphasis on enlisting partners that were involved in the day-to-day decision making of leading retailers and industry organizations.

### **Looking Forward**

Like many long-term development initiatives, the PFID-F&V project endured and embraced several periods of change, refocusing and adjustment. From Phase 1 to Phase 2 most program resources were invested in supporting the goal of connecting farmers to markets with improved access to information, training, key upgrades and relationship building skills, all necessary factors in the success of modern value chains. As other organizations have adopted approaches tested by PFID-F&V, the past two years have

been important for PFID-F&V's transformation back into a focal node for innovation and the transfer of leading practices for linking small and medium sized farmers to local, regional and international markets.

The most important innovation with roots in the PFID-F&V Core has been the collective development of the Food Safety Knowledge Network concept, development of its proof of concept for specific components, and the establishment of partnerships with key industry and development organizations for the roll-out of pilots for specific Knowledge Network components. This concept has gained substantial inertia and support within industry and the international donor community but also promises continued involvement from the research community needed for the validation of knowledge (content) and for generating the next cycle of innovation. Critical to the success of PFID-F&V during its three phases was the involvement of Michigan State University as it demonstrated a comparative advantage in connecting smallholders to global markets.

As the PFID-F&V showed its first signs of impact, a question sometimes asked by partners, media and other observers over the course of PFID-F&V's nine-year timeline was: "How can a university, as an academic institution, be so successful in the value chain development role?" For many it did not seem intuitively obvious that universities could be successful at navigating what seemed to be the waters of private business. But the answer to this question was that MSU, like many other universities, possesses a set of unique attributes, beginning with their fundamental mission to improve the human condition, to their access to science and technology, to their tradition of working with industry on one hand and smallholder producers on the other, that make them ideally suited to value chain development work, particularly in some of the world's most disadvantaged regions.

# Table of Contents

<b>Executive Summary.....</b>	<b>ii</b>
<b>Acronyms .....</b>	<b>xiii</b>
<b>1. Introduction and Background .....</b>	<b>1</b>
<b>2. Leader Award – Core Program .....</b>	<b>3</b>
2.1 Introduction.....	3
2.2 Implementation.....	4
2.3 Impact.....	13
2.4 Lessons Learned .....	19
2.5 Partnerships and Collaborations.....	21
<b>3. Associate Awards .....</b>	<b>23</b>
3.1 Ghana Private-Public Partnership Program (GHPPP).....	23
3.1.1 Introduction.....	23
3.1.2 Implementation.....	24
3.1.3 Impact.....	30
3.1.4 Lessons Learned .....	32
3.1.5 Public-Private Partnerships .....	33
3.1.6 Conclusion .....	34
3.2 Nicaragua.....	34
3.2.1 Introduction and Background.....	34
3.2.2 Justification for the Project Funding .....	35
3.2.3 Implementation Summary.....	36
3.2.4 Impact.....	38
3.2.5 Lessons Learned .....	39
3.2.6 Public-Private Partnerships .....	40
3.2.7 Conclusion .....	40
3.3 Central America.....	41
3.3.1 Introduction and Background.....	41
3.3.2 Justification for Project Funding.....	41
3.3.3 Implementation .....	42
3.3.4 Impact.....	43
3.3.5 Lessons Learned .....	45
3.3.6 Public-Private Partnerships .....	46

3.4	South Africa .....	47
3.4.1	Introduction.....	47
3.4.2	Implementation.....	48
3.4.3	Impact.....	50
3.4.4	Lessons Learned .....	51
3.4.5	Public-Private Partnerships .....	52
3.5	Southern Africa.....	52
3.5.1	Introduction.....	52
3.5.2	Implementation.....	54
3.5.3	Impact.....	56
3.5.4	Lessons Learned .....	57
3.5.5	Public-Private Partnerships .....	58
3.6	India.....	58
3.6.1	Introduction and Background.....	58
3.6.2	Justification for Project Funding.....	58
3.6.3	Project Objectives and Scope of Work .....	60
3.6.4	Implementation.....	60
3.6.5	Impact.....	66
3.6.6	Lessons Learned .....	68
3.6.7	Public Private Partnerships.....	69
3.6.8	Conclusion .....	72
<b>4.</b>	<b>Food Safety Knowledge Network (FSKN).....</b>	<b>73</b>
4.1	Introduction and Background .....	73
4.2	Partners .....	74
4.3	Implementation and Activities.....	75
4.4	Expected Impact.....	79
<b>5.</b>	<b>Synthesis.....</b>	<b>79</b>
5.1	Summary .....	79
5.2	Why Universities?.....	81
5.3	Looking Forward.....	83

## Acronyms

AGEXPRONT	Guatemalan Exporters Association
AMP	Access to Markets Program
APMC	
ASNAPP	International Agriculture Organization for Sustainable Agribusiness
CAPGAP	Central American Program Good Agricultural Practices
CARHCO	Central America Retail Holding Company
CIES	International food business organization for retailers and suppliers world-wide
CRS	Catholic Relief Services
CTO	Cognizant Technical Officer
DR-CAFTA	Dominican Republic-Central America Free-Trade Agreement
USAID/EGAT	USAID's Economic Growth and Trade office
EurepGAP	European Partnership for Good Agricultural Practices
FAO	Food and Agriculture Organization
FMI	Food Marketing Institute
FSKN	Food Safety Knowledge Network
GAP	Good Agricultural Practices
GBP	Good Business Practices
GFSI	Global Food Safety Initiative
GHPPP	Ghana Public-Private Partnerships
GHPs	Good Hygiene Practices
GMP	Good Manufacturing Practices
GOI	Government of India
HACCP	Hazard Analysis and Critical Control Points
IICA	International Institute of Cooperation on Agriculture
LWR	Lutheran World Relief
MAF	Market Access for the Farmer
MLRD	Market Led Rural Diversification Project
MOU	Memorandum of Understanding
MSAMB	Maharashtra State Agricultural Marketing Board
MSU	Michigan State University
NGO	Non-Governmental Organization
OICI	Opportunities Industrialization Centers International
PFID-F&V	Partnerships for Food Industry Development, Fruits and Vegetables
PMA	Produce Marketing Association

RCSA	Southern Africa Regional
SAMS	Strengthening Agriculture Market Systems
SO	Strategic Objective (USAID)
SPS	Sanitary and Phytosanitary Measures
SWOT	Strengths, Weaknesses, Opportunities and Threats
TAMAFED	The Tamil Nadu Mango Growers Federation
TNS	TechnoServe
UFH/ARDRI	University of Fort Hare/ Agricultural and Rural Development Research Institute
UNIDO	United Nations Industrial Development Organization
USAID	US Agency for International Development
USDA	US Department of Agriculture
VCA	Value Chain Analysis
VHT	Vapor Heat Treatment

# 1. Introduction and Background

The Partnerships for Food Industry Development – Fruits & Vegetables (PFID-F&V) was designed to meet USAID/EGAT's Strategic Objective (SO) 933-009 – “Science and Technology Developed to Improve Agricultural Productivity, Natural Resource Management, Markets and Human Nutrition.” Under this Strategic Objective, research and training/capacity building activities were designed to address problems associated with value chains for vital commodities for developing countries and focused on improving food safety and quality.

PFID-F&V was originally awarded to Michigan State University (MSU) and approved for start-up on January 15, 2001. PFID-F&V's mission was to: *“Enhance the economic well-being of small and medium-size producers of fruits and vegetables in developing countries by facilitating increased access to global, regional and local markets, through mutually beneficial partnerships further up the supply chain”*. To this end, research and training activities under PFID-F&V specifically targeted an interrelated set of constraints for small-scale farmers to build linkages with the private sector. Removing these constraints allowed for significant increases in market access for small- and medium-scale producers in developing countries, thereby improving their income earning capabilities and helping to alleviate poverty.

The Leader Award for PFID-F&V supported the development of products and services to facilitate more advantageous market linkages for small-and medium-scale fruit and vegetable producers, as well as to strengthened institutional capacity and the systematic availability of information on agrifood market development. Pilot activities applied these products and services in host countries to test and refine their replicability and applicability across regions. During the nine-year course of PFID-F&V, USAID country missions and regional programs supported project Associate Awards in Ghana, Central America (Region), India, Nicaragua, South Africa, and Southern Africa.

The role and approach of the Leader Award (Core Program) for PFID-F&V evolved over the life of the project. During Phase I of PFID-F&V (2000-2004), much of the program was funded by the Leader Award, and activities carried out during this phase focused on improving grades and standards in the fruit and vegetable sector. This first phase consisted of five objectives:

- Identification of local, regional and international market opportunities for sale of fruits and vegetables produced by medium and small scale growers.
- Building sustainable institutional capacity for meeting those grades and standards needed to ensure a continuing supply of quality export products (e.g.,

for cosmetic quality, packaging, pesticide residue labels, environmental quality, worker health and safety, phytosanitation, water quality, labeling, etc.).

- Training, both in the form of short-term courses and long-term degree programs, to enhance supply chains and make developing nations competitive in regional and global markets.
- Systematization of information on trends in global agrifood markets, making that information available to USAID, as well as to public and private policymakers in host countries.
- Development of partnerships among various organizations to promote greater linkages between developing nation producers and downstream actors in the supply chain, in both developing and industrialized nations.

In Phase 2, the previously completed applied research, market intelligence, best practices and lessons learned were incorporated into the project approach. At the same time, Phase 2 streamlined its approach from five to three program objectives, as follows:

- Market opportunities for sale of F&V identified and expanded in selected countries.
- Institutional capacity strengthened to ensure sustainable supply of high value products.
- Systematized information on agrifood market development made available to the public.

The PFID-F&V management team collaborated closely in an essential fourth role as the supporting program structure. Activities performed by program management and the technical team provided the framework necessary to holding the other program components into a coherent, single program, and formed the links between resulting products and services with appropriate USAID mission buy-ins. Management was responsible for distributing and applying the resulting best practices and lessons learned on a global basis.

At the beginning of Phase 2, four associate awards –Nicaragua, Central America, Southern Africa and India, all initiated their activities. Together with existing projects in Ghana and South Africa, Associate Awards at their height totaled six. One year later, the Ghana associate award program ended though many successful elements and approach of the program continued as they were embedded in a much larger unified program in Ghana that was not implemented through PFID-F&V.

During the final two project years, significant management transitions in the core and Southern Africa programs slowed down activity implementation. Four additional associate awards had ended by then—Central America, South Africa, Nicaragua, and Southern Africa—while the PFID-F&V Core and India programs continued at least for an additional two years.

## **Organization of the Report**

Section two of this report describes the major phases and programmatic accomplishments of the PFID-F&V Core (Leader Award). Section 3 follows with a summary of each country- or region-specific Associate Award that was carried out over the nine-year life of the project. The implementation of these country/regional programs along with their successes and challenges, lessons learned and public-private partnerships are highlighted in each associate award program. Throughout the life of the PFID-F&V project there were six major Associate Awards implemented. These were: the Ghana Private-Public Partnerships Program (GHPPP), Nicaragua, Central America, South Africa, Southern Africa, and India. The following sections describe the Leader Award and the associate Awards in detail. In Section 4 the steps and activities in the development of the Food Safety Knowledge Network are reviewed with a eye to the longer-term future impact of this exciting program and its potential for “scaling-up” many of the core competencies, best practices and lessons learned that emerged from the preceding seven years of PFID-F&V work around the world. The report concludes with Section 5, providing a brief synthesis and a bit of reflection on how universities can be instrumental in PFID-like activities looking forward.

## **2. Leader Award – Core Program**

### **2.1 Introduction**

This section summarizes the accomplishments of the PFID-F&V Core Program in support of USAID/EGAT’s Strategic Objective (SO 933-009) on Science and Technology to Improve Agricultural Productivity for Natural Resource Management, Markets, and Human Nutrition. PFID-F&V was awarded to Michigan State University and approved on October 1, 2000. Since its inception, PFID-F&V succeeded in establishing an increasing number of linkages with the private sector for the purpose of increasing market access for small and medium-scale producers in developing countries. Core Program funds financed research and training projects aiming at the establishment of longer-term

projects (buy-ins) with the USAID bilateral and regional missions. Several efforts were launched and a high success rate was obtained having established buy-ins for over \$US 24 million dollars in total with the USAID Missions in Ghana Guatemala, India, Nicaragua and South Africa, and the USAID Regional offices in Central America and Southern Africa. The total value of all PFID-F&V program budgets combined represented a value of over \$US 28 million. The initiatives where the Core Program made significant investments without a long-term buy-in from USAID missions or other funding were Kenya, Ecuador and Peru, Morocco and Senegal and Azerbaijan.

At the Core Program level most of the project execution experienced fast-paced growth as exceptional opportunities for positive and significant program impact arose. In most cases where buy-ins were obtained the results produced long-term PFID-F&V engagements. In others, where significant Core Program funding was invested, the funding and long-term commitment for greater programs could not be obtained for a number of administrative and technical reasons.

While much detailed information has been provided in semi-annual reports, this section concentrates on how the expectations were satisfied concerning overall program performance. Details on specific country and regional programs are provided in sections ahead.

## **2.2 Implementation**

Under the terms of the “Leader with Associates” agreement, USAID Washington and MSU agreed to work together globally to promote the facilitation of agribusiness partnerships and linkages between retailers/processors in the US and other industrialized nations and producers/exporters in developing nations. The expected results were to expand the size and range of products and markets, reduce transactions costs and risks for all partners, and respond to requirements of retailers and processors with respect to quality, safety, logistics, varieties, and volumes.

As the work evolved with bilateral and regional USAID missions, several opportunities were encountered to provide training and technical support to individual firms, farmers, farmer associations, and government agencies in target countries. After the 1990s boom in the globalization of more dynamic supply chains, developed and emerging economies were transitioning from nonexistent to more stringent private procurement standards of product quality and safety. The time was critical for several USAID-funded initiatives in developing countries initiatives to support producers and exporters to better understand the changing market rules and learn to be competitive. The PFID-F&V Core

Program team worked together with partners abroad to engage in initial training focusing on addressing key bottlenecks where entrepreneurs and farmers struggled to access more profitable markets.

Four common threads describe the focus on the project buy-ins where the Core Program successfully established long-term country activities. First of all, there was great focus on smallholder participation in production for the market and expansion of labor markets through on-and-off-farm employment in post-harvest enterprises so as to raise incomes. Second was the identification of products where smallholders had more advantages in producing and supplying than large farming operations. This immediately placed farmer associations as a target allowing for higher numbers of beneficiaries. Third, great emphasis on supporting small-scale farmers to comply with quality and safety grades and standards of fruits and vegetables for consumers in target markets remained a PFID-F&V priority through its execution. This was a necessary condition for the long-term sustainability of access to markets and the building of effective supply chains.

As the PFID-F&V Core Program targeted food industry development opportunities with USAID country missions as well as with other potential sources of funding, nine sequential steps were originally proposed to guide its implementation. These steps defined how partnerships would be identified and subsequently developed with the advantage of a common approach across the board, but still allowing the Core Program to mature project ideas in a collaborative fashion with partners. USAID missions played a central role in the adaptation process of this approach to the specific needs and Strategic Objectives for the host country. These nine steps are as follows:

Step 1. Diagnosis of international context with respect to trade patterns, trade negotiation issues, and pertinent foreign regulations and actors in the production, processing, and commercialization of fruits and vegetables.

Step 2. Diagnosis of domestic context with respect to the country's food laws, standards, regulations and actors in the production, processing, and commercialization of fruits and vegetables.

Step 3. Assessment of practical problems faced by the stakeholders concerning G&S and other regulations that affect food industry development and investment.

Step 4. Evaluation of changing market opportunities and G&S and other regulatory contexts.

Step 5. Evaluation of current technologies used by farmers, processors, and distributors and comparison with the technologies needed to respond to new opportunities in evolving regulatory frameworks identified in step 4.

Step 6. Proposition and evaluation of the likelihood of success in introducing needed changes in institutions (e.g., standards, laws and regulations) and organizations (e.g., standards organizations).

Step 7. Examination of the broader policy context (such as general trade regulations, exchange rates, tax and investment laws, etc.) to determine whether it facilitates or constrains the needed changes identified above.

Step 8. Training and capacity building of local institutions. Focus on knowledge needed to implement the above changes and to evaluate the market and regulatory context to anticipate needs.

Step 9. Monitoring and Evaluation.

As a result, the Core Program worked on the following initiatives over two phases (Phase 1 spanning from 2001 to 2004 and Phase 2, from 2005 to 2010), adding over \$24.0 million in funds from buy-ins alone. After a highly successful Phase 1, best practices and lessons learned were applied to the design of the next programmatic phase. As a result, Phase 2 had initiated a more finely targeted set of technical components that was implemented on a much broader scale.

### **Implementation of Phase 1 Activities (2000-2004)**

The first phase of the program was heavily geared toward improving grades and standards in the fruit and vegetable sector. Four countries were identified as having the greatest potential for improving standards: namely Guatemala, South Africa, Bangladesh and Kenya. Core funds (maximum of \$75,000 total for three years) were used to generate interest in the PFID-F&V program for all countries except Bangladesh. Of those four, Guatemala and South Africa's USAID missions bought into PFID-F&V with Associate Awards in July and October 2003, respectively.

The overall PFID-F&V Phase 1 approach, as redefined based on the first four years of activities consisted of five steps:

1. Identify local, regional and international market opportunities for sale of fruits and vegetables produced by medium and small scale growers.
2. Build sustainable institutional capacity to meet the many grades and standards needed to ensure a continuing supply of quality export products (e.g., for

- cosmetic quality, packaging, pesticide residue levels, environmental quality, worker health and safety, phytosanitation, water quality, labeling, etc.).
3. Provide training, both in the form of short-term education courses and long-term degree programs, to enhance supply chains and make developing nations competitive in regional and global markets.
  4. Systematize information about developments in global agrifood markets, making that information available to USAID, as well as to public and private policymakers in host countries.
  5. Develop partnerships among various organizations to promote greater linkages between developing nation producers and downstream actors in the supply chain, in both developing and industrialized nations.

A sign of success in this area, and a good indication that PFID-F&V was seen as a global leader in its ability to combine applied research with business actions, is that Wageningen University (Netherlands) also had embarked on a parallel program similar to PFID-F&V. Other members of the development community also increasingly recognize the PFID-F&V model as scientifically sound and business-tested approach that could be adapted to their own development needs.

Experience during Phase 1 showed that the average buy-in time from introduction of the idea to a mission to obtaining a buy-in was approximately two years. As Phase 1 neared its close and Phase 2 began, several Mission buy-ins concluded and other, new buy-ins simultaneously entered start-up mode.

### **Implementation of Phase 2 (2005-2010)**

In Phase 2, the previously completed applied research, market intelligence, global strategies, and numerous drivers were incorporated into the project approach. At the same time, Phase 2 had streamlined its approach from five to three program objectives, as follows:

- Market opportunities for sale of F&V identified and expanded in selected countries;
- Institutional capacity strengthened to ensure sustainable supply of high value products;
- Systematized information on agrifood market development made available to the public.

PFID-F&V Management collaborated closely in its essential fourth role as the supporting program structure. Activities performed by program management provided the

framework for holding the other program components into a coherent, single project, and they formed the links between resulting products and services with Mission buy-ins. Management was responsible for distributing and applying the resulting best practices and lessons learned on a global basis.

At the beginning of Phase 2, four Associate Awards -- Nicaragua, Central America and Southern Africa Regions, and India – all initiated their activities. Together with existing projects in Ghana and South Africa, Associate Award programs at their height totaled six. One year later, the Ghana Associate Award program was completed and replaced by a larger scale follow-on effort based on the PFID-F&V activity design. The PFID-F&V approach had obviously caught on and had excited many of the USAID Missions.

During the most recent project years, however, significant management changes in the Core and Southern Africa programs had slowed down activity implementation. Two additional associate awards had ended – those in Central America and South Africa, and Core Program funds for the coming year were reduced due to budget constraints. While the Institute of International Agriculture, housed in the MSU College of Agriculture, had facilitated increased financial contributions by MSU (through the Provost and other funds), the money was not sufficient to bear all essential program costs. The necessity of securing additional USAID Mission buy-ins to the program was imminent, as was the need to look outside the Agency for additional and complementary programming funds.

### **The PFID-F&V Board of Directors**

Comprised of one institutional representative from MSU, the PFID-F&V Board of Directors was designed to provide oversight for project policy, management, and implementation. The ex-officio members included the Project Director and the USAID Core Program Cognizant Technical Officer (CTO) assigned to PFID-F&V. A policy framework for the smooth and successful operation of the program was developed with the participation of project, partners NGOs and industry representatives. Although the board was originally organized to review work plans, personnel, budgets and monitor program progress against established outcomes and objectives, annual meetings were largely spent on program sustainability assessments and project accomplishments as guiding tools for management decisions. The first full Board of Directors was established in June 2002 with the participation of 12 members. The first meeting was organized as a day and a half event with several guests from the MSU administration, research and outreach community and several guests of honor from the food industry, among them keynote speakers Raymond and Wendy Ackerman, founders of Pick 'n Pay supermarket chain in South Africa, and Roland Waardenburg, director of Royal Ahold's African Sustainable Assistance Program, PFID-F&V's partner in Ghana.

