



**DAIRY ENTERPRISE INITIATIVE  
FOR HONDURAS AND CENTRAL AMERICA**

**CA# 522-A-00-01-00369-00**

**FINAL REPORT**

**SEPTEMBER 2001 - SEPTEMBER 2005**

**Submitted to USAID/Tegucigalpa**

**Submitted by**

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**September 27, 2001 – September 30, 2005**

**TABLE OF CONTENTS**

1. EXECUTIVE SUMMARY .....	2
2. PROJECT OVERVIEW .....	3
2.1 <i>Goal and Objectives</i> .....	3
2.2 <i>Geographic Focus and Target Groups</i> .....	4
2.3 <i>Key Activities and Implementation Strategies</i> .....	4
3. ACTIVITIES .....	5
3.1 <i>Assisting producers and small/medium-sized business thrive in the marketplace</i> .....	5
3.2 <i>Engaging the U.S. dairy industry</i> .....	7
3.3 <i>Improving the nutrition of children and pregnant women</i> .....	8
3.4 <i>Strengthening the regional dairy organizations</i> .....	8
4. RESULTS .....	9
4.1 <i>Results with Producers</i> .....	9
4.2 <i>Results at Industrial Processors</i> .....	12
4.3 <i>Results with Small Processors</i> .....	12
4.4 <i>Results with Engaging the U.S. Dairy Industry</i> .....	14
4.5 <i>Results for Improved Nutrition</i> .....	14
4.6 <i>Results with Regional Dairy Organizations</i> .....	17
5. PUBLIC PRIVATE PARTNERSHIP .....	17
6. CHALLENGES AND LESSONS LEARNED .....	18
6.1 <i>Milk Prices and Link between Producers and Processors</i> .....	19
6.2 <i>Associations' Missions</i> .....	20
6.3 <i>School Nutrition Program</i> .....	20
ATTACHMENTS	
Attachment A. METHODOLOGY OF IMPACT ANALYSIS	
Attachment B. SUCCESS STORIES	
Attachment C. RESULT INDICATORS	

## DAIRY ENTERPRISE INITIATIVE FOR HONDURAS AND CENTRAL AMERICA

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### FINAL REPORT

SEPTEMBER 27, 2001 - SEPTEMBER 30, 2005

#### 1. EXECUTIVE SUMMARY

	<p>Dates of project: Sept. 27, 2001 – Sept. 30, 2005</p> <p>Contact in the U.S.: Rodrigo Brenes Land O' Lakes/Arden Hills, MN Phone: (651) 494-5124 e-mail: rbrenes@landolakes.com</p>
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The Dairy Enterprise Initiative for Honduras and Central America funded by the United States Agency for International Development (USAID), has increased incomes and employment for the Honduran dairy sector, especially for rural farmers belonging to the 62 Milk Collection Centers established by the project. The project which began in September 2001 followed a Hurricane Mitch reconstruction project by Land O'Lakes that also assisted the dairy sector. Key activities for this initiative supported the USAID mission's strategic objectives under "*Economic Reactivation Meeting the Needs of the Poor*" and more specifically, IR 1.2 "*Improved Market Access and Competitiveness by the Poor.*"

To achieve the USAID's strategic objectives and to increase incomes and employment, the initiative addressed four objectives, the first two from the 2001 Dairy Directive:

- Assisting producers and small/medium-sized business in Honduras;
- Engaging the U.S. Dairy Industry;
- Improving the nutrition of infants, pregnant women and children; and,
- Strengthening regional dairy organizations.

Under the four objectives, the project focused on several activities to improve quality and develop markets along the dairy value chain from farmers to processors to consumers.

The Dairy Enterprise Initiative program was very successful in increasing rural incomes and employment by linking small farmers to processors and markets while increasing profitability and quality through building Milk Collection Centers, creating Full Service Centers, and training producers and processors on safety and sanitary practices. Targets

were greatly exceeded in terms of the establishment of producer-owned collection centers and volume of cooled milk received by processors. In addition, the project leveraged over US\$ 2.50 in private contributions for every US\$ 1.00 of USAID funding spent.

Selected highlights over the four year project include:

- Created 6,000 new jobs on farms and 190 at rural Milk Collection Centers.
- Increase in income from new jobs at member farms and Milk Collection Centers totaled US\$ 6,300,000.
- Increased average annual milk sales by US\$ 3,500 per Milk Collection Center member.
- Increased total annual milk sales by US\$ 4,700,000 for Milk Collection Center members.
- Established 62 producer-owned Milk Collection Centers providing better market access for 1,340 small dairy farmers.
- Expanded 14 Milk Collection Centers into Full Service Centers, aggregating commercial activities, such as veterinary, concentrate, credit, transportation and dairy processing services to members.
- Achieved an average of 58,716,000 liters of cooled milk to industrial processors.
- Application of HACCP<sup>1</sup> practices by artisanal and industrial processors.
- Led private-public funded program to bring daily dairy-based snacks to approximately 4,500 students at poor, rural Honduran schools that improved nutrition of students and consumption of dairy products.