Subsequent annual meetings became a highlight in the PFID-F&V implementation with the role of its members evolving to advisory positions on strategic matters. In light of this positive change, the PFID-F&V Board of Directors meeting, held in May 2005, determined at that time that the “Board” was better positioned to function as an “Advisory Committee”. With all members in agreement, the first Advisory Committee activity took place in December 2005. Because of budget constraints, annual meetings were reduced to one day events with the last one taking place in May 2005 at the PFID-F&V headquarters. As that year was the last for the Ghana project further Advisory Committee meetings did not take place. The Central America and Nicaragua projects were still in full swing, but the communication with the Advisory members did not merit group consultations. Further Advisory Committee meetings would have been an excellent push for new ideas, but a change of focus in the PFID-F&V project and dwindling Core Program budgets did not make such meetings feasible.

### **Shifting Focus toward Export Preparedness and Food Safety**

During the early years of PFID-F&V, the Leader Award funded training module development and pilot testing of new training approaches in new country contexts. Training and outreach such as this served as “attention getters” for USAID Missions who, based on experiences gleaned during such training exercises, often elected to buy-in to fuller programming activities thereafter. Export preparedness and food safety were and continued to be topics in high demand.

More recent efforts in capacity building that had been funded by the Core Program differed from such earlier efforts as the program was careful to pair all capacity building efforts with specific links to existing market demand for the knowledge and skills involved. As such, the PFID-F&V “Access to Markets Program” (AMP) was provided Leader Award funding (in combination with USAID/G-CAP funds) to enrich producer capacity building efforts related to Good Business Practices and Good Agricultural Practices and to bolster capacity of in-country technicians to verify compliance with CAPGAP standards. The enriched model – using field demonstration plots (one per producer organization) – was pilot tested among 500 producers, fine-tuned and readied for adoption by similar producers in other Central American countries and elsewhere. The documentation of this training approach for application in other contexts is thus related not only to Objective 2, on capacity building, but also to Objective 3, on systemizing information, as discussed below.

As a result of USAID funding for research during FY04-06 PFID-F&V Core Program had developed a series of case studies, policy briefs and a synthesis paper under the overall

initiative title “New Business Models for Linking Small Farmer Organizations to Dynamic Markets in a Globalizing World: Southern Africa Case Studies”

Staying current in food industry trends and developments is essential for Core management. This was increasingly difficult to accomplish in an era of rapid food industry change. Fruit and vegetables supply chains were experiencing seminal changes as a result of such factors as consumer attitudes and behavior, globalization of food companies, consolidation of industry players, and the adoption of new IT and computer technologies. Corporate strategic and operational responses to these and other forces resulted in an industry dynamism of unprecedented proportion. For these reasons it was important for Core managers to attend food industry conferences and trade shows as part of a concerted effort to become informed of marketplace dynamics. Only in this way were they able to construct appropriate Core strategies and projects, as well as to consult with in-country managers seeking guidance on how to effectively connect small and medium-size farmers/exporters with the buyers in local, regional and international markets. Participating in selected industry meetings and conventions was a necessary part of the process of acquiring knowledge and market intelligence; moreover, participation in meetings provided the opportunity to develop and maintain professional contacts with food industry executives who were in positions of providing Core and mission projects with useful market information, as well as partnering in projects.

During the Phase 2 years, several Core staff members participated in a variety of such meetings throughout the program. PFID-F&V continued to represent the program at the Food Marketing Institute (FMI), the Produce Marketing Association (PMA) and the Food Business Forum (CIES), now called the Consumer Goods Forum (CGF). In addition, PFID-F&V had a history of successful hosting and accompaniment of participating producers as well as Associate Award staff at each of these events. In order to identify profitable, sustainable market opportunities and customize market development programs for selected countries, Core Program funds and the MSU Cost Share were utilized for the participation of PFID-F&V staff to interact with food industry leaders by maximizing the use the programming and exhibits offered at key industry meetings. The principal objective of attending conferences was to learn as much as possible about trends and developments in the fruit and vegetable industry, facilitating encounters with a variety of potential retailer and wholesaler collaborators, as well as other suppliers of PFID-F&V related products, e.g. mango, squash, melon, and a number of root and tuber crops. Emphasis was maintained on those topics most useful to small- and medium-scale producers and processors participating in the PFID-F&V program. Market assessment/intelligence obtained by participating in industry meetings resulted in an increased understanding of local, regional and national markets as well as

heightened insight into how food companies in each of these markets function with respect to fruit and vegetable operations.

While USAID funding for research initiatives within PFID-F&V had been eliminated, complementary MSU funds had been identified and applied to program efforts as matching funds. For example, PFID-F&V faculty and staff were able to continue production of a noteworthy collection of systematized information on agrifood market development over the following two years. MSU Cost Share funds supported the work of Dr. Thomas Reardon and two graduate assistants to produce a series of papers addressing emerging issues related to PFID-F&V work in three regions (Central America, Southern Africa and South Asia), supply chains and the food service industry.

In Phase 2, PFID-F&V programs continued to have a large focus on South Asia. These activities leveraged many of the relationships that the PFID-F&V team had established during the India PFID mango project and the Post Harvest workshop in Jaipur, India.

Over this period PFID-F&V program continued assisting various old and new partners (AgroFair, Global Fruit, Melissa's of California, Yes Bank, SNX, and others) expanded and explored new market development opportunities for conventional and Fair Trade Alphonso mangos and puree sourced from small farmers in India. The program saw their continued interest as an important indicator of sustainability of our previous activities. Additionally the development of a processed puree market option would provide a viable secondary market for many small mangos producers who would be otherwise unable to access the stringent fresh market requirements. Processing would lower food safety and product quality constraints for market entry by smaller farmers. This was an important development in PFID-F&V's strategy in strengthening the F&V sector in South Asia.

### **Spreading the PFID-F&V Experience Abroad**

There was a general recognition that the knowledge and resources passed on through PFID-F&V training programs to producers, processors, retailers and government officials had not been effectively passed further down the line. Several partners had indicated that these newly trained individuals had neither the tools, nor the time, nor the ability to share their new knowledge with their subordinates at a sufficiently high standard to make it worthwhile. Furthermore, once these individuals completed the training programs, they lacked any opportunities or mechanisms to upgrade themselves and share their own experiences and leading practices among one another. Thus the knowledge imparted through the PFID-F&V training programs was not getting fully disseminated throughout the rural communities to the level that it should have been. As a result, the PFID-F&V team in discussions with USAID leadership recognized that a

new mechanism was needed to facilitate learning, knowledge acquisition and transfer of best practices within the horticultural sector.

A substantial amount of innovation was then initiated and delivered by the PFID-F&V Core team, other faculty members at MSU and external partners over the subsequent two years. In the process the program had established a new model for international development by leveraging leading edge technology and learning tools. This process created what the program envisioned as being a series of focal nodes for innovation and the transfer of leading practices in facilitating the linking of small and medium sized farmers to local, regional and international markets. The most important innovation and deliverable has been the further development and piloting of the Food Safety Knowledge Network to support the development of a community of practice in horticulture to support linking farmers to markets. This has now moved from concept to pilot development and implementation. As a result it is gaining substantial interest from industry, government and the donor community. The PFID-F&V team and aligning partners (CIES GFSI board members from leading retail and manufacturing companies, UNIDO, WTO etc) view this as a critical component to future growth of the bottom of the pyramid related to agriculture and horticulture.

A pilot group of industry, government and academia leaders was established and met in September 2008 to lead the development and implementation of the FSKN. This group had completed a series of briefing papers and materials on the concept and established an implementation plan. Additionally, the pilot group completed an initial analysis of China, Thailand, Vietnam and India as possible locations for the pilot implementation. The GFSI Board identified India as their preferred location for the pilot, and a set of FSKN pilot activities were completed in India and additional FSKN pilot activities in 2009 were conducted in Egypt under collaborative efforts with UNIDO and Metro and in China with Coca-Cola Company.

It is noteworthy to highlight that the Hewlett Foundation had provided PFID-F&V and MSU Global a \$250,000 grant to facilitate the creation of the knowledge infrastructure and buy-in from the appropriate industry, government and donor community. Similarly, UNIDO, in addition to the Egypt pilot activity, expressed interest to partner on the implementation of the FSKN training and capacity development components in other emerging and developing countries and the WTO also expressed interested in supporting the enabling environment components.

On the pilot implementation in India, the PFID-F&V program and the currently funded USAID MSU Indian Horticulture Development Alliance (IHDA) program actively worked with CIES-GFSI, Metro Group, Reliance, YES Bank, the GOI Ministries of Agriculture and

Food Processing Industries and various Indian Universities to establish public-private partnerships for the development of specific components of this concept. Each partner has different interests in the concept and the program has to establish an integrative participatory model where each player can achieve his/her individual goals while collaborating on meeting the larger FSKN goal. These activities are continuing.

Overall, the FSKN activities and findings are currently being pulled together into a substantial white paper on the issues and the role it could play in overcoming these constraints and building sustainable capacity in India, Southeast Asia, and elsewhere. It is important to recognize that the general knowledge network concept can be applied to any region or commodity.

The further development and institutionalization of an African Agricultural Knowledge Network component of the larger Global Food Chain Knowledge Network had become a medium term goal for PFID-F&V. This activity has started to gain momentum as well with the establishment of a PPP in Africa and the likely future support from the Gates Foundation.

The PFID-F&V team views the Knowledge Network concept and pilots as a showcase for USAID on how public private partnerships should work and the role that land grant universities can play in this process; a possible model for the USAID Global Development Commons.

## **2.3 Impact**

Three objectives summarize the focus of all programmatic activities in the second phase of PFID-F&V. These three objectives formed the core strengths and successes of the PFID-F&V program at MSU to address the primary constraints small farmers face in accessing more dynamic markets. The three cross-cutting objectives of the PFID-F&V program were: (i) identifying and building profitable sustainable market opportunities in selected countries, (ii) strengthening institutional capacity to ensure the sustainability of producing high value horticultural products, and (iii) generating, systematizing and disseminating information on agrifood market development to private and public stakeholders. It should be noted that these objectives were not mutually exclusive but rather codependent. For example, market opportunities could not be identified without research and the generation of market information. Moreover, the potential benefits of identified market opportunities could not be realized without institutional capacity building and technical assistance for small farmers and their associations.

MSU managers and technical experts learned in the first phase of the PFID-F&V program just which project activities had resulted in sustainable success and which areas needed more focus and attention in order to surmount the challenges of the program's goals and objectives. The following is a brief review of the PFID-F&V impacts, highlighting a few of the programming advantages that transcended individual Associate Awards, Cooperative Agreements and the Core Program Leader Award.

### **Identifying and Building Profitable Sustainable Market Opportunities for Selected Countries**

This objective depended on the formation of key partnerships and PFID-F&V faculty expertise in identifying potential opportunities in fresh fruit and vegetable markets for medium- and small-scale farmers. The formation of partnerships to address this objective served two purposes: to assist in the identification of market opportunities and to reduce transaction costs by promoting greater linkages between developing nation producers and downstream stakeholders in the supply chain. Active and ongoing participation by the Core management personnel allowed PFID-F&V to keep a finger on the pulse of dynamic changes in the food industry and specifically on the fresh fruits and vegetables (FFV) sector. This further enabled PFID-F&V to develop core strategies and programs that met the needs of stakeholders at every point in the supply chain, in turn raising the desire of organizations to participate in PFID-F&V sponsored partnerships.

### **Strengthening Institutional Capacity to Ensure the Sustainability of Producing High Value Horticultural Products**

This objective required building sustainable institutional capacity through training programs designed to meet specific needs and enhance supply chain efficiencies. The primary area of concentration was on grades and standards to ensure that a supply of high-value export products could be sustained. Standards compliance focused particularly on product quality, packaging, pesticide residue levels, environmental quality, worker health and safety, phytosanitation, water quality and labeling.

### **Generating, Systematizing and Disseminating Information on Agrifood Market Development**

To achieve the first two objectives and to achieve the overall goals of the project this third objective was designed make information available to USAID, project partners, beneficiaries, policymakers and private entities in host countries.

## Revised Objectives

*Good business practices.* Capacity building related to running a business did not figure prominently in early PFID-F&V project designs; however the importance of this component emerged over time in several ways:

- The case studies of farmer organization business models conducted in Southern Africa identified a lack of solid business knowledge and practice, including communication across the supply chain, as a major constraint in the success of the organizations studied.
- The provision of business development consultants to assist the Fort Hare Farmers Project with the development of its business plan, supply chain communications and the development of a sustainability plan have all provided important inputs toward strengthening their alliance with Pick 'n Pay and assuring the continuation of the project after USAID funding ended.
- The PFID-F&V Central America Program integrated capacity building in good business practices as an essential component in its overall program, equal in importance to those of good agricultural practices, good manufacturing practices, etc. Attention to this component in the early stages of the project cycle clearly helped to catalyze producer successes in attracting and maintaining high value markets and sales.

*Variations on institutional strengthening vs. capacity building.* Initiatives to strengthen local institutions were implemented via several Associate Award activities, including:

- PFID-F&V Central America support for a collaborative, public-private sector development and implementation of Central America Produce Good Agricultural Practices (CAPGAP) standards and verification thereof (via PIPPA).
- Additional support to strengthen a Guatemala-based non-profit's capacity to implement a broad-based capacity building program for small-scale farmers, with an emphasis of food safety standards.
- PFID-F&V India support for a similar process of developing IndiaGAP standards, and associated support to the government agency charged with verification (APEDA) and a regional marketing board's (MSAMB's) ability to train producers in its implementation.
- Formation and development of the Fort Hare Farmers producer organization toward eventual self-sufficiency in maintaining its partnership with the Pick 'n Pay supermarket chain and other secondary market connections.

- Collaboration with INCAE in offering the Export Preparedness course to Nicaraguan producers via a series of workshops carried out in Nicaragua and the U.S.

There were some common benefits that were enjoyed by participants in each Associate Award project due to PFID-F&V's consistent approach in the implementation of programs. Some of these benefits are:

Market assistance activities – Facilitating access to local and international market access for farmers by strengthening food safety standards, quality control, and marketing knowledge was a hallmark of the PFID-F&V program. PFID-F&V maintained a focus on finding high value markets and farmers benefited from the knowledge that these markets could be identified locally as well as regionally and globally. This resulted in more sustainable business strategies.

Capacity building – This component was present in all PFID-F&V interventions and was aimed at enhancing the skills and capabilities of farmers and exporters. Participants of Associate Award programs benefited from extensive training in the process and export of fresh produce, technical assistance in marketing, production, administration and finance, and training on post-harvest handling, including packaging design, labeling, packaging facilities and other areas.

Market research – Participants benefited from the market analysis that PFID-F&V conducted in participating countries. Knowledge resulting from this research was vitally important in assisting organizations in client countries to develop viable marketing strategies.

### **Strategic Research Components**

One of the foremost accomplishments of the PFID-F&V program throughout its execution was its capacity to support relevant, peer-reviewed research that reached audiences beyond the academic community. At the end of the 1990s, the research interest on linking farmers to markets was extremely supply-side oriented. This approach was necessary to address the typical hardships of small-scale production, but was far from sufficient in for understanding rapidly changing market trends on the demand side. It can be claimed that PFID-F&V faculty carved out seminal, ground breaking research in partnership with other research and funding institutions to support donor (particularly USAID) thinking in terms of markets and how to narrow the existing divide between poverty reduction development efforts and profit- and expansion-seeking market developments.

Important research contributions under the leadership of Dr. Lawrence Busch (first PFID-F&V Director) were developed on the role of private standards and its implications for small farmer access to more profitable markets. Related to this topic, Dr. Thomas Reardon (who served as PFID-F&V Principal Economist from 2001 through 2004) spawned a world-wide domain of research on the growth of supermarkets in emerging and developing economies and the implications of this trend on smallholder production. During the PFID-F&V years under leadership of Dr. Dave Weatherspoon (second PFID-F&V Director), and several graduate students financed partially through PFID-F&V core funds and country programs, provided development practitioners and scholars with cross-cutting views on supermarket development in Africa. Many of these research papers have credited PFID-F&V for their sponsorship. This research has also been an important input in prominent strategic analyses and development policy for USAID during these years. For example, USAID's *Agricultural Strategy: Linking Producers to Markets published in 2004* was closely guided by this body of work. Another example is found in *Supermarkets: Smallholder Participation in the Global Food Value Chain*, an important policy analysis commissioned by USAID in 2004 (available at <http://agri-alim.redev.info/Actualite/povnet/Povnet2.pdf>). This analysis highlights the importance of the changing structure of the global value chains and the role of smallholders in agriculture markets in Latin America, Asia, and Africa. Perhaps the most important impact of the PFID-F&V-led research has been how USAID and partners have used this information in the design of agricultural development projects around the world, focusing on the constellation of value chains, global and domestic supermarkets as the locus of programmatic activity.

A listing of research papers where PFID-F&V participated partially or fully is provided below. Besides these outputs, a legacy of market intelligence and related research reports addressing the trends in value-chain development in fruits and vegetables and other innovations in linking farmers to markets have been made available to PFID-F&V partners through several website versions and individual exchanges. It has been rewarding to witness the expanded number of graduate students in the US and abroad interested in learning about the PFID-F&V experience as a source of motivation for further research on how markets matter in poverty reduction. MSU, through IIA, will continue to make this legacy available to the broad audience of public, private and NGO interested parties through continued work on FSKN and value chain development efforts in Asia, Africa, Latin America and elsewhere abroad.

The seminal papers produced with partial or full financing from PFID-F&V are listed in the table here below:

Year	Title
2001	Estrada-Valle, Juan Manuel A Sub Sector Overview of the Guatemalan Bean Industry: Constraints and Opportunities for Vertical Coordination and Sustainable Growth. Master's Thesis, 2001. Major Professor: Richard Bernsten.
2002	Reardon, T. and J.A. Berdegú. 2002. The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development,   <i>Development Policy Review</i> , 20 (4), September: 317-34.
2003	Weatherspoon, D.D and T. Reardon. 2003. —The Rise of Supermarkets in Africa: implications for agrifood systems and the rural poor,   <i>Development Policy Review</i> , May, 21(3): 333-355.  Balsevich, F., J.A. Berdegue, L. Flores, D. Mainville, and T. Reardon. 2003. —Supermarkets and Produce Quality and Safety Standards in Latin America,   <i>American Journal of Agricultural Economics</i> , 85 (5), December: 1147-1154.  Balsevich, Fernando Paraguayan Supermarket Development and its Implications for the Produce Industry. Plan B Paper, 2003. Major Professor: Thomas Reardon.
2004	Neven, D. and T. Reardon. 2004. —The Rise of Kenyan Supermarkets and Evolution of their Horticulture Product Procurement Systems,   <i>Development Policy Review</i> , 22(6) November: 669-699.  Flores-Navas, Luis Geovanny Small Lettuce Farmers Access to Dynamic Markets in Guatemala. Master's Thesis, 2004. Major Professor: Thomas Reardon.  Neven, David Three Essays on the Rise of Supermarkets and Their Impact on Fresh Fruits and Vegetables Supply Chains in Kenya. Ph.D. Dissertation, 2004. Major Professor: Thomas Reardon.  Photodegradation of Crop (Broccoli) Trellising Plastic Twine use in the Guatemalan Highlands. Maria-Paz González Mulet, 2004
2005	Flores, L. G., Thiagarajan, D., and Busch, L. 2005. The Relationship of Third-Party Certification (TPC) to Sanitary and Phytosanitary (SPS) Measures and the International Agri-food Trade: Case Study Guatemala con Emphasis on Food Safety Standards. (RAISE SPS Global Analytical Report No. 3). Bethesda, MD: Development Alternative, Inc.  Berdegú, J.A. F. Balsevich, L. Flores, T. Reardon. 2005. —Central American supermarkets' private standards of quality and safety in procurement of fresh fruits and vegetables,   <i>Food Policy</i> , Vol 30 Issue 3, June: 254-269.  Balsevich, Fernando Essays on Producers' Participation in, Access to, and Response to the Changing Nature of Dynamic Domestic Markets in Nicaragua and Costa Rica. Ph.D. Dissertation, 2006. Major Professor: Thomas Reardon.
2006	Berdegú, J.A., T. Reardon, F. Balsevich, L. Flores, and R. Hernández. 2006. "Supermarkets and Small Horticultural Product Farmers in Central America," Chapter in Swinnen, J. (ed.). <i>Global supply chains, standards, and poor farmers</i> , CABI Press.  Flores, L. 2006. Supermarkets, new generation wholesalers, farmer organizations, contract farming and lettuce in Guatemala: participation by and effects on small farmers. Staff Paper. Dept. of Agricultural Economics, Michigan State University.  Neven, D. and T. Reardon. 2006. —The Farmer Response to The Rise of Supermarkets in Kenya's Fresh Fruits and Vegetables Supply System,   <i>Journal of Food Distribution Research</i> ,

	<p>Research Report, Volume 37, No. 1.</p> <p>Neven, D., T. Reardon, J. Chege, and H. Wang. 2006. —Supermarkets and Consumers in Africa: The case of Nairobi, Kenya, <i>Journal of International Food &amp; Agribusiness Marketing</i>, 18 (1/2): 103-123.</p> <p>Reardon, T. and L. Flores. 2006. — Viewpoint: ‘Customized Competitiveness’ Strategies for Horticultural Exporters: Central America Focus with Lessons from and for other Regions, <i>Food Policy</i>, 31(6). 483-503</p>
2007	<p>Hernández, R., T. Reardon, and J.A. Berdegué. 2007. Supermarkets, Wholesalers, and Tomato Growers in Guatemala, <i>Agricultural Economics</i>, 36(3), May: 281-290.</p> <p>Donnet, M. Laura. Essays On Specialty Coffee Procurement. Ph.D. Dissertation, 2007. Major Professor: Allan Schmid.</p>
2009	<p>Hernandez, Ricardo. Supermarkets, Wholesalers and Tomato Growers in Guatemala. Master's Thesis, 2009. Major Professor: Thomas Reardon.</p>
2010	<p>Flores, Luis. The Role of Household Physical, Human, Network and Environmental Assets in Small Farmer Access to Markets: Guatemalan Lettuce Growers Experiences with Modern Market Channels. Dissertation 2009. Major Professor: Michael Kaplowitz.</p>

## 2.4 Lessons Learned

Several important lessons were learned through the Core Program during the course of the project. Since the inception of the PFID-F&V program in 2001, there have been many successes, yet, like all international agricultural development programs, for nearly every success there were challenges encountered. Often these challenges are the motivation of innovative action; they are often the source of our successes and lessons learned. Summarized here below are some of the challenges and lessons learned through the PFID-F&V Core program. In like fashion, each of the country/region specific associate award programs reviewed in Section 3 contains a discussion of lessons learned from the activities and programmatic experiences on the ground with producer groups and other partners.

During the evaluation of Phase 1 programs and at the commencement of Phase 2 programs, the following list of Core-specific activities had been found to be an essential component of successful programs and were subsequently, included in all future work plans. These essential tasks include:

- Gathering of market intelligence for existing and emerging partnerships in both the short (e.g., PMA) and long term (e.g., research related to current and new business).
- Collecting and documenting best practices, specifically regarding the forging of partnerships, building capacity and researching markets.

- Disseminating information across PFID-F&V projects and to USAID Missions, other donors, retailers, etc.
- Developing and promoting new pilot activities to USAID Missions.
- Providing the administrative functions needed to implement the above activities and to coordinate multiple partnerships (value added services such as communication with the Advisory Board, communication among COPs, faculty recruitment, etc.).

On the administrative side, it was important for MSU to adjust to different management styles and rules over time and across regions. For instance, despite having a Leader with Associates Award, working towards buy-ins was in many cases no different from competing for contracts. This was the case in Senegal and Morocco where at times MSU was not set to comply with specific regulations such as moving from a Leader with Associate Grant Agreement funding mechanisms to a MOBIS contract. Because MSU is not registered to comply with MOBIS regulations, it was not possible for MSU to present itself and effectively compete for this buy-in as the Lead Partner. This made the PFID-F&V program less competitive in such instances.

From the perspective of associate awards, there were common threads of learning and evolving that took place over the course of their implementation. Among the major lessons, is that access by small farmers to more profitable markets is only possible if they have a safe, high quality product that they can deliver in consistent volumes at a competitive price. The team saw an abundance of interest in products of all sorts from different producer groups, NGOs, small businesses and even from individual investors in one product or another. But the vast majority of these ideas and investments were destined to failure because of the lack of attention to safety, quality and volume.

Additionally, the successes that teams had with linking producers with buyers was based on the producers' capacity to deliver their product in a consistent manner at the volumes the buyer required. These conditions apply not only to international markets, but are becoming more important in regional markets where the most accurate logistics are correlated with offering competitive prices to consumers. Another lesson that should be highlighted is the importance of empowering local institutions to take ownership of the program, resulting in institutionalized programs and greater sustainability. These findings are some of the common threads emerging from PFID-F&V and will be recognized in different forms in the detailed reporting of the Associate Awards in Section 3 of this report.

## **2.5 Partnerships and Collaborations**

MSU's efforts to foster partnerships and collaborations are aligned with the true spirit of the Land Grant University philosophy. As such, selecting and strategically partnering with key public, industry and NGO collaborators became a PFID-F&V priority from the very start, in program design and inception. The selection of partnership was guided by four major strategic interests. First, PFID-F&V looked for partners that could facilitate access to cutting edge science and technology in the US and abroad. Second, PFID-F&V aimed at engaging partners with available and stable technical staff capable of covering a diversity of subject matter, from natural resource management to agriculture, manufacturing and marketing. Third, PFID-F&V sought the collaboration of partners that, like MSU, would have a vested not-for-profit interest in supporting our country programs. And fourth, PFID-F&V placed special emphasis on enlisting partners that were involved in the day-to-day decision making of leading retailers and industry organizations. The paragraphs that follow describe some of our more prominent partnerships, with an expanded list of partners captured in the individual country associate award reports.

### **Produce Marketing Association (PMA)**

The PMA represents over 2,000 leading fruit and vegetable growers, shippers and suppliers, mainly in the US. PMA cooperated with MSU on five consecutive training workshops on export preparedness and food safety during the annual PMA Fresh Summit. Additionally, PMA provided access to the industry's foremost forum that exhibited produce and related services of great value to clients from Central America and India. PFID-F&V was fortunate to count on the participation of Mrs. Nancy Tucker in several Board Meetings where her knowledge of industry contacts helped increase the profile of PFID-F&V with key buyers such as Southern Specialties, HEB, Meijer's, Wal-Mart and others.

### **Food Marketing Institute (FMI)**

Food Marketing Institute is a leading trade association representing 2,300 North American retailers and wholesalers plus an international membership of 200 companies in 60 countries. Food manufacturers exhibit products and services at its annual convention, which is of special interest to producers targeting the US and Canadian markets. FMI provided access to potential partnering customers and through its meetings provided the project with insights and training resources relating to food industry research on productivity and food safety. On more than one occasion such business contacts led to specific sales deals for Central American companies. Honest Tea

and McCormick are good representative examples where FMI contact resulted in sales for smallholder producers.

### **Ahold**

Ahold (also known as Royal Ahold) is an international group of quality supermarkets based in the United States and Europe. They have a continuous customer focus to provide an easy, convenient and appealing shopping experience and are committed to offering the best value, the highest quality and healthy choices. Ahold was a strong and reliable partner in the implementation of the GHPPP in Ghana. For instance, in a joint mission, Ahold and MSU with Ghanaian counterparts conducted a SWOT analysis. Additionally, Ahold was involved in conducting consumer studies on preferences for pineapple varieties in Ghana and selected European Union markets. Ahold also provided leadership for the development of nutritious products for pregnant women and children. It also shared office space with the associate award project, GHPPP, and was considered a vital partner to the success of that project.

### **Melissa's World Variety Produce**

Melissa's is a leading importer and distributor of specialty produce from around the world that offers more than 800 varieties of exotic fresh and dried fruits and vegetables. It supplies produce to grocers, supermarkets, and other retailers, as well as foodservice operators. Melissa was a longstanding PFID-F&V partner through the first to project phases. They imported several containers loaded with plantains, okra, sweet onions, snap peas and squash from Guatemala and their senior executives were interested in investing in new packaging technology in client countries as a more effective way of achieving supply chain efficiencies and fresher quality. Additionally, they expressed interest in importing irradiated mangos and fruits from India and Southeast Asia, as well as products from Southern Africa and extended an invitation to conduct a workshop and tour at its Los Angeles headquarters for the group of some 25 Nicaraguans who were attending the PMA in San Diego through PFID/Nicaragua.

### **Pick n' Pay**

The Pick 'n Pay group is one of Africa's largest and most consistently successful retailers of food, clothing and general merchandise. PFID-F&V has had a longstanding relationship with Pick 'n Pay and this relationship was strengthened through the partnership in the South African project. Pick 'n Pay became the primary market buyer and partner in the South African project and participated in the steering committee organized to improve supply chain coordination. It also awarded low interest credit to support the FHF cash flow as the FHF continued to advance in improved production and

post harvest practice. At a World Food Business Summit (CIES) in Paris (June 21-23, 2006) the Ackerman family expressed satisfactory progress with the MSU/USAID/Fort Hare project.

### **CIES – The Food Business Forum (Now the Consumer Goods Forum – CGF)**

**CIES** is a global food business network that serves senior management of 175 retailer and 175 supplier member companies in over 150 countries. PFID-F&V was a paying member of this organization and actively participate in its annual meetings. Involvement with this organization proved to be a highly cost-effective means of participating in dialogue with top management in the food industry on trends, issues and opportunities. CIES provided a neutral platform for knowledge-exchange and networking and developed positions on key strategic and practical issues affecting the food business. Throughout the life of the project PFID-F&V continued to develop a relationship with CIES (now known as the Consumer Goods Forum) to help small farmers better profit from information on trends, developments and the broad networks of key decision makers in the industry. Through the final two years of the project this organization's Global Food Safety Initiative (GFSI) was, and continues to be, a close collaborator with MSU in the development of the Food Safety Knowledge Network described in greater detail in Section 4 for this report.

## **3. Associate Awards**

### **3.1 Ghana Private-Public Partnership Program (GHPPP)**

#### **3.1.1 Introduction**

The first PFID-F&V Associate Award was from the USAID Mission in Ghana, a country located on the West African coast and supporting a population of approximately 23,000,000 inhabitants. The Ghana Private-Public Partnership Program (GHPPP) for Food Industry Development, as the project was called, was set up to create synergy between PFID-F&V, Royal Ahold (a Dutch Supermarket and food service company), and Non-Governmental Organizations (NGOs); AMEX International, CARE International, Techno Serve (TNS) and other private sector operatives in the Trade and Investment Reform Program (TIRP). Historically, in 1998, USAID/Ghana funded the TIRP program under its Strategic Objective 1 (SO-1) – Increasing Private Sector Growth and (SO II) - Increased Private Sector Performance which was implemented largely through USAID

contracts awarded to three NGOs: AMEX International, CARE International and Techno Serve (TNS). The Project Assistance portion of the TIRP sought to address technical and training needs of both the government and the private sector with the goal of increasing agricultural productivity, marketing and investment. Through the implementation of the TIRP by these NGOs, several significant gains were realized (TIRP Project Final Evaluation, March 2003).

### **3.1.2 Implementation**

At the time of project implementation Ghana was a re-emerging democracy following several years of military rule. Even though Ghana had historically relied on the exports of its traditional products, such as gold, cocoa, and timber (accounting for over 50% of the nation's GDP), in the last decade the export of non-traditional products had become extremely important for the country's economy and the welfare of its people. Among those non-traditional products, the production and export of fresh fruits and vegetables constituted one of Ghana's most promising economic activities. Despite rapid growth in the horticultural sector during this period and the favorable geographical location of the country relative to its major market, Europe, the horticulture industry needed to undertake major improvements in order to increase its market share and remain competitive in the high standards for produce in the European market.

To continue growth in the fruits and vegetables export markets and to complement and enhance the gains that had been achieved, or were still being achieved, during the implementation of the TIRP program, the Ghana Private-Public Partnerships for Food Industry Development project was funded in 2002 in the amount of \$2,144,000. It was designed as a two year project with the potential of renewal. Since the TIRP program in Ghana was to be implemented in part by USAID's support to AMEX International, USDA, TechnoServe (TNS), and Care International, the strategy under the Ghana Private-Public Partnership Food Industry Development Project was to create a partnership between Michigan State University, Royal Ahold, the private sector consulting firms and other local NGO's involved in the TIRP so as to enable them enhance their assistance programs. The broad goals of the GHPPP project were to:

- Enhance demand for Ghanaian fruits and vegetables through linkages with retailers, and
- Enhance supply by incorporating more small farmers into the market, thereby raising their incomes.

Specific objectives and activities of GHPPP were focused in five interconnected areas that embodied what the PFID-F&V program came to call “value chain development.” In short, these were to:

- Develop a logistical chain to yield products of specific consistency, quality and safety.
- Develop skills and capabilities of all participants in the horticulture supply chain.
- Establish a Ghanaian NGO with the capability to lead the horticultural industry in sustainable and profitable development.
- Provide technical assistance where needed to entities in all segments of the horticultural supply chain.
- Develop and market commercially viable nutritional products for children and pregnant women and other natural products.

To kick-off the implementation of the GHPPP project, MSU the lead implementing partner, organized a Ghana Supply Chain Mission from March 1 to 8, 2003. Participants of the mission included 10 experts with varying experiences in the horticultural industry. The team of experts came from MSU, Royal Ahold, LEI University in the Netherlands, Amex International, TechnoServe, CARE, and 12 Ghanaian partners and collaborators (such as VEPEAG, University of Ghana, farmers, among other). The main goal of the Supply Chain Mission was to establish a baseline or SWOT analysis of the Ghanaian horticultural industry before project implementation. The activities of the Mission consisted of visits to farms, processing plants, fruit terminal, fruit and vegetables cooling facilities, and packaging facilities, and conducting a series of workshops directed at improving the industry. The key findings of the Supply Chain Mission were: a fragmented Ghanaian horticultural industry; 66 exporters with a small group of six handling over 70% of exports; a lack of on-farm cold chain management experience or technologies, under-utilization of existing cold chain facilities, a growing sector for fresh cut fruit, financial/credit constraints, a need for new demand-driven products (e.g., MD-2 pineapples, new vegetable varieties); poor packaging materials, poor international market exposure; limited knowledge of new technologies that were being utilized in other African countries and the need for GAP training among Ghanaian producers. These findings established a framework for the partnership to design and tailor the activities to that would have a significant impact on the country’s F&V export sector.

**Implementation of objective (1): Develop logistical chain to yield products of high consistency, quality and safety.**

To initiate corrective measures for these objectives, several studies and workshops were conducted aimed at improving the supply chain and marketing. The studies included: marketing plans on selected vegetables; the effect of temperature on quality of pineapple varieties (M. Phil. Thesis, University of Ghana); the export status of horticulture and export potential in Northern Ghana (by OICI a partner); internal marketing of fruits and vegetables; indicative consumer studies on pineapples preference conducted in 8 European countries – (Major finding that MD-2 pineapple variety was preferred to the smooth canyon and sugar loaf). Two major study tours that had benefits across project objectives were:

The Kenyan Joint Mission Study conducted by MSU (lead partner) and Care International/Ghana in December 2003. The decision to conduct this study tour in Kenya was based on Kenya's rapid success in recent decades in vegetables production and exports to both high value and regional markets in sub-Saharan Africa. The purpose of the mission was to identify best practices in marketing; supply chain and cold chain management; vegetable varieties and on-farm technologies that could be applicable in the Ghanaian horticultural industry. Two key findings worth noting were: *first*, confirmation that the Kenyan vegetable export industry supply chain was relatively well developed from farm to shipping terminals. Discussions with farmers reflected their appreciation of cold chain management, unlike most small-scale Ghanaian farmers. For example we observed evaporative cooling chambers in two of the small-scale producers' farms visited. These were simple, on-farm, low cost, charcoal fueled cooling devices that function by lowering the chamber interior temperature by transferring heat to the soaked walls for evaporation. A *second* key finding in the marketing of produce to international buyers was that Kenyan growers scheduled production based on demand. Growers' contracts with exporters agreed on varieties, quantity, and timing for production and harvesting time; and, importantly, the price that would be paid. Having a reliable market and an organization that could negotiate prices with international buyers was a motivating factor to small-scale producers to produce more, knowing that their produce would be sold and that they would not be cheated in the process (details of the findings can be found in the report titled "Joint Mission Report between CARE-Ghana and Michigan State University: Lessons Learned and Comparative Analysis of the Kenyan and Ghanaian Horticultural Industry – December 1-7, 2003) submitted to USAID.

The Guatemala Mission where Ghanaian producers visited MD-2 pineapple production and vegetable farms, post harvest facilities, treatment and selection of fruits and vegetables for export, and overall marketing strategies revealed some of the best

practices. Key outcomes of the mission were: Ghanaian producers secured two shipments of MD-2 pineapple seedlings at an affordable price compared to previous circumstances characterized by a lack of the seedlings in Ghana and their prohibitively high cost. Ghanaian producers also were exposed to best practices such as MD-2 plant spacing and seasonal timing, maintenance of planted seeds, harvesting, selection process, grading and packaging, cold chain management and marketing strategies applicable to the Ghana horticulture industry. Upon their return to Ghana, workshops were conducted to broadly disseminate to industry stakeholders the information and practices they had acquired from their counterparts in Guatemala.

### **Implementation of objective (2): Develop skills and capabilities of all participants in the horticulture supply chain**

To develop the skills and capabilities of Ghanaian producers and marketers in the horticulture supply chain, several activities were planned and accomplished by the partnership. These activities included: (1) a workshop on quality and cold chain management standards in agri-business marketing, which was attended by 75 participants; (2) a Cold Chain Management course at Oklahoma State University attended by 5 Ghanaian participants; (3) an online course on International Food Laws and Codex completed by 9 participants; (4) a Food Law Workshop held in Accra Ghana and heavily attended by industry stakeholders; (5) training in Food Safety and Quality management for women retailers and entrepreneurs; (6) Food Safety training at MSU for private sector operators; (7) a stakeholders meeting was held on “Standards – tools for market access for fresh Ghanaian produce” was attended by 85 participants; (8) a Regional Food Safety workshop was held in Accra; (9) on-farm training was organized for a group of producers and purchasing agents on pre-harvest handling of produce; (10) a workshop for purchasing agents and vegetable producers by the Produce Marketing Association (PMA) attended by 12 participants in Chicago USA; (11) Pesticides Usage training for Farmapine and Equatorial Ventures farms; (12) Fruitsia Produce Show in the Netherlands; and (13) a EurepGAP workshop held in Madrid, Spain.

Through these and other activities implemented by the partnership stakeholders throughout Ghana’s horticulture value chains were able to upgrade their skills and knowledge base and make significant improvements in the production, supply chain management and marketing of their produce. Producers and the so called “suitcase producers” were also exposed to international markets (buyers) where some of them were able to consummate deals and to become suppliers of selected fresh fruits and vegetables. For example, from these activities Dansak Farms became a supplier to a Supermarket buyer in the Netherlands.

**Implementation of objective (3): Establish a Ghanaian Private Organization (NGO) with the capability to lead the horticultural industry in sustainable and profitable development**

During the team's Supply Chain Mission a good number existing associations in the horticultural industry were identified, such as the Sea-Freight Pineapple Exporters of Ghana (SPEG); the Horticultural Association of Ghana (HAG); and the Vegetables Producers and Exporters Association of Ghana (VEPEAG). The partnership worked with these associations to improve their effectiveness and coverage. GHPPP sought to develop management and leadership capabilities by offering training as needed, and in appropriate forms to build organizational capacity. For example, GHPPP supported members of the Organic Farmers Association (which it helped to establish) to participate in trade shows and a EurepGAP benchmarking workshop, as well as support for the National Tomato Traders Association and Freight Forwarders Association to participate in Cold Chain and Logistics training. In addition, the partnership established a good working relationship with the Ministry of Food and Agriculture (MoFA) and the Ghana Export Promotion Council (GEPC) to try to establish an effective association that would represent the industry. The partnership also created and nurtured the Papaya and Mango Producers and Exporters Association of Ghana (PAMPEAG).

Despite the partnership efforts to establish two new key associations to complement the existing ones, it was unsuccessful in establishing a single association that had the capacity to cater to the affairs of the horticultural industry in such areas as negotiating prices with international buyers and influencing export and domestic standards for the produce. Even though the partnership put in a significant effort to provide technical assistance to the associations, changing habits takes time, more time than was feasible in this two-year program. However, by the formation of the two new associations, more small scale producers were brought into the industry leading to increased productivity of MD-2 pineapples and new vegetable species that were procured from the Kenyan Mission visit.

**Implementation of objective (4): Provide technical assistance where needed to entities in all segments of the horticultural supply chain**

Several activities were initiated and implemented by the partnership to vitalize the Ghana horticulture industry. For example, training programs were customized and tailored to the needs of the producers on such topics/functions as EurepGAP, production of organic products and Fair Trade programs, processing and appropriate post-harvest and handling activities, and so forth. Packaging/post harvest experts from

MSU interacted with practitioners and stakeholders, and trips work organized to PMA and FMI meetings to build these important industry linkages.

Training programs were also developed that involved local experts in different areas of the horticultural industry with the aim of learning/improving skills. For example, Eden Tree Ltd. in Accra Ghana, which became an active partner on the project, conducted several training programs for stakeholders in cold chain management. Training was also conducted for four fruit and vegetable vendors. In addition, an audit was done at family Traditional Enterprises in the Central Region which resulted in marked improvements in some of their original processed products (e.g., they now process and sell cowpea-fortified corn dough instead of non-fortified corn dough). Additionally, the partnership assisted 8 members of SPEG for a study tour in South Africa, and 108 stakeholders attended a workshop in Ghana on challenges and opportunities facing the industry. Partners also worked closely with GTZ and MOFA to deliver technical assistance to farmers; and tissue culture from South Africa was obtained. The activities that were implemented under this objective clearly had a positive impact on Ghana's management of the horticulture supply chain.

#### **Implementation of objective (5): Develop and market commercially viable nutritional products for children and pregnant women and other natural products**

To implement this objective, the partnership initiated a collaborative relationship with the university of Ghana researchers to develop and market viable nutritional products for children and pregnant women. Nutritional products were developed from Moringa seeds and plants were made available for nursing mothers to include in their diets. Fruit juices were also developed and pre-packed and cut vegetables were made available in the local and export markets. Additionally, four new herbal tea products were developed from various blends of culinary herbs and local spices (by ASNAPP).

The GHPPP secretariat and Ahold led the development and introduction of some nutritional products into local communities, notably nutritious cowpea-fortified maize dough for preparing traditional food products such as koko, moore, kenkey and kakro (traditional Ghanaian foods). The communities that benefited from these products included – Agona Okitsew, Obosomase and Amanfrodo (Central Region), Kordiable (Greater Accra Region), Yensiso and Kwamoso (East tern Region). These products were well received by the targeted communities. A traditional family enterprise near Cape Coast has applied information and practices from these efforts to produce new lines of the products.

### **3.1.3 Impact**

Generally, the long-term impacts of GHPPP are expected to be significant on the Ghanaian horticultural industry and indeed the entire export sector as they come into full maturity over time. For example, the training programs and the study tour activities implemented by the program if sustained will improve stakeholders' performance and enable Ghanaian exports to be more competitive in the World market. GHPPP impacts are summarized by objective:

#### **Develop logistical chain to achieve products of specific consistency, quality and safety**

Although there was no assessment conducted to determine how some of the activities of GHPPP helped to achieve products of quality and consistency, some local producers for the first time were linked with external markets. For example, Dansak Farms was able to export papaya to Albert Heinz stores and ICA in Europe. GHPPP also developed grades and standards for eight horticultural products and pepper samples were delivered to Albert Heinz for evaluation. Two EurepGAP awareness workshops were held in Tamele and Bolgatanga, which were attended by 78 participants. The study tour to Kenya where Ghanaian producers purchased new varieties of seedlings led to 40 farmers cultivating parsley, dill, sage and thyme on 5 acres of irrigated land at Mafi-Aklamador and Apeguso. Workshops on food quality and safety and standards were conducted for stakeholders.

#### **Develop skills and capabilities of all participants in the horticultural industry**

The Supply Chain Mission comprised of experts from MSU, Netherlands and Ghana that was conducted at the start of GHPPP provided a very useful tool on how the training programs and study tours were to be structured. These were based on the SWOT analysis of the industry. As previously discussed, several training programs were designed that were aimed at enhancing the skills of the producers and exporters such as: Grades and Standards Training (75 attendees); WFLO on logistics (5 attendees); Food Laws Training (35 attendees); AMSCO training on ISO 9001:2000-tools for fresh Ghanaian produce (85 participants); Workshop by CARE on purchasing agents "Suitcase Producers" and also a report on the Joint Mission between CARE and MSU to Kenya (185 attendees); EUREPGAP workshops organized by AMEX on pineapples, mangoes, papaya and vegetables (attended by 31 out growers of Farmerpine and 39 Equatorial); and Training of small women entrepreneurs of shea product development by ASNAP (60 trainees). These activities helped to bring about a more organized domestic marketing and production of vegetables and fruit varieties. Also noticeable was the increase in the number of so called "suitcase producers" who were now able to buy quality and diversified domestic products for export.

### **Establish a Ghanaian NGO with the Capacity to lead the industry**

Although the partnership (Ahold, AMEX, CARE, TNS, MSU, ASNAPP, OICI) organized training programs tailored to the staff of VEPEAG and other associations such as the Mango Papaya, and Farmerpine, there was no clear organization that had been transformed as a hub organization for the Ghanaian horticultural industry. However, a significant development worth noting that emerged from the relationships and training programs was that Ideal Providence Farms evolved as the lead association for certification of Ghanaian produce based on EurepGAP standards (now GlobalGAP). It however could not negotiate for the industry in terms of produce prices with international buyers. On the other hand, fragmentation in the industry association in terms of production, quality and marketing continued, though at a much reduced rate. Had GHPPP had a longer life span, this objective might have been realized. Nonetheless, a solid foundation was established through the various training programs and exposure to international horticultural associations such as PMA, EurepGAP, FMI, WFLO, and Fruitesia (Fruit Logistica) and their produce shows for Ghanaian NGOs to expand and succeed in the industry.

### **Provide technical assistance where needed to entities in all segments of the horticulture supply chain**

Just like the impact of (2) above (development of skills and capabilities of participants), technical assistance for the entities in the industry objective also had a significant impact. Besides on-farm training programs given by experts in the partnership for producers in the areas of produce grading, cold chain management, packaging, etc., there was direct financial assistance to 8 producers of SPEG for a study tour in South Africa. As a result of the certification programs and efforts by TNS to ensure compliance with Organic Fair Trade regulations, 33 farmers received EUREPGAP certification. Additionally, ASNAPP facilitated the use of a quality control/quality assurance tracking system among the producers. A total of 33 farmers received certification as a result of the partnership with TNS but the larger impact of this activity was seen in the ability of significantly more farmers gaining access to international markets and the higher prices they bring.

### **Develop and market commercially viable nutritional products for children and pregnant women and other natural products**

Royal Ahold and the GHPPP secretariat provided leadership in the development and introduction of several products to rural communities, such as fortified cowpea dough, that can enrich the nutritional value of Ghanaian traditional foods. There was also the development of nutritional products from maringa plants for pregnant women and

children which could be included in their diets. Unfortunately, because of the limited life-span of GHPPP, it was not possible to assess the full impact of these packages on pregnant women and children.

### **3.1.4 Lessons Learned**

There were several key lessons learned through the implementation of the program:

***Program objectives:*** Some of the objectives of GHPPP were too broad and thus did not lend themselves well to measurement of indicators or outcomes. For example, the objective to “develop skills and capabilities of all participants in the horticulture supply chain” appeared to be too ambitious for a two year program. As a result there was no clear pathway as to how this could be measured to determine the impact of this and other objectives. Ghana is a diverse country with vastly different regions, so the possibility of developing the skills of everyone involved in the horticultural industry, including subsistence farmers was not something that could be realistically accomplished. Also, a majority of program beneficiaries were producers and exporters around Accra and its surrounding areas; consequently a majority of farmers in the outer regions could not be significantly reached by program trainers.

***A single quarterly report from the partnership to USAID/Ghana:*** The project document/proposal did not provide for any specific format nor did it designate any of the partners as lead contractor. Despite the lack of a lead contractor, USAID required a unified, composite quarterly report from the partnership and designated MSU-GHPPP to take responsibility for such reports. Although it may have been a good strategy in terms of reducing administrative and overhead costs and for convenience for the Mission to receive a single report from the partnership, it resulted in a significant quarterly challenge for MSU-GHPPP to obtain the partner reports with no contractual ability to enforce timely reporting. Additionally, the partners felt that there was no initial mandate for such deliverables through MSU-GHPPP so they did not feel obligated to comply with such reporting requests. Moreover, some of the partners preferred to report directly to USAID because it was their usual practice, and also because not all of their on-going activities were covered under the partnership, resulting in multiple reports for their different programs and activities. It took some time for MSU to convince the partnership to come on board, though they eventually did so. The lesson learned here is that for future proposals or project documents which involve partnerships with several implementing agencies, composite reporting should only be required where there are contractual relationships that will ensure their preparation and submission.

***Establishment of a Ghanaian NGO to lead the horticultural industry:*** Before the implementation of GHPPP activities, VEPEAG was seen as the organization that could easily be transformed to represent the Ghanaian horticultural industry. Despite the fact that the partnership had provided leadership in the formation of young associations such as Papaya and Mango Producers and Exporters Association of Ghana (PAMPEAG) and the Organic Farmers Association, VEPEAG continued to be dominated by two key partners- HAG and SPEG. Also, despite efforts by GHPPP to integrate these associations, it was not an easy task as VEPEAG's large scale producers continued to cater to the narrow interests of its key partners. To change the habits of such organizations is a gradual process that takes a long time. Given the short, two-year timeline on GHPPP, it was not possible to fully transform VEPEAG as the sole organization to represent the horticultural industry of Ghana.

***Promotion of the non-traditional sector:*** USAID's strategy to support the development of the horticultural industry through the funding of GHPPP was a good initiative as it was well aligned with Ghanaian government policy. However, a key lesson learned when implementing the program was that approaching an issue of this magnitude requires a long term strategy and sustained program. After just two years, new structures and procedures are still tenuous and new. Sustainability is a major issue. For example, Royal Ahold joined the partnership to compliment USAID's activities by funding certain activities and also shared the same office space with MSU. At the conclusion of the two year project Ahold was "left in the lurch" so to speak when MSU concluded the GHPPP program. For future projects, it is recommended that USAID strengthen its partnership with the government of Ghana and other donor agencies and seriously take into consideration the importance of private sector partners such as Ahold which take a long term view to their investments and are the key to the long term success of donor agency investments.

Finally, the MSU GHPPP program completed a mid-term survey which produced great results on how stakeholders viewed the program's impact. Generally, stakeholders believed very strongly that MSU GHPPP program was the right program for Ghana and they could see the benefits of the program in very practical terms. Expanding this program to 4 or more years would have been highly desirable in the eyes of the surveyed stakeholders.

### **3.1.5 Public-Private Partnerships**

The partnership played a significant role in formation of two private partnerships – Organic Farmers Association and the Papaya and Mango Producers and Exporters Association of Ghana (PAMPEAG). The members of these associations were provided

with training by the partnership. Some of their members were also sponsored by GHPPP to attend project workshops such as EurepGAP, WFLO, PMA and Food Safety programs. Several meetings with these newly formed private partners were held with VEPEAG, Farmerpine, HAG, and SPEG. The objective behind these meetings was to create and foster relationships among them that could someday lead to a consensus to bring them together under one umbrella.

### **3.1.6 Conclusion**

Michigan State University and its partners (Ahold, TNS, AMES, ASNAPP, CARE), based on a SWOT analysis of the Ghanaian horticultural industry, developed program activities that were tailored to meet the findings of the Supply Chain Mission. Some of the key findings were: a fragmented Ghanaian horticultural industry, little appreciation for cold chain management, logistics issues, and undeveloped stakeholder skills for linking to the global market place. Based on the discussion above, activities that were designed and implemented appeared to have met the goals and objectives of the program. However, due to the short timeline there was no clear way of determining the magnitude of the program impacts on stakeholders, particularly in terms of measuring improvements in household incomes as a result of the project. Throughout the implementation process, besides quarterly reports, there were two assessment studies done: a Mid-Term Evaluation (conducted by the project coordinator) which was a survey with a random sample of stakeholders and a Final Evaluation report (conducted by the director of the project and one outsider) at the end of the third year of the project. A major finding of the Mid-Term Evaluation was that an overwhelming majority of stakeholders (80%) confirmed that program activities were beneficial to them and wanted the program to be continued. The Final Evaluation which was implemented as a face-to-face survey and a summary of program activities by objective provides a very good summary of the project's activities and achievements. However, the report also concluded that because of the short-life span of the project, overall impacts could not fully be measured. Again, this speaks to the need to envision a longer timeline, possibly 4-6 years, for similar programs in the future.

## **3.2 Nicaragua**

### **3.2.1 Introduction and Background**

The Partnership for Food Industry Development – Fruits and Vegetables (PFID-F&V) in Nicaragua was implemented over the course of four years and worked with NGOs, higher education and training institutions as well as with private companies in the food

industry in Nicaragua and abroad. PFID-F&V provided tailored technical assistance to participating small and medium-scale producers aiming at improved competitiveness on cost, quality, food safety standards application and an overall capacity to access more profitable local, regional, and export markets.

This program began in July 2003 with the participation of Technoserve as a single partner under a \$1.16M associate award. It was then followed by a five-fold grant increase for a second phase from October 2004 to September 2005, expanding to an alliance with three faith-based, international NGOs – Catholic Relief Services (CRS), Lutheran World Relief (LWR) and World Relief Corporation (WRC). These three NGO's not only brought years of experience in working with grassroots organizations, but were also the major link to USAID's previous programs addressing the Nicaraguan coffee sector search for market and product diversification alternatives. Even though PFID-F&V targeted fruits and vegetables, the project became strategically important to the USAID Nicaragua Mission as a mechanism to transition previous programs from supporting the coffee sector to also participating in fruits and vegetable markets. Subsequent funding extensions allowed the project to continue until April 2007.

PFID-F&V/Nicaragua's foremost achievement is its unsurpassed market expansion for over four thousand beneficiaries. This success has been attributed to the project's emphasis demand side activities, a needed element in so many previous supply-focused initiatives. This demand-side focus included an extensive research initiative in local, regional and the US markets as the first step in crop planning and farmer organization, followed by intensive training on cost-saving, productivity-enhancing agricultural practices. In most cases, formalization of purchasing contracts between buyers and farmers also led to explicit purchasing and marketing contracts between importers, wholesalers and brokers with small and medium-scale producers for year-round and winter season supply of quality fresh produce. As a result, better planning and timely delivery to fulfill contracts was evident and took farmers to a new level of better business practices and operational performance.

### **3.2.2 Justification for the Project Funding**

By 2003, two major driving forces were leading Nicaragua to its most dynamic agricultural transformation period since the 1980's: the negotiation of the Dominican Republic and Central American Free Trade Agreement with the US (DR-CAFTA) and the agricultural diversification toward exports of fresh produce to the US and Europe where other Central American countries had successfully participated. Nicaragua, although lagging behind many other countries in the region, was participating in a rapid expansion of agricultural markets that were also transforming its local stores through

the “supermarketization” initiated in 1999 by the regional supermarket chain CARHCO (becoming Wal-Mart Central America in 2005). Further interlinking across countries with increased regional and global market access opportunities for small and medium scale farmers was within reach. At the same time, the pressure to compete on cost, quality and food safety standards threatened Nicaraguan’s competitive capacity in their own backyard. A project that could quickly lead other organizations with limited knowledge of these market developments was necessary. PFID-F&V Nicaragua was conceptualized as a response to this need.

### **3.2.3 Implementation Summary**

At the farmer level, access to working and investment capital was made available through the project’s Small Investment Fund (SIF) to address major supply-side bottle necks. At the subsector level, several initiatives concentrated on generating the missing market intelligence both locally and abroad, while the development of more favorable agribusiness policies were drafted in a joint effort between the Ministry of Agriculture of Nicaragua and the major project sub grantee, the Inter-American Institute for Cooperation on Agriculture (IICA).

#### **Supply-side activities**

USAID/Nicaragua recognized the financial challenges facing small and medium-scale farmers as well as private companies in funding the crop investment, entry, and development of new markets—particularly the export markets. USAID approved the use of up to \$1.2 million in grant funds for PFID-F&V to manage a Small Investment Fund, as a key component of the MAF program. The SIF provided risk capital (seed capital) to assist small and medium-scale producers and firms to increase their capacity to take on new market opportunities that require capital investments to meet the quality specifications of supermarket chains and export markets. With the SIF, PFID-F&V shared with the participating producers the initial risk when entering a new market and/or growing different crops for local or export markets. Risk mitigation was a key element of the project and one of the reasons for its success.

This financial support was followed by the identification of training needs to ensure the success and sustainability of the production and market expansion ventures throughout the life of the project. A major training program that benefitted several SIF recipients was Export Nicaragua. Export Nicaragua started in 2004, and was delivered by MSU and INCAE faculty with experience in marketing and strategic planning. Export-Nicaragua, a ten step road-map for training small and medium-scale Nicaraguan companies, focused on training exporters--primarily to the DR-CAFTA markets.

## **Demand side activities**

*Emphasis on local and regional supermarkets.* PFID-F&V/Nicaragua emphasized demand-side activities for four major markets: the national and regional supermarket chains; the specialty markets for coffees and organic cocoa; and the winter window market for high volume crops to the US. Key alliances with private sector players such as Wal-Mart and Chiquita Brands International placed the project in direct contact with specific purchasing agents that explained in great detail what they expected from farmers. This knowledge was turned into training programs and marketing tools addressing the traditional challenges farmers needed to overcome.

*Emphasis on coffee and cocoa market diversification.* The start of the PFID-F&V Project coincided with the importance of coffee diversification support programs in the region. These projects were designed and implemented to find alternatives to the coffee crisis, mostly felt during the late 1990s and early 2000s. One of the strategies put into place was to develop specialty coffees with the potential to receive price premiums in international markets, and to diversify small farmers away from producing only coffee. Three Faith-Based organizations (CRS, LWR and WRC) were tasked with supporting this strategic USAID and Nicaragua interest, promoting high value crops such as fruits and vegetables while also expanding access to specialty coffee markets. These three organizations provided effective assistance in a timely manner to improve coffee farmers' income and field practices during the 2005-2006 and 2006-2007 crop cycles. Besides key market development efforts, other capacity building activities on the supply-side focused on coffee fertilization, pest and disease controls, pruning, shade management, improved post-harvest techniques including water and waste management during wet milling.

*Emphasis on the US market window.* The winter market window for fresh produce consisted of contracted sales with US, Canadian and European buyers for 41 ha of okra planted by and association of seven producers. This okra crop season represented sales of more than \$2 million. Also, 22 ha of hard squash production, planted by 4 small- and medium-scale farmers under marketing contracts for the US market were attained, representing sales of \$1.6 million. In terms of sweet onions, 257 ha were planted by 46 small farmers with the first grade quality sold in the US, while the rest was sold in the local and regional markets. Although not highly extensive, these plantations were under intensive agriculture, generating an approximate output of 1.2 million pounds, representing approximately \$1.9 million in sales.

### 3.2.4 Impact

Many activities were carried out successfully during the course of the four project years. However, internal and external project evaluations were only able to measure “impact” on the Nicaraguan agricultural sector for some of the key product value chains as explained below. Recent exchanges with the USAID Mission in Nicaragua confirm that the impact of the PFID-F&V project has been sustained, as other initiatives (with USAID and MCC funding) have continued to replicate PFID-F&V activities in other parts of Nicaragua.

*The Plantain Cluster.* The Project selected plantains as a priority export crop for development in Nicaragua in November of 2003. This decision was based on the results of detailed studies of the US market and the Nicaraguan plantain sector commissioned at the time which showed that Nicaragua had comparative and competitive advantages to position itself in the plantain markets (regional and export) and to take full advantage of the DR-CAFTA, including:

- The Pacific area of Nicaragua is relatively free from natural disasters such as hurricanes and floods, in comparison with the rest of Central and South America.
- Low temperatures affecting productivity and fruit development in neighboring countries are not common in Nicaragua during the northern hemisphere winter months.
- Rivas, the largest plantain producing area, has a production peak that matches a period of low supplies and high prices (opportunity window) in the US market.
- Production costs in Nicaragua are lower than in other countries mostly due to a lower incidence of major diseases.
- Nicaragua’s geographic position allows for short shipping distances to the US and other markets.
- Agro-ecological, climatic, water availability and soil conditions offer optimum growing conditions.
- Nicaraguan plantain growers needed production, post-harvest, marketing and organizational assistance to effectively compete in regional and export markets.

The support from PFID-F&V resulted in increased prices received by growers and increased sales and export volumes to the US market and the Central American regional market. These are markets for which Nicaraguan plantains have become a necessary item, particularly for regional supermarket chains and plantain processors where

cumulative sales reached \$5.5 million leading up to March 2007, benefiting over 500 producing households, creating close to 2000 direct jobs and totaling more than 1500ha of production under improved practices.

*The Okra Winter Window Production.* Helping to diversify agriculture production with the addition of high-value export crops, PFID-F&V worked in close coordination with partners to provide farmers with technical, financial and marketing assistance for three consecutive seasons to develop the production and exports of fresh okra. The target markets were the USA, Canada and Europe. Given the right climatic conditions and the technical support provided, in just three years Nicaragua became the largest exporter of fresh okra to The US expanding the sales to Canada and Europe. Cumulative sales of \$3.9 million were achieved, creating over 230 direct jobs in an extension of 325 ha.

The assistance provided by PFID-F&V included the following activities:

- A comprehensive market study of the fresh okra markets opportunities, identifying linkages to the markets and potential buyers for farmers to produce and export directly the fresh okra to the US, Canada and Europe.
- Assisted participating farmers in the marketing and market negotiations with potential partners.
- Prepared draft marketing contracts between farmers and buyers and coordinated the negotiations of the contracts between producers and buyers.
- Tailor-designed a technical assistance and training package for the efficient production, post-harvest and export of fresh okra. With particular emphasis in implementing best agriculture practices, sanitary and phytosanitary controls for the production of a safe produce with high quality.
- Assisted farmers in forming the Okra Crop Board—integrated by all farmers growing okra, which helped farmers to achieve sizable savings in production costs, including: savings in seed purchase, transportation costs by negotiating as a group transportation of large volume of okra, improve negotiations with packaging (wooden boxes) producers, and with selected clients in the market by ensuring the supply of large volumes of okra.

### **3.2.5 Lessons Learned**

Factors contributing to the success of PFID-F&V outlined by MSU and USAID evaluations include the establishment of alliances with private sector companies as a critical ingredient in generating long lasting business relationships. In the past, producer groups

alone without the access to purchasing agents did not impress buyers as high-performance suppliers. The combined effort that PFID-F&V was able to coordinate with other NGOs in Nicaragua resulted in opportunities to dramatically expand market access and linkages for small and medium size farmers.

Central to this success was the access to and implementation of a small investment fund (SIF) to provide much needed seed capital for business development as explained above. Not only was specialized technical assistance to the grower/exporter available but thanks to the project there was an increase in the number of agricultural entrepreneurs in Nicaragua who understood market requirements and were able to meet them both during and after the program was concluded.

A very important lesson learned was the importance of understanding the dynamics of higher sales versus increased net incomes for the participating producers by progressively accessing higher-value markets at the local, regional and international levels. Although it was easier to monitor sales, it will be important in the future to establish the necessary baselines per product to also measure net income improvement for every crop.

### **3.2.6 Public-Private Partnerships**

Partnerships with international market promotion institutions and multinational companies and regional supermarkets were established with the participation of the public sector. Also, PFID-F&V facilitated a more formal alliance between Hortifruti (the buying arm of Wal-Mart Nicaragua) and USAID programs to encourage more micro and small producers to participate in different value chains from beans to plantains and other products.

### **3.2.7 Conclusion**

The project met and surpassed its objectives. For instance, at the end of the project, PFID-F&V had assisted approximately 5200 beneficiaries. Farmers gained access to targeted markets reaching sales of \$46.9 million, surpassing the target of cumulative sales (40 million) by nearly \$7 million. Of total sales, approximately 75% targeted the US and other international markets and the remaining 25% represents local and regional market sales. The number of crops sold to export market increased from 6 in 2003 to 26 in 2005, and the number sold to local markets increased from 32 in 2003 to 42 in 2005. This economic activity had a ripple effect on job creation and in keeping jobs in the coffee and cocoa sectors.

These results obtained would not have been possible without the mix of partners that worked under the coordination of PFID-F&V. Although at times it was difficult to deal with over 7 sub-grantees, it was possible to keep the focus on the finish line. Nicaragua was placed on the map of world-class suppliers of a number of products, and that has had positive consequences for the country's reputation and for how future, similar initiatives can and should be approached.

### **3.3 Central America**

#### **3.3.1 Introduction and Background**

The USAID/G-CAP Cooperative Agreement No. 596-A-00-04-00039-00 was awarded to MSU in January 30, 2004 for a period of two and a half years. This Central America regional project was granted in a moment of great need for capacity building to address sanitary and phyto-sanitary issues impeding increased fruit and vegetable produce exports and trade from and within the region. Under the parameters of this Cooperative Agreement, PFID-F&V implemented a ten-month bilateral project in Guatemala. A parallel bilateral project was developed in partnership with the "Market Led Rural Diversification Project" (MLRD) under the applicable provisions of the Prime Grant No. 520-A-00-99-00069-00 issued by USAID in May 2003 to the Association of Exporters of Non-Traditional Products of Guatemala (AGEXPRONT) by the United States Agency for International Development (USAID). The bilateral project undertook demand-side activities on specific tasks and training aimed at the establishment of a Business Development Unit (BDU) located in AGEXPRONT. Although originally planned for 16 months (from June 2003 through September 2004), the actual duration of the project was 10 months, starting December 1, 2003, until September 30, 2004.

#### **3.3.2 Justification for Project Funding**

The objectives of the original USAID/G-CAP Cooperative Agreement were to: 1) mitigate the SPS (sanitary and phytosanitary measures) impeding increased fruit and vegetable produce exports via capacity-building; 2) to carry out market intelligence diagnostics of food industry demand (supermarkets, food service, and processors) for the five Central American countries, and to establish 15 new long-term business deals/contracts made between partners within and outside the region for up to \$15 million in sales accrued to the business deals/contracts.

As a result of the Central American Strategy placing the delivery of production and marketing assistance within the bilateral missions, a second one-year work plan

covering October 1, 2004 through July 2005 was established in October of 2004 with modifications based on the assumption that even though a market demand approach would be the underlying focus of the team, an increased emphasis would be placed on SPS issues, particularly GAPs, as a necessary component of all market activities. A final work plan covering the period from August 2005 through July 2006 was approved in August 2005. This plan reflected several changes that influenced the focus of the project as follows:

1. Facilitation of sanitary and phytosanitary issues impeding increased fruit and vegetable produce exports via capacity-building. This was the primary focus and closely linked to the implementation of an Access to Market Program (AMP) which consists of the implementation of Good Agricultural Practices (GAPs) and Good Manufacturing practices (GMPs); training in business management (GBPs – Good Business Practices), technical assistance in the development of new products (production) or new markets, and the installation of model plots to demonstrate GAPs.
2. Market intelligence diagnostics of food industry demand (supermarkets, food service, and processors) for the five Central American countries. Initial diagnostics were completed during the first year of the program, but given the shift to intra-regional markets with a known demand for specific products, no more specific market studies were done. However, a buyer's analysis was carried out both with local supermarkets and buyers in Europe and U.S.
3. Fifteen new long-term business deals/contracts were consummated between partners within the Central America region and/or with partners outside the region. This was a reachable target within the context of producers having new deals with Central American supermarkets, and was a priority.
4. \$15 million in sales accrued to the business deals/contracts made between partners within the Central America region and/or with partners outside the region. This target shifted to sales of product that had been produced under compliance with GAPs.

### **3.3.3 Implementation**

Increasingly, high value markets for horticultural products in Central America demanded assurances that the farmers meet international standards for good agricultural practices (GAPS) and that produce meets international safety standards. This increased emphasis on food safety threatened to widen the gap between the small farmer and high value markets. If the small and medium sized farmers were not able to implement good

agricultural practices in the short run they were forced sell their produce directly to traditional markets, i.e., through brokers, or simply drop out of the business completely.

The project sought to achieve this impact on multiple stakeholders and also addressed the need for improved capacity in meeting increased demands from US buyers that the products they purchased be grown under GAP, and regional supermarket chains, following closely behind DR-CAFTA's "ratcheting-up" of food safety standards. Under this scenario, the implementation of the Central American PFID-F&V Project was important to improving the situation by facilitating sanitary and phytosanitary compliance capacity building particularly in areas currently impeding increased fruit and vegetable produce exports.

A few market intelligence diagnostics were done during the first year, but given the shift to intra regional markets with a known demand for specific products no more specific market studies were required. As a result, 32 new contracts or "deals" (a deal is producer-crop-buyer specific) with international buyers were consummated, while 17 new contracts were made with national buyer/exporters and 22 producer groups were able to begin new contracts with domestic buyers. These business engagement activities led to \$6.5 million in sales from Guatemalan producer groups alone. Although the programs in Nicaragua and El Salvador addressed the basic GAPs, it was estimated that by the end of the program they had accumulated local and regional sales of "safe food" in excess of \$500,000.

### **3.3.4 Impact**

The Access to Market Program - AMP resulted in more and better income opportunities for small and medium Central American farmers by increasing access to high value markets through compliance with international standards for Good Agricultural Practices.

During 2005 a new program was developed that was much more complete than the GAPs – it included training to assist small and medium farmers to become good businesspersons. This was the Access to Market Program - AMP or in Spanish: *Programa de Acceso a Mercados – PAM*. Specific outcomes under this program resulted in 70 producer groups. From this total, 36 producer groups in Guatemala implemented the AMP program; 16 of them under the PFID-F&V Core agreement; plus 7 in El Salvador and 7 in Nicaragua for a total of 50 groups. Unfortunately, funds were cut from the overall budget (further explained below) in late 2005, making it impossible to reach the 70 group level). Other key results of the program were:

- A total of 3000 small farmers (500 from Core AMP Model) were trained and complied with CAPGAP under PIPPA standards by the end of 2006.
- 2600 small farmers were trained: 73 in El Salvador; 102 in Nicaragua; 547 under the EGAT grant and 1884 under the original Guatemala project, again budget cuts reflected in the overall planned amount.
- In an effort to assure program sustainability after the life of the project, 150 technicians (25 from Core AMP Model) received the basic CAPGAP training program, of these at least 10 firms (1 from Core AMP Model), NGOs or other associations will have received approval from the National Agricultural and Environmental Protection Program (PIPAA) to begin to implement AMP to at least 50 producers groups (8 from Core AMP Model).
- A total of 142 technicians from NGOs and other technical service provider were trained in total (again reflecting budget cuts): 23 Central American EurepGAP auditors; 29 GAP technicians in El Salvador; 32 in Nicaragua; and 58 in Guatemala (from EGAT).
- A model program to promote effective CAPGAP compliance among small and medium-size producers was field-tested and fine-tuned in Guatemala and readied for adoption by similar producers in other Central American countries.
- The AC/DPE program that Fundación Agil implemented with over 80 groups in Guatemala and with a select group in Nicaragua through 2008 is a direct result of perfecting the original model.
- Estimated Sales of product from all farmers using CAPGAP: End of July 2006 was \$5 million dollars based on volume of over 10 million pounds of product. End of July 2007 was \$20 million dollars based on an expansion in groups in AMP.
- Sales by farmers under the original Guatemalan award were 12.8 million pounds produced on over 3,350 acres with a net value of slightly more than \$4.7 million. Sales by farmers under the PFID-F&V agreement were 6.5 million pounds produced on over 550 acres with a net value of slightly more than \$1.8 million. Total new jobs from the project were 1700 and new daily employment was 425,000.

A different set of results and impact was produced as result of PFID-F&V/Central America implementation of CAPGAP, a trial program with 20 Guatemalan producer groups in GAPs through Fundación AGIL and its alliance with PIPAA, the Agricultural and Environmental Integral Protection Program -- a public/private entity that certifies producers and verifies compliance on a continuing basis according to specific export markets standards. Since that initiative, progress was made to develop and refine the

program. The result was a new program that was much more complete than simply implementing GAP standards. This more expansive program was called: *Aseguramiento de la Calidad y el Desarrollo de Pequeñas Empresas (AC/DPE)* (“Quality Assurance and Small Business Development”). Producer groups implementing this program at all levels were enabled to have better access to high value regional and international markets, allowing them to compete more efficiently, and thereby increase on-farm incomes.

**The AC/DPE program had five components:**

- A modified GAP based focus on EurepGAP and FDA standards that more closely fits the reality of Central America called CAPGAP, and which has generated considerable interest on the part of CARCHO;
- Good Post Harvest Practices (including packing);
- Good Business Practices (a manual developed by Fundación Agil);
- A basic specific assistance package in production and marketing, and;
- The installation of model GAP farms within each group.

**3.3.5 Lessons Learned**

Three major lessons stand out in the work carried out under the PFID-F&V Central America Associate Award. The first is that access by small farmers to more profitable markets is only possible if they have a safe, high quality product that they can deliver in consistent volumes at a competitive price. Additionally, the success the team had with linking producers with buyers was based on the producers’ capacity to deliver their product in a consistent manner at the volumes the buyer required. These conditions apply not only to international markets, but are becoming more important in regional markets where the most accurate logistics are correlated with offering competitive prices to consumers.

Second, an important lesson learned lies in the high pay off that comes from empowering local organizations to take over project activities early enough in the program. The Central America project worked with Fundación Agil as a subgrantee and of the 50 groups that had begun to implement GAPs under the Fundación AGIL program, all of them reported sales for local, regional and international markets of approximately \$6.5 million before the program ended. Other projects may target local entities to take over project responsibilities too late in the game, so to speak, so that there is not sufficient time to work together and transfer administrative as well as technical skills. As such, the use of Fundación Agil was a key move for the project to empower a local organization to continue with this work beyond MSU’s involvement.

And finally, the importance of determining the financial and operational feasibility of selected F&V's to clear the way for Central American suppliers to complete long-term business deals is very important. As requested by various organizations it is essential to include basic business management training and access to investment capital to enable them to upgrade their operations with at least minimally required equipment and supplies. Buyers in Central America and abroad rarely, if ever, co-invest with their suppliers on such upgrading expenses. In short, it is important to consider such financial assistance if the goal is to include more small growers, typically characterized by limited access to credit and investment money.

### **3.3.6 Public-Private Partnerships**

Supermarket alliances have been established but we are still uncertain of the impact that Wal-Mart might have on these alliances. Producer alliances within Guatemala have been functioning very well, and should expand in the near future as the European market demands more diversified product. As described earlier, many of traditional supermarket procurement systems do not function well when trying to access a single buyer with consistent quantities and qualities at a more or less fixed price over a long period of time. The "traditional" system employed by supermarkets is to buy different products from an intermediary or buy one product from many different farmers based strictly on price or to buy in spot markets. None of these systems will easily function to purchase guaranteed safe food. For international markets there is no problem, but regional buyers will have to change their structure to make this system work (following the successful Hortifruti/Costa Rica system).

PFID-F&V Central America carried out a number of technical meetings and workshops principally with PIPAA, CARHCO (now Wal-Mart), and EAP, CropLife, Ministries of Agriculture and other technical experts to design a Central American GAP program (CAPGAP); however, there is still uncertainty in knowing whether such alliances will produce results with the participation of the public sector given the high personnel turnover in public agencies. Also, despite the excitement for CAPGAP, the absence of a championing institution puts long term sustainability into question. Nevertheless, a working framework across the public and private sector continues to work around the major GAP and phytosanitary issues through PIPAA and this is a major step toward building confidence among trading partners that Central American product will meet SPS safety and environmental standards.

## **3.4 South Africa**

### **3.4.1 Introduction**

In 2002, after several months of reconnaissance work, PFID-F&V Core Pilot Program activities were officially initiated in South Africa with the award of a sub-agreement to the University of Fort Hare (UFH) and creation of the Fort Hare Farmers (FHF) group. A total of \$57,445 was allocated to UFH via this sub-agreement for collaboration with Michigan State University (MSU) on the development and implementation of the PFID-F&V model with a group of emerging South African farmers in the Amathole District of the Eastern Cape Province.

Shortly thereafter, in September 2003, PFID-F&V signed a cooperative agreement with USAID/South Africa to increase market access of historically disadvantaged emerging farmers in the Eastern Cape and to build a sustainable capacity for continued market access. Faculty from both institutions (UFH & MSU) had collaborated through the years on joint initiatives and exchange programs, and thus the foundation was already established for the PFID-F&V project to embark on another such collaborative venture. Between September 2003 and June 2004 a total of \$200,000 was obligated to this activity by the USAID/South Africa mission. Responding to the challenges encountered by the program, two no-cost extensions were subsequently approved by USAID, with the second one ending in July 2006. The entire period of the associate award spanned approximately two years and 10 months.

At the start of PFID-F&V activities, the biggest impediment for small-scale farmers in the Eastern Cape to attain fair prices for their product was their lack of access to lucrative, value-added markets where sales for fixed amounts of product would be guaranteed well in advance. The common sales practice among small-scale farmers was to sell their produce to informal markets dominated by “hawkers,” who came by the farmer’s fields with their trucks, ready to pay cash for all available produce, albeit at less than premium prices. Once the market was saturated, crops were often left to rot in their fields. With this in mind, the goal of the PFID-F&V South Africa project was to increase the market access of historically disadvantaged, emerging farmers in the Eastern Cape and to build a sustainable capacity for continued market access.

There were two specific objectives established in support of this goal: 1) increased market access to quality commercial contracts; and 2) enhanced capacity created for sustained market development. Due to UFH’s unique position, expertise, familiarity with the region, and organizational mission to promote sustainable community development through specialized research and collaboration with stakeholders, the PFID-F&V Fort

Hare Farmers project was managed by UFH in collaboration with their Agricultural and Rural Development Research Institute (ARDRI). PFID-F&V's expertise served primarily to facilitate the market linkages with project partners, such as Pick n' Pay, with whom PFID-F&V had a relatively longstanding relationship and good reputation in the region. Additional assistance was also provided in oversight, managerial and technical capacities as needed and as requested by UFH/ARDRI.

### **3.4.2 Implementation**

During the pilot program phase, a market buyer and the smallholder producers to participate in the project were identified. On the demand side of the equation, the supermarket Pick 'n Pay was identified as the primary market buyer and partner in the South African PFID-F&V project. Two incentives in particular inspired Pick 'n Pay's interest in the project. First, the identified producers had the potential to improve the chain's produce procurement system in the Eastern Cape by: (1) expanding the procurement window for certain crops; and/or, (2) substituting more expensive supplies from the chain's Johannesburg distribution center for locally grown produce. Second, procuring from previously disadvantaged populations fit well in its corporate social responsibility mission.

On the supply side, two farming communities were selected due to: easy access to main roads; the presence of irrigation systems; and the abundant availability of land with fertile soils. Furthermore, the resources present in these communities complied with specific requirements of Pick 'n Pay (i.e. farmers used mechanized equipment rather than animal traction). Additionally, some of the farmer's produce was sampled by Pick 'n Pay and found to meet the supermarket's product standards. Initially, the produce items supplied by the FHF to Pick 'n Pay supermarkets focused on the farmers' summer crops and involved items the farmers were accustomed to growing (butternut, white pumpkin, and blue-grey pumpkin) as well as some items that were new to them (gem squash, Hubbard squash, and watermelon).

Once the project participants were identified and had indicated their commitment to the project, a more official relationship was established via the Cooperative Agreement with USAID/South Africa. A three-phase approach was then developed to supply the primary market with produce while giving the farmers time to build expertise and financial capital to progressively upgrade their farms:

**Phase I.** This phase focused on items that do not require cold chain technology, such as squashes and pumpkins. Pick 'n Pay eased the farmer's entry to the market by relaxing two standard requirements by: 1) reducing packaging

expectations, and 2) allowing extra time to get ready for a quality/safety process audit. For example, FHF could supply butternut in 10kg bulk bags (as opposed to the smaller, bar-coded and labeled pre-packs). The FHF were also given additional time to upgrade their production and post-harvest system to the level that was needed to meet Pick n' Pay's process standards.

**Phase II.** In this phase, the farmers would shift to potatoes which are still relatively easy to store but which require more resources to produce.

**Phase III.** In the final phase of the project the farmers would shift to more demanding produce items, such as carrots and onions, for which well-equipped pack sheds become a requirement.

During the time of the three-phase implementation process, the team faced challenges that affected the anticipated outcomes of the project. Perhaps the single greatest challenge faced by participating farmers involved the process of understanding and adopting the modern terms of marketing in the dynamic food retail sector. In order to generate a full understanding and acceptance of the need for these trends, project management was counting on encouraging some degree of eagerness and a proactive nature in project participants; however, for a variety of reasons, it took a long time to promote this type of proactive behavior with any degree of success among the FHF group of producers.

Another primary source of complication during project implementation was one of project management and proximity. While UFH/ARDRI had the advantage of being only a short distance from the project site, particularly relative to PFID-F&V, even this short distance caused problems, as direct on-site farm management was needed in order to ensure full compliance of product quality to the standard requirements of Pick n' Pay. Beginning in January 2004 a succession of farm managers were hired part-time to manage an on-site project implementation. Unfortunately, the transfer of project management, even to the limited extent of daily on-site issues, resulted in weakening the FHF group's performance. During the first quarter of 2005, UFH/ARDRI once again took over all aspects of project management.

Other sources of challenges included a powerful tornado that stormed through the region, damaging large segments of vegetable crops in its wake; competing development projects – focusing on cotton, paprika and grains – that offered farmers significant (unsustainable) levels of inputs if they would participate and thereby competed for production resources such as water, tractors, and the farmers' attention (as a result the PFID-F&V program lost half of its participants in a single year); and

persistent weak spots in the supply chain, particularly with regard to transportation and sufficient cash flow to address the costs of production.

However, despite these challenges, the project was able to reorganize in 2005 resulting in an improved approach and a remarkable set of benefits to the farmers who remained in the program. Highlights of this reorganization include:

- Development of a business plan – the creation of a coherent business approach to organization and marketing has suggested a clear set of activities and benchmarks that must be achieved as preconditions for market survival as a producer group.
- Hiring of an on-site farm manager – hiring of a full time farm manager at a better wage provided farmers with more consistent guidance in seed selection, nursery interfacing, timing and techniques for production activities, as well as closer coordination with transportation services.
- Organization of the FHF Steering Committee – A steering committee composed of stakeholders across the supply chain (from nursery to farm to transport to grocery) meets on a monthly basis.
- Hiring a program liaison officer – the steering committee, in combination with a new liaison or communications specialist has strengthened the communication up and down the supply chain, thereby resulting in increased trust and more predictable deliveries and sales.

As an expression of support for FHF reorganization efforts, Pick 'n Pay provided a generous (R400,000) low interest loan to support the producer's cash flow as they continued to advance in improved production and post harvest practices. The 2005-06 reorganization of the project was an instrumental step in guaranteeing a successful and continued relationship between FHF and Pick 'n Pay.

Additionally a business development consultant worked with both the FHF group and UFH/ARDRI in July, 2006 to initiate a sustainability plan. This groundwork provides the basic steps for UFH and FHF to finalize the plan and set about implementing the new five-year plan toward self-sufficiency.

### **3.4.3 Impact**

PFID-F&V efforts aimed to achieve a win-win scenario for both producers and retailers alike. This initiative has not only served to increase market access for the participating farmers; it has also improved the PnP supermarket chain's produce procurement system in the Eastern Cape, at the same time furthering its corporate social responsibility

mission, with the company's commitment to the project coming from the very top of the management structure.

Notable results achieved include:

- An increased land area in crops sown that are destined to primary markets;
- Increased use of good agricultural practices during production;
- Decreasing production costs over time, i.e., reduced from approximately 40% to 25% of total cost;
- Implementation of sorting and grading of produce;
- Increased access to diversified markets, including a shift from complete reliance on local informal market sales to increased sales to secondary and primary markets;
- An increase in average net profit by participating producers from R800 to R4586;
- Transition from Phase I upgrades for hard squash varieties only to initial Phase II/III activities related to sale of additional crops (first to secondary markets).

#### **3.4.4 Lessons Learned**

Due to the challenges enumerated above, the three-phased approach to the South African project had unfurled at a much slower pace than anticipated. Hence only the first phase had been achieved with the FHF group selling a selection of squashes and pumpkins to Pick 'n Pay in limited volumes. Therefore the primary task in the last year of the project focused on sustainability of market access for the Fort Hare Farmers and strengthening of the individual producer-level capacity so that they could achieve a level of independence that was still lacking. However, even with a rather shaky first two years of activity, the recommitment and concentration of the participating farmers in 2005, together with the increasing involvement of stakeholders in the FHF Steering Committee, continued positive results were expected even after the conclusion of the project. The UFH project management determined that through an increase in the number of farmers in the project and through an increase in the acreage each participating farmer could potentially allocate for Pick 'n Pay, the volumes sold to Pick 'n Pay and secondary markets would increase.

### **3.4.5 Public-Private Partnerships**

PFID-F&V activities in the Eastern Cape were coordinated with:

- The University of Fort Hare (UFH), in collaboration with their Agricultural and Rural Development Research Institute (ARDRI);
- Pick ‘n Pay Supermarkets (PnP), the second largest retailer in South Africa;
- The Fort Hare Farmers (FHF) group, consisting of producers from Burnshill and Lenye villages; and
- Eventually a variety of additional public and private stakeholders from across the supply chain, including the Stark Ayres company, Umtiza fertilizers and chemicals, Zanyokwe Agricultural Development Trust and the government extension service.

## **3.5 Southern Africa**

### **3.5.1 Introduction**

The PFID-F&V Southern Africa Regional (RCSA) project was originally commissioned in September of 2004 with the granting of a USAID associate award for a period of five years ending in September 2009. While the Start-up Phase initiated in November, 2004, the hiring of a Chief of Party (COP) was not finalized until February 2005. Delays in the approval of the annual work plan, completing the sub-award agreements, and difficulties establishing a regional office in Gaborone, Botswana resulted in a slow start-up for activity implementation.

The goal of the PFID-F&V RCSA project was to develop business linkages, provide technical assistance, build indigenous capacity, and develop and apply information technologies. The goal also included educational activities and the provision of training in market development for small-scale producers, producer associations, producer cooperatives, food processors, exporters and the public sector. This partnership program encouraged opportunities for the development of a more competitive economy in the region, diversify rural livelihoods, reduce hunger and alleviate poverty, increase business management capacity and improve market competitiveness, all of which were intended to achieve the larger goals of expanded trade capacity and enhanced market demand-driven development.

Based upon the five objectives of the Phase 1 PFID-F&V approach, with the addition of three areas in response to requests by the USAID Regional Mission, the following project objectives were identified:

- Improve market access for small-scale producers by providing links to buyers from supermarkets, hotel and restaurant chains, processors and international exporters (i.e. dynamic markets)
- Improve access to market information for buyers and sellers through increased use of multiple information and communication technologies
- Improve market access for alternative crops such as medicinal and herbal natural products
- Identify regions in Southern Africa having surplus agricultural production and process these foods into fortified products for infants, school-feeding programs and home-based care centers for HIV/AIDS patients
- Improve food security and regional market knowledge by collecting informal market data on food products crossing borders
- Conduct training of small-scale commercial producers in critical management and marketing skills
- Facilitate market entry of medium-scale enterprises into the seed industry that provides services to small-scale commercial producers

These objectives were pursued through collaboration with several private and public organizations via the formation of a Southern Africa Regional Agribusiness partnership and five sub-agreements awarded to ASNAPP (Agribusiness in Sustainable Natural African Plant Products), Market Matter, Inc., World Food Program, the University of Botswana and the Botswana Horticultural Council. Mission funding totaled \$3,339.363.

The individual sub-award agreements included the following:

*ASNAPP*

- Market development and linkages for natural products
- Natural product development
- Quality control/quality assurance management/post harvest handling
- Business enterprise development

#### *Market Matters Inc.*

- Enhance business management capacity of small-scale agricultural enterprises, farmers and commodity associations
- Assist agricultural firms to access local, regional and extra-regional markets for African products
- Alleviate rural poverty among small and medium scale farmers through the Seeds for Development Program (funded in part by the Rockefeller Foundation)

#### *University of Botswana (UB)*

- Development of food based scientific strategies to improve the health of nutritionally challenged children, particularly those infected with HIV/AIDS
- Study the economic and technical feasibility and implications of mandatory fortification of cereals on food industry on Botswana

#### *United Nations World Food Program*

- Development of a low-cost system to monitor cross-border food trade in Southern Africa

#### *Botswana Horticultural Council*

- Strengthened of Botswana Horticultural Council by assisting them to provide market related information to its members
- Use ICT to improve information access to the membership of BHC
- Collect fresh produce marketing information to enable small scale producers/members to access the local market
- Enable BHC to lobby for policy changes and provide membership with information on changing local and regional policies

### **3.5.2 Implementation**

During the initial proposal development stages, the RCSA project focus was well-defined and concentrated on the core strengths and expertise for the PFID-F&V organization. However, in the process of preparing the proposal for approval and through ongoing communications with the USAID Regional Mission, additional project objectives were identified that stretched PFID-F&V into new territory. These new objectives included activities addressing HIV/AIDS, cross-border monitoring, and marketing of non-FFV products such as medicinal and herbal natural products and seed industry activities. Due

to the Mission's preference to work primarily, and from the start, through local organizations or others already established on the ground, these activities were delegated through sub-awards to the organizations mentioned above, with little direct communication or management by PFID-F&V. This approach caused some difficulty in coming to terms with a standardized, cross-award Performance Monitoring Plan (PMP) as these did not always contribute directly and/or clearly to the original objectives of the umbrella Cooperative Agreement.

Management of the project at a regional level was provided by a project team office established in Gaborone, Botswana. MSU PFID-F&V staff provided contractual and accounting support to the regional office, and the PFID-F&V management team provided management oversight. The "Market Linkages" activity to identify emerging markets and match these to small producers of F&V in the region was also carried out by MSU via the Gaborone office. The aforementioned individual and semi-autonomous sub-awards, on the other hand, were managed independently by project managers at each organization.

The staffing pattern and associated time allocation to several positions caused some significant challenges to project implementation. Initially, the Gaborone regional office was staffed only with the COP, a program assistant and an administrative/accounting assistant. Technical back-up LOE at MSU was kept to a minimum. Eventually, a program manager was hired to manage the work planning and reporting processes and to coordinate activities more closely among partners. Shortly after this individual was hired, however, the COP's performance was increasingly challenged by the Mission and he was eventually requested to leave the project in April 2006. MSU was not allowed to refill this position, a situation that increased the team's difficulty in effectively coordinating, implementing and reporting on program activities.

MSU activity emphasis switched increasingly away from the more intensive Market linkages work toward regional coordination of the sub-agreement awards, as resources were increasingly reallocated to the sub-agreement partners. Despite the challenges discussed above, MSU was successful in providing regional coordination and in forging Market linkages. Regional coordination involved facilitating exchange of information among sub-agreement partners with USAID/Southern Africa, including that related to performance and financial reporting. MSU administered the sub-agreement relationship and provided partners with programmatic support and oversight of sub-agreement administration as carried out by these partners.

*Success Story: ASNAPP.* The specialty vegetable and herb project in Livingstone, Zambia in conjunction with Sun International Hotels was one of the big success stories in this

program. The sight-impaired people of the communities in Linda and Mapenzi produced their crops in both open fields and greenhouses. ASNAPP set up greenhouse structures and provided training and within the first year, they were so successful in producing specialty vegetables and crops that they were providing ten percent of the total fresh vegetables consumed by Sun Hotels. Surplus produce which Sun International cannot use is marketed to other hotels and guest houses in the area. This project has not only provided these sight-impaired people with food for consumption, but it has also allowed them to raise their standard of living, while negating the need for Sun International to transport fresh produce by road from Johannesburg in South Africa or from Lusaka, Zambia.

### **3.5.3 Impact**

In terms of building partnerships and fostering supply chain linkages, MSU provided valuable technical leadership and assistance, particularly in South Africa, Zambia, Malawi and ultimately in Botswana as well. PFID-F&V was able to develop a good reputation with market stakeholders, particularly in establishing that MSU PFID-F&V experts have a good understanding of what they require, especially from potential small producers. Due to this reputation, over the years major food industry partners such as Freshmark, ShopRite, Woolworth and Pick 'n Pay have demonstrated a willingness to work with small producers associated with the MSU PFID-F&V projects. Project managers in the region surmise that anyone would be hard pressed to find another US-based university in the Southern Africa region that had the same reputation.

Additionally, a total of about 216 people were supported by the program to attend workshops and courses in year two. PFID-F&V provided training for trainers, for partners in the Chinyanja Triangle and region. The training was mainly in marketing and also exposed farmers to technical issues (market requirements, pricing, other stakeholders in the supply chain, etc.) relating to fresh produce/high value crops marketing and production. The exception was a workshop that addressed the impact on non-clinical interventions of HIV/AIDS in the agricultural sector.

While the impact of the courses and workshops on the target beneficiaries cannot accurately be stated, the workshop reports gave an indication of their potential impacts. For example, the major outcomes of the Regional Workshop on Agricultural Interventions for Mitigating the Impact of HIV/AIDS: Nutrition and Farming Technologies workshop were:

- The formation of the Botswana National Fortification Alliance

- Formation of a working group to promote the use of appropriate agricultural technologies to mitigate the impact of HIV/AIDS (reduced labor productivity and general health) on the formation of a National Fortification Alliance

The Chinyanja Triangle participants of the Market Matters 6 Workshop held in Capetown were able to convince one of the organizers of the workshop to visit the Triangle with a view of identifying areas of possible collaboration.

Finally, the MQM Workshop in Zambia also had major positive outcomes, the most notable being the formation of working groups on paprika, germplasm and medicinal plants. The workshop facilitated networking among the different players in the region representing the private sector, non-governmental organizations, government, academia and donors. It also highlighted the potential for the natural products industry to increase incomes for rural dwellers.

### **3.5.4 Lessons Learned**

In general terms the output of the program was low relative to the expected outcomes. Three possible explanations for this were identified, not only because of their contribution to the final output of year two, but also because of their implication on the implementation of the project in the next three years (with or without PFID-F&V SA). The three are: changes in the program, status of target beneficiaries, and program coordination.

Two major changes that altered the direction of the RCSA project's primary objectives involve the implementation of a push strategy in place of a pull strategy. The project dynamics were ultimately production-driven rather than demand-driven. The second change affected the locality of project activities. Rather than working through the region, activities were reduced to a specific zone concentrated in the Chinyanja Triangle. Furthermore, activities were refocused so that production research activities determined project focus, starting with what they know small farmers could grow in that zone, rather than with what the market demanded. Marketing strategies and partnerships based on procuring markets for those products were follow-up steps, and as such overall progress toward sales progressed more slowly than might have occurred if a market-led strategy was adopted.

The limited organizational, technical and financial capacities of the targeted producers in the Chinyanja Triangle posed a challenge for the attainment of project goals as well. This factor was further exacerbated by high standards required by the market and competition from commercial producers. While the local markets could absorb some

increased production, especially during the counter season, its size relative to potential production capacity presented a substantial challenge.

### **3.5.5 Public-Private Partnerships**

The PFID-F&V Southern Africa award's objectives were pursued in collaboration with several private and public organizations via the formation of a Southern Africa Regional Agribusiness Partnership and five sub-agreements awarded to ASNAPP (Agribusiness in Sustainable Natural African Plant Products), Markets Matter, Inc., World Food Program, the University of Botswana and the Botswana Horticultural Council.

## **3.6 India**

### **3.6.1 Introduction and Background**

The *Partnerships for Food Industry Development – Fruits and Vegetables* (PFID-F&V) project at Michigan State University collaborated with public and private partners to increase the competitiveness of small and medium scale fruit and vegetable producers in local, regional, and international markets. Since its establishment in 2000, the PFID-F&V Program had initiated programs to address the wide range of challenges to small scale fruit and vegetable producers in Africa, Asia and Latin America.

In late 2003, MSU PFID-F&V staff began a series of discussions with key stakeholders in the Indian horticulture sector to identify development opportunities with high potential for success. These discussions culminated in a participatory workshop on “Fruits and Vegetables Market Development in India” which was held in New Delhi in March 2004. The 60 participants in this workshop included food retailers, processors, academicians, state and central government officials, and international development agencies. A key activity during the course of this workshop was the completion of a SWOCA (Strengths, Weaknesses, Opportunities, Challenges and Actions) analysis relative to Indian horticulture in general and the targeted identification of commodities of focus for potential future market development projects.

### **3.6.2 Justification for Project Funding**

India being the world's largest supplier of mangoes had an annual production of 11.6 million metric tons in 2005 (National Horticulture Mission, Ministry of Agriculture). Mango accounted for 23.5% of all fruit produced in India during the year 2005-06 and was second only to banana (34.8%) in Indian fruit production. Furthermore, India was the major global producer of mango, accounting for 41% of the estimated worldwide

mango production of 25.56 million metric tons in 2003 (FAO). Despite this large mango production, India remained a minor exporter of fresh mango and processed mango products. During the year 2004-05, exports of fresh mangoes from India were 52.4 thousand metric tons, or slightly less than 0.5% of mango production during this time frame. Furthermore, the vast majority (>90%) of fresh mango exports from India were destined for the relatively low-value near markets of Bangladesh, the United Arab Emirates, Nepal, and Saudi Arabia.

A similar pattern emerged for exports of Indian mango pulp. India exported 91.0 thousand metric tons of mango pulp during the 2004-05. Assuming a 50% yield of puree from fresh mango, this export quantity would account for approximately 1.6% of total mango production in India.

Collectively, these observations indicated that, despite being by far the world's largest mango producer, India exported only approximately 2% of its mango crop as fresh mangoes or processed mango products. These observations about mango had been consistent with aggregate data available on exports of all Indian fruit and vegetable commodities.

Expectations of developed nations for stringent sanitary and phytosanitary standards, as well as traceability requirements, had represented barriers to exportation of Indian mango and mango pulp. Indian horticulture had also suffered from a lack of universally-accepted quality standards for horticultural commodities and a superficial approach to quality grading.

In addition to targeting high-value export markets such as Europe and the US, the project team anticipated that the development of GAP standards, HACCP procedures, consistent quality grades, and other standards would have considerable value in the rapidly-evolving domestic food retail market.

Based on formative discussions, outcomes from the March 2004 New Delhi workshop, and specific interests from partner organizations in India, PFID-F&V proposed a horticulture development project to the USAID India Mission that focused on "Mango Market Development." Mango was selected because the lack of global mango market development presented a unique opportunity for India to make an organized entry in the fresh mango and mango pulp market.

The project team chose to focus this project in the state of Maharashtra for several reasons. First, Maharashtra is a leading state in the production of two high-quality mango varieties – Alphonso and Kesar. Second, the close proximity to packing, logistics and export facilities in Mumbai made Maharashtra a logical geographic focus. Third,

Maharashtra was among the first Indian states to amend their APMC Acts to enable direct contracts between farmers and buyers of their produce, a key strategy to reduce transaction costs in the value chain. Finally, the Maharashtra State Agricultural Marketing Board (MSAMB) had already begun making significant investments in infrastructure to support the future development of the mango industry.

### **3.6.3 Project Objectives and Scope of Work**

A three-year project on “Mango Market Development” was approved by the USAID India Mission with a start date of September 2004. The overall objectives of this project were:

1. To enhance the ability of growers and processors to meet international requirements for grades and standards;
2. To strengthen market linkages of growers with processors, and growers with large domestic distributors and exporters;
3. To promote Indian mango and mango products to importers in targeted international markets; and
4. To enhance profitability and sustainability for small and medium sized mango farms in Maharashtra.

The strategy used by PFID-F&V to meet these objectives was focused on building capacity among mango farmers and processors to meet high standards for product quality and safety and then matched those producers and processors with higher-value markets. These high-value markets included both export destinations as well as the emerging retail food sector in India. PFID-F&V did not organize new producer groups, but rather worked with existing farmer organizations to assist their members in meeting market demands.

### **3.6.4 Implementation**

**Objective 1: To enhance the ability of growers and processors to meet international requirements for grades and standards**

#### *Food Safety Training Programs*

In February 2005, a team organized by MSU and MSAMB conducted a value chain analysis (VCA) in the Konkan region of Maharashtra, the key Alphonso growing region of the state and evaluated key aspects related to mango production, post-harvest handling, processing, compliance with food quality and safety grades and standards,

packaging, marketing and logistics. Based on the findings of the VCA, several capacity building and market development activities were planned and executed during the second and third years of the project. Capacity building efforts included training for farmers, processors, government officials, and extension agents on Good Agricultural Practices (GAPs; Pre-Harvest Food Safety for fruits and vegetables), food safety requirements such as Good Manufacturing Practices (GMPs) and Good Hygiene Practices (GHPs) and the food safety management system Hazard Analysis and Critical Control Points (HACCP).

Two week-long training programs on food safety standards were conducted in January 2006 near Pune (MSAMB's Horticulture Training Center at Talegaon-Dabhade) and in Ratnagiri. There were approximately 70 participants during the course of the Pune training program including 35 state departments of agriculture personnel from five states (Uttar Pradesh, Andhra Pradesh, Gujarat, and Tamil Nadu) who participated in a "train-the-trainer" format. The Pune training program participants included 22 Kesar mango farmers from the Aurangabad and Latur districts of Maharashtra and 8-10 industry representatives such as Reliance Industries, Indian Tobacco Company (ITC), and ShopRite.

The training program in Ratnagiri was similar in structure and included over 150 unique participants. The participants included 135 farmers or farmer/processors who participated in the GAP program on Monday and Tuesday and 63 farmers, processors, and trainers who participated in the GMP, GHP and HACCP program on Wednesday-Friday. Two faculty from Tamil Nadu Agricultural University (TNAU) and six farmers from the Tamil Nadu were also present.

Mango Growers Federation (TAMAFED) also participated in the full program with support from a USAID-funded TNAU-MSU ALO (now HED) project on horticulture development. Reliance Industries also sent three representatives to Ratnagiri to meet with the farmers and demonstrate new packaging materials. Another key to the success of these training programs was the participation of personnel from FoodCert India in the training team.

Targeted food safety management system training also was conducted for mango pulp processors and government officials in Maharashtra. A three-day HACCP training program was held on October 9-11, 2006 at the MSAMB packing facility in Nachane, Ratnagiri District of Maharashtra. Program participants numbered 30 persons and were primarily from the Ratnagiri and Sindhudurg districts. Participants included small and medium-sized owner/operators (22), some line managers from large mango processing units (2), and government/MSAMB staff (6).

### *EurepGAP Certification of Mango Growers*

Following the GAPs training programs in January 2006, 44 mango farms (31 Alphonso and 13 Kesar growing farms) in Maharashtra received EurepGAP-Fruit and Vegetable certification following on-farm audits by FoodCert India and acceptable pesticide residue tests on samples of their produce.

In the 2007 mango season, 33 mango farms in Maharashtra received EurepGAP-Fruit and Vegetable Option 1 certification. These 33 farms included 15 farms which were certified in 2006 (EurepGAP audits must be repeated annually), as well as 18 new farms. Kesar mango farmers in Maharashtra did not see greater net returns for EurepGAP-certified mangoes in their local markets, and they faced very stiff competition from Kesar mango farmers in Gujarat for high-value opportunities in the Mumbai markets.

### *Packaging Conference*

During the Value Chain Analysis, the assessment team also noted minimal adoption of modern packaging technologies both for fresh mango and processed mango products. To address this issue, PFID-F&V organized a conference on “Packaging of Fresh Mango and Processed Mango Products” which was held at the SIES School of Packaging in Nerul, Navi Mumbai on September 29-30, 2006. The conference was attended by 150 stakeholders, which included packaging material suppliers, several farmers and representatives from the retail food industry, food processors, exporters, university faculty, and government officials. The conference was well received by participants as both highly informative and practical. Meetings between the packaging industry and end-product users (e.g. processors, packers, exporters) were planned for the coming months to explore greater contacts and linkages for the benefit of the industry.

### **Objective 2: To strengthen market linkages of growers with processors, and growers with large domestic distributors and exporters**

#### *Enhancing Financial Returns to Farmers via Improved Access to Markets*

Integral to the success of this project was the linking of farmers to markets which enabled greater net returns for their produce. Market development opportunities guided the training strategies employed in the project and market linkages were pursued in parallel with these capacity building efforts. In essence, markets were targeted based upon the ability of farmers to meet particular market demand. Farmers who were able to successfully obtain EurepGAP certification were linked with buyers (exporters or retail buyers) who desired certified product. Another key strategy used for

all participating growers was to increase net returns to farmers by organizing direct linkages with domestic buyers and thereby shortening the supply chain.

*Market development activities associated with the project fell into the following categories:*

- Establish direct linkages with Indian food retailers,
- Provide direct marketing opportunities for farmers,
- Link growers to exporters and high-value foreign markets, and
- Facilitate linkages to Indian mango pulp processors.
- Establish Direct Linkages with Indian Food Retailers

India was in the midst of a retail revolution, which in recent years had expanded rapidly to include development of an organized retail food sector. To assess market needs and begin developing linkages for growers, PFID-F&V personnel (including Marketing Specialists such as Patrick Hanemann) began meeting with retail food procurement personnel very early in the development of this project. Retail operators were invited to participate in project activities and interact with farmers and producer groups on a regular basis through buyer-seller meets in the Alphonso and Kesar mango producing regions of Maharashtra.

PFID-F&V facilitated the establishment of Memoranda of Understanding (MOUs) linking mango sales by farmers participating under this project with major food retailers such as Food Bazaar, Shop-Rite etc. in Maharashtra. In-store promotions were another tool utilized by these retailers to increase awareness of their efforts to partner with farmers.

Although the Alphonso mango growers in the Konkan region of Maharashtra were quite successful in entering into direct contracts with retail buyers, Kesar mango growers faced more difficulty entering these marketing channels. PFID-F&V and MSAMB arranged for representatives from both Food Bazaar and Metro to meet with Kesar mango growers based in Aurangabad and Jalana during the 2007 season.

*Facilitate Linkages to Indian Mango Pulp Processors*

Seasonality of mango production in India caused major gluts of production to occur from the middle to end of the mango season. During that time (in Maharashtra; mid-April to May for Alphonso mango and May-June for Kesar mango), a major portion of mango production should be diverted into processing facilities. The PFID-F&V project helped facilitate market linkages between individual mango growers and grower groups (e.g. Shree Mangoes, Devgad Mango Cooperative Society) and large-scale processors

who were seeking Alphonso mangoes (e.g. Warna, Foods and Inns, Chitali, ITC). Some of the larger mango growers also operated their own small-scale processing facilities, typically producing Alphonso mango puree packed in #10 tin cans. PFID-F&V helped some of these small-scale processors develop additional linkages with mango puree distributors (e.g. Kedia). During the course of the project, several hundred metric tons of Alphonso mangoes were consumed through these direct market channels, rather than being sent to the wholesale markets where they would have fetched relatively low late-season prices.

In addition to these activities, in the policy arena, PFID-F&V team facilitated the standardization of IndiaGAP and waiver of Maharashtra APMC Act Provision for Retailers.

### **Objective 3: To promote Indian mango and mango products to importers in targeted international markets**

#### *Link Growers to Exporters and High-Value Foreign Markets*

A key strategy of this project was to help facilitate linkages with higher-value export markets for growers who could meet the high sanitary, phytosanitary, and quality standards in these demanding markets. Kay Bee Exports, based in Mumbai, was one of the first exporters to aggressively target high-value markets in Western Europe and East Asia. Beginning in the 2006 growing season (the first season when EurepGAP-certified mangoes were produced under the project), Kay Bee sourced EurepGAP-certified mangoes from at least ten mango growers affiliated with the PFID-F&V mango market development project.

MSAMB also facilitated small-scale trial shipments of Alphonso and Kesar mangoes to additional export markets. Trials were conducted with mango exports to Hong Kong, wherein 1,200 dozen Kesar mangoes were shipped via air cargo. Discussions also were held with representatives from supermarket chains based in the Netherlands, but these contacts did not result in exports.

From the beginning of the project, PFID-F&V team members facilitated contacts between Total Fruit, a company based in the Netherlands, and mango growers in Maharashtra. In 2007, Total Fruit conducted a trial shipment of Kesar mangoes by sea container from Mumbai to Rotterdam.

Mr. Sunil Borade, MSAMB export coordinator and a core team member for the PFID-F&V mango market development project, worked closely with representatives from the Japanese Plant Quarantine Department to satisfy the conditions required by the

Japanese government such as vapor heat treatment (VHT). During the 2006 mango season, 9 metric tons of trial mango shipments were exported from the VHT facility from MSAMB and several companies including Bharti Field Fresh, ITC Limited, Kay Bee Exports and others. All mangoes destined for Japan were sourced from EurepGAP-certified farms participating in the project. In addition to this, MSAMB worked closely with USDA-APHIS personnel to develop protocols for export of Indian mangoes, and the first consignments reached the US in the latter half of May 2007.

During the course of this project, the PFID-F&V team also facilitated contacts of growers with exporters who were based outside of Maharashtra such as ITC-Limited based in Hyderabad as well as Metro in Bangalore and Hyderabad.

#### *Short-Term Training Programs*

In addition to training and capacity building programs held in India, this project provided an opportunity for project partners to participate in short-term training programs in the United States. PFID-F&V organized an “International Short Course in Export Preparedness” which was held on October 16-20, 2006. The short course was designed to provide an introduction to the US produce industry, import/export procedures at major ports of entry to the US, and produce marketing and included visits to produce companies and terminal markets. The workshop was held in Miami, Florida and San Diego, California. Following the workshop, participants attended the annual Produce Marketing Association meetings in San Diego to learn more about the US and international fresh produce industries.

The PFID-F&V India Mango Market Development Project provided support for two project partners to attend the Export Preparedness Workshop and the Produce Marketing Association Meetings. They were Mr. Sunil Borade, Export Manager for MSAMB, and Dr. Raosaheb Mohite, Projects Manager for MSAMB. PFID-F&V also facilitated the participation of three additional persons from India: Mr. Ninad Bhosale, Vice President – Exports, ITC Limited; Mr. Raghuraj Tipre, Manager – Exports, ITC Limited; and Mr. Vijay Kumar, Manager, ICICI Bank. Two additional MSAMB staff who were actively involved in the PFID-F&V project, Mr. Suhas Prakash Kale and Mr. Satish Wasudeo Warade, underwent training in postharvest management, US sanitary and phytosanitary requirements for fresh produce (including Indian mango), and food irradiation technology in the US from April 11 to May 4, 2007. They were awarded Cochran Fellowships by the USDA to meet all of their expenses during this training period.

#### **Objective 4: To enhance profitability and sustainability for small and medium sized mango farms in Maharashtra**

##### *Provide Direct Marketing Opportunities for Farmers*

Another marketing strategy widely employed under the project was the organization of “Mango Festivals” during the harvest season which enabled growers to sell produce directly to consumers. MSAMB organized the Pune Mango Festival in the month of May 2006, wherein 55 small- and medium-scale mango growers maintained stalls for display and sale of mangoes directly to consumers. The festival was inaugurated by Dr. George Deikun, Mission Director, USAID, New Delhi and honored guests included local dignitaries including two former mayors of Pune. MSAMB estimated that 500 metric tons of mangoes (or approximately 200,000 dozen) were sold by farmers during this festival.

During the 2007 mango season, two additional mango festivals were organized by the MSAMB APMC, Ratnagiri in central Maharashtra in Pimpri-Chinchwad (May 13-15, 2007) and Ahmednagar (May 17-19, 2007). MSAMB estimated that 21,000 dozen mangoes valued at Rs 42 lakhs were sold in Pimpri-Chinchwad and that 5,200 dozen mangoes valued at Rs 10 lakhs were sold in Ahmednagar. MSAMB also organized direct sales of a small quantity (600 dozen) of Alphonso mangoes through Kelshi Parisar Amba Kharedi Vikri Sahakari Sanstha (Lokamangal Supermarket) in Solapur.

MSAMB also successfully organized a “Farmers to Consumer Direct Sale” scheme during the 2006 and 2007 seasons in Pune attended by about 25 Alphonso and Kesar growers. MSAMB estimated total sales through these kiosks to be approximately 60,000 dozen in 2006. In 2007, MSAMB estimated total sales at 13,750 dozen with returns of Rs 20 lakhs to farmers. Through this program, farmers obtained superior net returns compared to the traditional markets and consumer obtained high-quality mangoes at a reasonable price.

#### **3.6.5 Impact**

The PFID-F&V project team assessed the short-term economic impacts of the various marketing interventions employed in the project. Extensive interviews conducted with mango growers and traders who participated in the project led us to conclude that growers who were able to produce GAP-certified produce received 20-30% greater returns on mangoes in the high-value domestic market (relative to prices in the mandi) and approximately 50-60% greater returns on mangoes which were sold to exporters. Farmers who participated in direct sales (mango festivals, MSAMB kiosk direct sales) also received approximately 20-30% greater returns than the wholesale market.

## **Success Stories:**

### *Partnering with Certification Bodies to Improve Food Safety Knowledge and Practices:*

With an objective of gaining access to the high-value European and Japanese markets, it was essential that the farmers upgrade their food safety practices to comply with international standards such as EurepGAP. Therefore, PFID-F&V partnered with FoodCert India Pvt. Ltd. to develop and deliver training courses necessary to build capacity among farmers to comply with EurepGAP standards. These programs were hugely successful, providing comprehensive and practical training to over 220 farmers, government personnel, and others in proper food safety practices.

### *Guidance and Promotion of Successful Mango Grower Groups:*

Dr. Vivek Bhide and the other members of the Malgund, Ratnagiri District, Alphonso mango growers group participated in the GAPs training programs and then worked during the subsequent months to improve their facilities and practices in order to obtain EurepGAP certification. Each of the Malgund growers successfully obtained EurepGAP certification in May 2006. Working together with Dr. Bhide's leadership and guidance from the PFID-F&V India project team and MSAMB, the group then actively pursued market linkages with organized domestic retailers and exporters to high-value markets. They were among the first Alphonso mango growers to enter into direct market linkages with Food Bazaar and Kay Bee Exports during the 2006 season.

### *Linking Farmers Directly to Retail Buyers:*

For the 2006 mango season, PFID-F&V and MSAMB market specialists facilitated the establishment of Memoranda of Understanding (MOUs) between MSAMB and food retailers. These MOUs outlined procedures whereby farmers associated with the Mango Market Development Project would market their mangoes to these retailers. The key retail partners in the first year were Food Bazaar, Division of Pantaloon, which had over 50 stores in major Indian metros at that time, and ShopRite, a large hypermarket based in Mumbai. Key to these agreements was the stipulation of rapid and equitable remuneration to the farmers. The MOUs were formally signed at the Pune Mango Festival in May 2006 and over 17,000 dozen mangoes were transacted under the MOUs in the first season.

### *Kay Bee Exports: Linking GAP-Certified Farmers to High-Value Distant Markets:*

Kay Bee Exports, based in Mumbai, had a wealth of experience in exporting fresh fruits and vegetables to distant markets. PFID-F&V met with Mr. Kaushal Khakhar of Kay Bee early in the India Mango Market Development Project to discuss our marketing

objectives. Mr. Khakhar seized on this opportunity and was one of the major purchasers of mangoes from EurepGAP-certified project farmers during the 2006 season. During the 2006 season, Kay Bee Exports indicated that they had purchased over 4,000,000 rupees (approximately \$90,000) of produce from EurepGAP-certified farmers associated with the Mango Market Development Project during the 2006 season at about 50% higher price than local markets. Kay Bee exported several consignments of both Alphonso and Kesar mangoes from India to the US during May and June 2007, when the United States allowed imports of Indian mangoes for the first time in over twenty years. These mangoes were a huge success in the US market, fetching approximately \$36 per dozen (or more than 12 times their value in Indian markets).

*Impacts on Farmers in Other Indian States: The Tamil Nadu Mango Growers Federation (TAMAFED):*

Michigan State University also received funding from USAID to conduct horticulture development work in collaboration with Tamil Nadu Agricultural University (TNAU). During the GAP training program in Ratnagiri, the TAMAFED farmers and their TNAU faculty had ample opportunity to discuss and develop their objectives. Through hard work and a shared vision, TAMAFED met and exceeded these initial goals. One of their farmers obtained EurepGAP certification after the Ratnagiri training program and contracted with Bharti FieldFresh to supply mangoes for export to the United Kingdom. Several other TAMAFED farmers negotiated price and specifications with the SAFAL market in Bangalore and began supplying mangoes to SAFAL at a price 8-30% greater than the local mandi. Most importantly for the future, the group succeeded on obtaining funding of 15.75 million rupees (approximately \$375,000) from the Government of India to expand their efforts and develop GAP demonstration farms in Tamil Nadu.

### **3.6.6 Lessons Learned**

The “Mango Market Development Project” represented a highly successful approach to strategically engaging mango farmers in Maharashtra with high-value market opportunities. These market linkages often were contingent upon farmers being able to effectively meet requirements, such as food safety certification, that were imposed by the buyer. Thus, it was essential that educational and capacity building efforts be calibrated to meet these market demands. During the course of planning and executing this project the team gained many additional insights on factors that contributed to, or served as obstacles to, the success of the overall project. Our experiences were as follows:

## **Project Strategy and Approach**

Extensive stakeholder participation in the formulation of the project was crucial in many respects. The approaches outlined by PFID-F&V should not be construed as “one-size fits all,” but rather must be carefully planned to address the characteristics of each particular supply chain. For example, in the “Mango Market Development Project” it was not possible to implement interventions that impacted farm productivity due to the long-term nature of fruit production. Rather, the project had to focus on other strategies to increase net returns to farmers.

## **Capacity Building Activities and Compliance with Standards**

Capacity building efforts and capital investments must be strategically linked to marketing opportunities. Disjointing these efforts would result in wasted resources and possible disillusionment of participating farmers. In the “Mango Market Development Project,” one key strategy the project team employed was training and capacity building of farmers, packing facility personnel, and processors on food safety standards such as EurepGAP, GMPs and HACCP. It was important that proper analysis of current market conditions and opportunities be completed prior to deciding on approach. Early adopters of new technologies, standards, and marketing approaches must be provided with necessary support to maximize their chances of success. During the course of this project, we observed that clear communication and transparency in grades and standards expectations was critical to successful execution of contracts. Failure to effectively meet these market expectations could result in large claims against suppliers at the time of product delivery. Continued failure to effectively meet requirements would result in loss of market opportunities.

## **Market Development Activities**

The PFID-F&V and MSAMB staff catalyzed market linkages between mango producers and the rapidly-developing domestic retail segment in India. The project capacity building and market linkage activities generally were very effective in enabling farmers to meet market expectations.

### **3.6.7 Public Private Partnerships**

Throughout the course of the “Mango Market Development” project, the PFID-F&V team cultivated many partnerships and linkages that were designed to continue well beyond the three-year duration of this program. This section briefly described some of these additional linkages and partnerships.

## **Agro Fair**

The organization Agro Fair ([www.agrofair.com](http://www.agrofair.com)) is a Fair Trade fresh fruit import company based in The Netherlands. The Agro Fair and the PFID-F&V team met to discuss the potential to collaborate in the development of a value chain of Fair Trade Alphonso mango puree sourced from Maharashtra, Karnataka, and Tamil Nadu states in India and destined for the European food and drinks industry. As a transitional step to the development of a full Fair Trade-certified mango puree value chain, AgroFair indicated they would be interested in sourcing conventional and/or organic mango puree produced from Alphonso mangoes grown by farmers in these Indian states.

## **SAFAL National Exchange**

The SAFAL National Exchange of India Ltd. (SNX) provided a technology based competitive market place to farmers for marketing of perishable horticultural commodities and other allied produce in a fair and a transparent manner. As an outcome of the discussions with the PFID-F&V team, SNX expressed their interest in entering into an MOU with PFID-F&V, one or more major fruit importers in Europe and/or the US, and a high-quality certification body in India to assist in meeting importing country requirements.

## **PFID-F&V Core Program (Post harvest Technology Workshop in India, 2008)**

The PFID-F&V India team planned and implemented a “Post Harvest Workshop for Fruits and Vegetables for the South Asia Region” which was held at the National Institute of Agricultural Marketing (NIAM) in Jaipur, India in January 2008. The team partnered with Rabobank India, NIAM, ICAR and several other Indian organizations and private sector firms in executing this conference and workshop. This conference and workshop consisted of a comprehensive nine-day training program which was attended by approximately 40 regional experts from universities, government agencies, non-government organizations, Bhutan participants and private sector firms in India.

## **USAID-USDA NIAM Strengthening Agriculture Market Systems (SAMS) Program**

The SAMS Program was focused on building capacity on several critical factors necessary for strengthening the horticultural marketing system in India. The project was coordinated by NIAM in partnership with the US Department of Agriculture with support from the United States Agency for International Development, and initially had targeted capacity building efforts in three Indian states (Rajasthan, Himachal Pradesh, and Karnataka). There were four core areas of competency being addressed by this project: 1) food safety (Good Agricultural Practices), 2) quality grades and standards, 3) market

information news, and 4) marketing extension. The overall program utilizes a “Train-the-Trainer” approach.

### **World Bank Multi-State Agricultural Competitiveness Project (MACP), India**

The states of Maharashtra, Tamil Nadu and Andhra Pradesh had put forth detailed proposals for the MACP identifying critical needs in horticulture value chains, recommendations to be considered under the competitiveness area, and identified appropriate partner institutions such as MSU to help address and implement these recommendations. The potential role of MSU and PFID-F&V with the states of Maharashtra, Tamil Nadu and Andhra Pradesh under the World Bank MACP initiative included partnerships to execute work in the following areas: 1) GAP standards training, implementation, and impact assessment for producers of horticultural commodities; 2) HACCP systems training and implementation for food processors, packers and distributors; 3) certification on ISO 22000 and other food safety and quality management systems; 4) facilitation of producer groups to meet standards of high-value markets and develop pertinent and sustainable market linkages; 5) provision of market intelligence for fruit and vegetable producers and processors; and 6) assist in the development of more efficient and sustainable agricultural production systems, production diversification and strengthening the agricultural extension system in the states through leveraging and partnering with MSU and PFID-F&V’s strong in-house research and extension capabilities.

### **Kay Bee Exports**

During the 2006 season, Kay Bee Exports indicated that they had purchased over 4,000,000 rupees (approximately \$90,000) of produce from EurepGAP-certified farmers associated with the Mango Market Development Project during the 2006 season. These mangoes were purchased by Kay Bee at a considerably higher price (approximately 50% higher) than would have been fetched in the local markets. Kay Bee was one of the first companies to gain access to an irradiation treatment facility at Maharashtra following the US approvals in 2007 and consequently was able to export successfully.

### **MSAMB and Food Retailers**

For the 2006 mango season, PFID-F&V and MSAMB market specialists facilitated the establishment of Memoranda of Understanding (MOUs) between MSAMB and food retailers. These MOUs outlined procedures whereby farmers associated with the Mango Market Development Project would market their mangoes to these retailers. The key retail partners in the first year were Food Bazaar, Division of Pantaloon, which had over 50 stores in major Indian metros at that time, and ShopRite, a large

hypermarket based in Mumbai. Key to these agreements was the stipulation of rapid and equitable remuneration to the farmers.

### **Malgund Mango Growers and Food Retailers**

Members of the grower group participated in the GAPs training programs and then worked during the subsequent months to improve their facilities and practices to obtain EurepGAP certification. Each of the Malgund growers successfully obtained EurepGAP certification in May 2006. Working together with Dr. Bhide's leadership and guidance from the PFID-F&V India project team and MSAMB, the group then actively pursued market linkages with organized domestic retailers and exporters to high-value markets. They were among the first Alphonso mango growers to enter into direct market linkages with Food Bazaar and Kay Bee Exports during the 2006 season.

### **3.6.8 Conclusion**

Based on formative discussions, outcomes from the March 2004 New Delhi workshop, and specific interests from partner organizations in India, PFID-F&V proposed a horticulture development project to the USAID India Mission that focused on "Mango Market Development" in Maharashtra. This project focused on enhancing the ability of growers and processors to meet the international requirements for grades and standards, strengthening the market linkage for domestic and export markets, promotion of India mangoes and enhancing profitability and sustainability of small farmers. The strategy used by PFID-F&V to meet these objectives was focused on building capacity among mango farmers and processors to meet high standards for product quality and safety and then matching those producers and processors with higher-value markets. These high-value markets included both export destinations as well as the emerging retail food sector in India. PFID-F&V worked with existing farmer organizations to assist their members in meeting market demands.

In brief, our experiences demonstrated that the farmer share of final retail price could be increased from its historical level of 30%, up to the 50%-60% range, by circumventing the elongated network of intermediaries in favor of direct linkages between farmers and retailers. The dramatic growth throughout India of the organized produce retail sector – both in terms of new actors, as well as new store openings by existing actors – would provide our project stakeholders with ample opportunity to expand this approach over the coming years. Expanding and sustaining the PFID-F&V model of farm-to-market linkage across varieties and geographical dimensions, the near-term potential for enhanced revenue realizations for mango growers was considerable. There also is a tremendous opportunity to expand this model to other high-value horticultural varieties

in India. Considering the various success stories related to farmer groups, retailers and processors, we believe the PFID-F&V had created a positive impact on the stakeholders of the project.

## **4. Food Safety Knowledge Network (FSKN)**

### **4.1 Introduction and Background**

PFID-F&V was one of the primary contributors to the development of the Food Safety Knowledge Network (FSKN) from 2007 to 2010. The project provided funds for technical staff time, travel and operational costs in building and testing this exciting new platform for upgrading the skills of developing country suppliers to agrifood industries around the world.

In short, FSKN is an initiative created in partnership by Michigan State University (MSU) and the Global Food Safety Initiative (GFSI), with the specific aims to:

- Develop internationally recognized competences in relation to food safety for individuals at all levels and in all sectors of the food supply chain, and
- Promote knowledge transfer within the food safety community.

FSKN achieves these aims by harmonizing existing technical food safety training schemes through the development of the competencies of food safety professionals, recognized by international stakeholders, both from the public and the private sectors.

Through this process, the FSKN aims to achieve the following overall objectives:

1. Facilitate the production of safer food on a global basis.
2. Transfer knowledge throughout the supply chain on a global basis.
3. Enable career development, education and enhanced mobility for food safety professionals.
4. Enhance the competitiveness of small growers and producers and enable access to high value export markets for emerging countries.
5. Achieve pragmatic cost reductions through the elimination of corrective actions and more efficient auditing.

6. Secure the supplier base in terms of legality and food safety with improved conformity.

The FSKN is international in scope and offers a platform whereby food safety professionals can assess and improve their knowledge and skills relative to a multi-level food safety competency framework established by an expert panel of professionals drawn from both the private and public sectors. The competency framework is closely aligned to Codex Alimentarius standards, and thus is grounded in internationally accepted norms. The assessment and training resources for individuals responsible for food safety are in turn closely aligned to company requirements, established by the GFSI Global Markets Working Group, and are specifically designed to provide a pathway for continuous improvement in knowledge and skills for food professionals.

The FSKN training resources are shared openly (under Creative Commons licensing) via the internet to all users to customize, translate and share with food safety practitioners, policymakers and experts around the world. In this manner, educational content developed under FSKN can be shared, adapted and localized by multiple end-users and training partners, thereby making the FSKN platform a highly scalable solution for food safety training around the globe. Collectively, it is anticipated these efforts will constitute a vital set of resources to build capacity of global food professionals and businesses, with the ultimate outcome being the facilitation of food trade, particularly for small and less developed businesses.

Development of the FSKN initiative started in the spring of 2008 and proceeded with the organization of an FSKN pilot group comprised by MSU faculty and staff, GFSI technical experts and staff, and technical experts from a subset of GFSI member companies (e.g. METRO Buying Group International, The Coca-Cola Company, Danone). During a series of three meetings, the FSKN pilot group developed the original terms of reference, objectives and work plan for the pilot phase of the FSKN project. By mutual agreement of the FSKN pilot group, the initial pilot phase in 2008-09 focused on basic competences related to the food manufacturing (processing) sector. Subsequent meetings of the FSKN pilot group and an expanded FSKN technical working group focused on development of a competency framework, training modules, assessment tools and delivery mechanisms for the initiative.

## **4.2 Partners**

The FSKN project is truly a global initiative and includes partners representing academia, food industry associations, food producers, manufacturers, and retailers, international standards and development organizations, and food industry service providers.

Financial and in-kind support for the initiative has been provided by USAID Washington (PFID-F&V Core), Michigan State University, the William and Flora Hewlett Foundation (via grant funding to MSU), USAID India (via the USAID-MSU-Indian Horticulture Development Alliance project supported under the Partnerships for Innovation and Knowledge in Agriculture initiative), and GFSI and its member companies. Additional participants in the FSKN pilot group and technical working group also provided in-kind support for the initiative through the donation of their time and expertise as well as travel support for committee members.

Corporate partners and UNIDO have provided significant direct financial support and in-kind support to enable the execution of pilot training programs associated with FSKN in 2009 and continuing into early 2010. METRO Cash & Carry and its affiliated stores in Egypt (Makro) and India (METRO India) were instrumental in organizing and executing pilot FSKN training activities in these two countries. The United Nations Industrial Development Organization (UNIDO) partnered in the Egypt pilot and provided technical experts associated with the UNIDO eTrace project in Egypt. These experts conducted translations of FSKN materials, served as lead trainers for FSKN educational sessions for food professionals, and mentored Egyptian companies who also participated in a concurrent pilot test of the GFSI Global Markets company protocol on basic level requirements for the food manufacturing scope. In China, the Coca-Cola Company provided financial and in-kind support to enable the development and delivery of a major food safety training conference which included a pilot test of FSKN training and assessment materials in Chinese. Finally, Tata Tea in India is providing in-kind support to conduct a pilot test of FSKN eLearning materials with their staff in India.

FSKN pilot group members included representatives from MSU, GFSI, METRO, The Coca-Cola Company, and Danone. The FSKN technical working group included the members of the pilot group as well as representatives from UNIDO, Hong Kong Quality Assurance Agency, The Chartered Institute for Environmental Health (UK), The Tetley Group (UK), McDonald's Restaurants, The Silliker Group, Det Norske Veritas, Johnson Diversey and Purdue University.

### **4.3 Implementation and Activities**

In collaboration with GFSI and with the commitment of industry partners – through the CIES Food Business Forum's Global Food Safety Initiative – PFID-F&V established a substantial amount of industry and public sector support for the FSKN concept. This support allowed the FSKN to move from the conceptual phase to the development phase in late 2008. To implement the development phase, MSU and GFSI collaborated in

the design of a collaborative organizational structure for the FSKN. This design phase resulted in a co-leadership organizational structure between GFSI and MSU being established. There are two important groups within this organizational structure:

1. The Pilot Group – composed of GFSI industry and MSU representatives. This group's role is to act as the board of directors and provide strategic direction, vision and framework for the implementation of the initiative.
2. The Technical Working Group (TWG) – comprising a mix of technical specialists drawn from GFSI industry members, external industry representatives, government and international donor representatives and MSU. The role of the TWG is to design, create and implement the FSKN. The structure of the group will change depending upon the specific technical tasks that need to be completed at each step of the process.

During October 2008 to March 2009 the FSKN Pilot Group members: 1) designed specific activities and desired outcomes for the FSKN, 2) created an initial work/business plan, 3) identified potential Technical Working Group members and requirements, 4) conducted background research on the initial components of the FSKN, and 5) defined a workable implementation plan. During this same period, the FSKN and GFSI Global Markets TWGs were formed and charged with creating a logical stepwise process whereby food producers and processors in emerging markets could acquire the required capabilities and competencies to become compliant with GFSI-benchmarked food safety standards. Subsequently, the GFSI Global Markets and FSKN TWGs have collaborated to create the protocols for company requirements (the focus of the Global Markets TWG) and the competencies of food professionals responsible for ensuring food safety in these companies (the focus of the FSKN TWG).

During February-June 2009, specific FSKN technical working groups developed the competency framework for individuals linked to a series of the food safety requirements, the Basic Level Company Requirements for food manufacture, as defined by the GFSI Global Markets Working Group. The completed competency framework included 89 competencies distributed across thirteen generic food safety topics that comprise the GFSI Basic Level requirements for food manufacturers. Parallel to development of the assessment items, FSKN members from MSU and GFSI developed training presentations designed to teach the fundamental competencies associated with each of the thirteen food safety areas that comprise the GFSI Basic Level requirements for food manufacturers.

During July and August 2009, the FSKN team developed training and assessment tools linked to the competency framework for individuals responsible for food safety within

food manufacturing premises. These tools served as the basis for delivering pilot training programs in late 2009 and early 2010. The first FSKN pilot training was a face-to-face training program held in Chennai, India in September 2009. This program was attended by 74 food professionals from 25 Indian food manufacturing facilities and 6 public sector organizations. All participants completed comprehensive pre-training and post-training assessments, which were analyzed to determine participant knowledge change, validity of individual assessment items, and efficacy of the training modules to deliver knowledge relevant to the established competency framework. Results of the assessments were statistically analyzed with the following findings. Among the 72 participants who completed both the pre- and post-workshop knowledge assessments, there was an overall improvement in scores of 19.3%. When performance was assessed against each of the training modules, participants demonstrated improved knowledge in all thirteen areas under the Basic Level for Food Manufacture competency framework.

Training and assessment materials captured from the Chennai workshop also have been packaged for dissemination via an e-learning platform, and additional participants in India initiated a pilot of this e-learning platform during October 2009 through January 2010. The participants for this pilot were identified by the international retail organization METRO Cash and Carry, who has active retail operations in India. The e-learning participants included India-based food professionals from METRO, as well as food safety managers for a selected group of their India-based suppliers. Tata Tea, Inc. also will conduct a pilot in India using this e-learning platform. The results of these pilot activities will demonstrate the efficacy of the e-learning platform and associated assessment and training tools to improve participant knowledge and skills.

In partnership with METRO and the United Nations Industrial Development Organization (UNIDO), the FSKN team also conducted a training program in Egypt in November 2009 for a locally-based highly-skilled group of trainers, who in turn trained manufacturers who wish to be suppliers for METRO (Makro) Egypt. The training and assessment materials developed for the India pilots were translated to Arabic and used for the Egypt pilot training program. In this pilot, 36 participants completed pre- and post-assessments of knowledge. Overall results demonstrated an improvement in scores of 16.3% during the course of the workshop. In addition to the FSKN training for food professionals, the Egypt program also is evaluating the GFSI Global Markets Company Protocol for Basic Level for Food Manufacture. Ultimately, this approach will enable us to correlate company performance with knowledge of their food safety managers.

Finally, in partnership with the Coca-Cola Company, the FSKN project conducted a face to face training program for Coca-Cola Company employees, suppliers and customers in Shanghai, China in December 2009. This pilot training program was conducted with full

financial support by the Coca-Cola Company and enabled us to translate training and assessment tools into Mandarin Chinese and test these tools in another country. The China program was four days in duration and included several topics in addition to the FSKN Basic Level modules. These modules were on pre-harvest food safety (Good Agricultural Practices), additional prerequisite food safety programs, and the ISO 22000 food safety management system. There were a total of 142 participants in the program, which included 42 participants from the Coca-Cola Company, 14 Coke bottlers, 6 Coke customers, 57 suppliers, 12 sub-suppliers and 6 from other organizations (including academia).

As in the previous pilot programs, participants completed pre- and post-workshop knowledge assessments, but due to time constraints the assessments used in China were shorter in duration than those used in the India or Egypt programs. Overall results for the 113 participants who completed both pre- and post-assessments indicated a 6% overall increase in assessment scores at the end of the workshop. Compared to the other pilot programs, the increase in assessment scores was less primarily because scores on the pre-assessment were considerably greater for the China program (owing to the simplified assessment tools used). We also observed that participant performance was significantly influenced by level of educational attainment (participants with graduate degrees performed better), previous training (participants who had previously had attended formal food safety training programs performed better than those who had not), and organization type (Coca-Cola employees performed at the highest level, sub-suppliers at the lowest level, with Coke suppliers and customers intermediate in performance). The translated materials and digitally captured training presentations have been made available openly under a branding agreement with Coca-Cola, GFSI and MSU.

Training modules developed for the FSKN pilot training programs have been digitally captured and produced for distribution on the internet in a variety of formats. The FSKN content is available at <http://www.foodsafetyknowledgenetwork.org/> (the overall home page for the FSKN content) and <http://www.fskntraining.org/index> (the repository of educational content used for training programs).

While demonstrating the efficacy of the FSKN project in pilot activities in India, Egypt and China, the team also is focused on short-term and long-term next steps to continue to build and expand this effort. The immediate next steps for the FSKN project include: 1) expansion of pilot training activities to other regions, and 2) in conjunction with the GFSI Global Markets Working Group, expansion of the program to Intermediate Level for Food Manufacturing and Basic Level for Primary Production. We currently are seeking additional funding to initiate these efforts.

## **4.4 Expected Impact**

From the perspective of horticulture market development, the FSKN platform will provide a mechanism whereby food producers (e.g., farmers and cooperatives) and food manufacturers from developing countries can more effectively improve their knowledge and skills to meet the demands of multinational food retailers and manufacturers for demonstration of effective food safety and food standards programs. During the development and pilot-testing of the FSKN content for food manufacturing, the team has demonstrated the efficacy of the educational materials to significantly increase participant knowledge when delivered either in traditional face-to-face programs or via eLearning through the internet. The team also has begun to examine the impact of FSKN training on behavior change of individuals (i.e. the persons responsible for food safety in a firm) and correlate the knowledge of individuals with the performance of their companies on food safety assessments. These efforts should be instrumental in helping to improve the safety of food products produced by farmers and processors who participate in the FSKN program.

Ultimately, it is anticipated that these efforts will result in more farmers and small-scale processors being able to achieve certification against GFSI-benchmarked food safety/standards schemes and thus more effectively enter into supply contracts with multinational food companies that require these certifications for engagement with high-value markets. Thus, the FSKN initiative is a key element that enables food producers and processors to more effectively meet the demands of high-value markets (both domestic and export) and increase profits, two of PFID-F&V's overarching goals.

## **5. Synthesis**

### **5.1 Summary**

Over the course of its nine year history, PFID-F&V formed a number of strong and strategic coalitions consisting of NGOs, academia, training institutions, and private sector companies. These partnerships and alliances were highly successful in assisting small and medium producers to become more competitive and to expand exports of fruits and vegetables into targeted markets. Over this period, the concept of the PFID-F&V model became centered on increasing small farmer competitiveness through enhanced market information, focused on key farm-based upgrades, increased numbers of producer-buyer linkages, and capacity building on grades and standards for improved

food safety and quality throughout the value chain. The one factor that differentiated PFID-F&V from other market-led initiatives was the strong market-driven approach with key contributions from demand-side actors themselves.

The success of the program has also been attributed to both MSU's leadership and the effectiveness of the key partners in each of the PFID-F&V projects. Identifying, recruiting and working with such partners was a difficult but rewarding task for the PFID-F&V team. The PFID-F&V Board members, comprised of experienced and senior industry professionals, served as a think-tank charged with driving the program into more challenging and innovative territory, bringing farmers closer to participating in long-term business relationships with interested buyers. Representatives from industry leaders such as Royal Ahold, Shop-Rite, Pick 'n Pay, Melissa's and key strategic partners such as the Produce Marketing Association were among the most active PFID-F&V Board members. For a significant stretch of the PFID-F&V years these partners and private sector alliances met annually to support MSU's engagement of a broad cross-section of stakeholders and were actively involved in the monitoring and reporting of project results. Accountability was a priority. It can be claimed that much of the success with USAID Missions was related to the market development innovations and ideas catalyzed by the PFID-F&V Board and implemented by a cadre of both senior and junior MSU professionals who possessed strong academic and field experiences, as well as multi-lingual and multi-cultural capacities.

Most PFID-F&V country buy-ins were characterized by a fast-track approach to project deliverables demonstrating direct market engagement and successful results by small farmers. Despite the heavy programmatic workload, the MSU core staff managed to participate in critical research surrounding issues of great scholarly interest well beyond the more tightly defined academic circles. The work led by Drs. Busch, Reardon and Weatherspoon on the expansion of supermarkets in Africa, India and Latin America and the implications of stricter grades and standards for small farmer participation in dynamic markets has left a legacy of peer-reviewed research that has shaped the thinking of the larger development community. Development practitioners and scholars continue to cite this body of work because of its ground breaking relevance to food industry and the prospects for smallholders even in some of the most impoverished regions of sub-Saharan Africa and Southeast Asia.

Not only was this forward thinking integral to the specific PFID-F&V goals of understanding small farmer participation in dynamic markets, but it also captured worldwide attention through institutions such as the Inter-American Development Bank, the World Bank and other independent think-tanks as well as sister universities in the US and abroad. It has inspired a new generation of research into how market

development at a global level can be leveraged to support poverty reduction among small and medium scale farmers at a very local level. To be sure, much research remains in validating, testing and improving on the conceptual and empirical work emanating from the great volume of energy captured in the PFID-F&V experience.

## 5.2 Why Universities?

### **PFID-F&V demonstrates the comparative advantage of universities in connecting smallholder producers to global markets**

A question sometimes asked by partners, media and other observers over the course of PFID-F&V's nine-year timeline was: "How can a university, as an academic institution, be so successful in the value chain development role?" For many, at first blush, it does not seem logical that universities can be successful at navigating what seem to be the waters of private business. But there is a very logical answer to this question and it is a multifaceted answer. Universities are, indeed, academic institutions with well known responsibilities for higher education; but these same universities, at another less obvious level, also possess a set of unique attributes that make them ideally suited to value chain development work, particularly in some of the world's most disadvantaged regions.

1. **Mission alignment.** For one, universities contain in their mission statements, either implicitly or explicitly, their fundamental commitment to addressing the world's great social and environmental challenges. Perhaps foremost among these great challenges is the eradication of hunger, poverty and suffering so pervasive in the developing world, most intractably in Sub-Saharan Africa and great swaths of Central, South and Southeast Asia. University incentives and resources are invariably aligned with this aspect of their core mission.
2. **Science and technology (S&T).** Second, science and technology are the priority subject matter and focus of university research, teaching and outreach programs. Scientific and technological approaches and solutions lead the way in nearly all university departments addressing problems food and agricultural systems. Universities have access to and knowledge of the latest scientific discoveries; they are known for their contributions to scientific research and technological innovation.

Moreover, university investment in S&T is broadly diversified across many disciplines, an exceptional asset to value chain development programs and other complex problems that require integrated solutions. Food and agricultural value

chains require S&T expertise at all stages, including primary production, post-harvest handling, food processing, packaging, logistics, and marketing. By their very nature, Land Grant universities boast teams of researchers, educators and outreach specialists in all of these critical areas. Thanks to programs like PFID-F&V they are enabled to cross traditional boundaries and work together in exciting and highly productive ways.

3. Tradition of outreach to smallholder producers. Particularly in US Land Grant universities there resides a strong philosophy and practical tradition of agricultural extension/outreach to smallholder producers and rural communities. This tradition dates back to their initial establishment in the mid to late 1800s and remains very strong today. Universities have built systems to enhance their work with rural communities and to this day Land Grants are the home of state agricultural extension systems throughout the US. Many universities, Michigan State University in particular, have expanded this commitment well beyond state borders to other countries and their rural populations. For example, MSU's mantra now reads: "From Land Grant to World Grant."
4. Tradition of industry partnership. More than ever, US universities are known for their longstanding partnership with private sector industry and for Land Grant institutions the ties to the agrifood industry run deep. Many industry partners support university research activities and universities fill the pipeline with trained graduates with skills required by agrifood companies.
5. Trusted broker. In PFID-F&V and related projects the university plays a critical facilitating role between the smallholder cooperative (supplier) and the food industry buyer. This role is enabled by the longstanding traditions of producer group outreach and industry partnership that both sides know and trust. The university is seen as an unbiased party that can bring to the relationship:
  - For developing country supplier groups: an understanding of industry needs, operations, global market demand and trends, and product standards that are driven and required by industry, yet often remain a mystery to smallholder suppliers in the developing world.
  - For agrifood industry buyers: The S&T and extension skills needed to work with and build capacity among small holder supplier groups in meeting export standards for food safety and quality. Global food companies are not equipped to easily work with large numbers of untrained smallholders in sourcing safe, high quality and sometimes high volume product. The university helps to fill this critical void as a trusted third party facilitator.

6. Sustainable relationships. Universities invest in relationships for the long haul. Relationships built with sister universities, governments, and private sector organizations are not intended for short term gain. They are intended to serve as the basis for achieving the larger mission of improving the global human condition through avenues and opportunities that are rarely envisioned at the start. They are partnerships that often endure for decades and are enhanced and made increasingly sustainable through generations of faculty researchers and their developing country students and colleagues over the course of their careers. These are special qualities that universities so often bring to their endeavors that make sustainable institutions and relationships possible.

In short, for all of these compelling reasons PFID-F&V has succeeded in tapping university resources to bridge the divide between food industry demand for safe, high quality product and the challenges faced by smallholder suppliers in meeting this demand. In its simplest form this project has been about sustainably connecting developing country farmers to global markets by leveraging university resources, capacities, traditions and incentives in innovative ways that help to eradicate hunger and poverty among disadvantaged populations around the world.

### **5.3 Looking Forward**

Over its final two years, following the great volume of field based work in Africa, Latin America and then South Asia, PFID-F&V retracted, in a way reengineering itself into an altogether different entity, one that looked again to innovation and new opportunities for expanding its reach in linking small and medium sized farmers to local, regional and international markets. Among the most important innovations of this third stage was the collective development of the Food Safety Knowledge Network, a concept and most recently proof of concept among FFV producers in India. FSKN has gained substantial inertia and support within industry (CIES/GFSI, SAI Platform, and Chain of Life) and the international donor community (UNIDO, FAO, WTO, Hewlett and Gates foundation). Particularly initiatives such as SAI Platform and Floriculture Knowledge Network with Chain of Life have expressed keen interest in further developing, integrating and institutionalizing the FSKN concept towards building a larger Global Food Chain Knowledge Network. To advance this larger goal of building a Global Food Chain Knowledge Network, the PFID-F&V team leveraged a portion of the remaining PFID programmatic time period to develop and populate a sustainable FSKN platform.

Looking to the future, the PFID-F&V team is committed to building on the foundation created through nine years of investment in partnerships, in country-based, face-to-face

work with producers and with industry buyers. In its next stages the Knowledge Network will provide a showcase for USAID on how public- private partnerships can and should work and for the vital role that land grant universities can play in this process. Additionally, the Knowledge Network has the opportunity to become an integral piece to the USAID Administrator's "Global Development Commons" vision. New steps that are now taking shape based on leveraged funds from other donors include the development of pilot materials, curricula, training modules, courses, videos and other activities.

In a parallel effort, the PFID-F&V team is working to identify and develop a viable low cost mechanism for engaging all of the community of practice around global horticulture to capture and share their knowledge and populate the knowledge network and to scale up this information to reach hundreds of thousands, and then hundreds of millions of developing country producers and processors and other professionals in F&V value chains throughout the world. It is only through the establishment of such a co-created, self-driven, social networking structure focused on shared communities of practice that we can ensure the long term sustainability of the FSKN, and the legacy of PFID-F&V, and therein lies its future.