## 2. PROJECT OVERVIEW

### 2.1 Goal and Objectives

The project achieved its goals of increasing incomes and employment of poor, rural populations by increasing market access and competitiveness of rural agribusinesses. The initiative's objectives supported the USAID's strategic objectives under "*Economic Reactivation Meeting the Needs of the Poor*" and more specifically, IR 1.2 "*Improved Market Access and Competitiveness by the Poor.*" The project structured its activities under the objectives:

1. Assisting producers and small/medium-sized business to thrive in the marketplace;
2. Engaging the U.S. dairy industry in the delivery of assistance and commercial activities in the host country and/or region;
3. Improving the nutrition of children and pregnant women; and,
4. Strengthening the regional dairy organizations.

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<sup>1</sup> HACCP, Hazard Analysis and Critical Control Point, is a systematic approach to the identification, evaluation, and control of food safety hazards.

## 2.2 Geographic Focus and Target Groups

Over the life of the program, the project worked in ten (10) departments: Atlántida, Cortés, Santa Bárbara, Comayagua, Colón, Yoro, Olancho, Copán, Ocotepeque and Lempira. The program worked with individual farmers, farmer associations, cooperatives, small, medium and industrial processors, equipment and service providers and schools in rural areas.

## 2.3 Key Activities and Implementation Strategies

The project focused on activities to overcome poor raw milk quality, poor finished product quality, and the lack of formalized distribution channels and markets. The project targeted quality and marketing enhancements at rural dairy farms, small artisanal processors and larger industrial processors. Raw milk quality and finished product quality are very important for achieving the highest value for dairy and for creating a stable market in which to sell the raw milk or finished products. Likewise, access to markets and consumers needed improvement, especially for artisanal processors who process about 65 percent of the dairy consumed in Honduras. The project had key activities under each objective, as shown in Table 1.

**Table 1. Relation of Objectives and Key Activities**

Objective		Key Activity
1. Assisting producers and small/medium-sized business thrive in the marketplace		1.1 Establish producer-owned Milk Collection Centers  1.2 Expand Milk Collection Centers into Full Service Centers  1.3 Create value-added manufacturing at processors
2. Engaging the U.S. dairy industry in the delivery of assistance and commercial activities in the host country and/or region		2.1 Establish Central American – U.S. Dairy Link Center  2.2 Promote regional marketing activities
3. Improving the nutrition of children and pregnant women		3.1 Provide nutrition education and marketing campaigns
4. Strengthening the regional dairy organizations		4.1 Provide organizational and marketing support

The Dairy Enterprise Initiative's strategy was to demonstrate the benefits of organizing under Milk Collection Centers and the benefits of quality raw milk production and finished products. Through the centers, farmers were able to receive training on herd health and nutrition, secure cold milk transport and storage, formalize links between producers and processors, access technology, and provide marketing opportunities. The processors recognized the benefits of securing quality raw milk at Milk Collection Centers and improving their own standards to get a higher price for their product. They also recognized the need to increase consumer confidence in a quality product. Project staff assisted farmers by establishing and delivering assistance through the Milk Collection Centers, and the project assisted local artisanal and industrial processors by connecting them to quality milk at Milk Collection Centers and direct outreach.

### 3. ACTIVITIES

The following section describes in detail the activities conducted for each objective.

#### 3.1 Assisting producers and small/medium-sized business thrive in the marketplace

##### 3.1.1 Establish producer-owned Milk Collection Centers

For establishing Milk Collection Centers, the program focused the productivity and quality procedures at the farm level to improve raw milk quality. The program grouped local farmers into cooperative-type organizations, assisting them to obtain legal documentation and linking them to local farmer associations. Formalization of farmer groups into small coops rendered a solid basis for a demand-driven process that enabled improvements to the access of lower cost inputs, change of poor milking practices and practical hands-on training. This helped to strengthen the farm-to-market infrastructure by clustering producers for the efficient delivery of technical assistance and training so that these producers directly participated in the dairy market.

Farmers constructed the Milk Collection Centers and contributed 35 percent of the total costs. All the centers were equipped with refrigeration tanks and equipment as well as auxiliary power generators, which were funded by the PRONADERS-RERURAL initiative of the Honduran Ministry of Agriculture in partnership with the Interamerican Development Bank (IDB).



Photo of the La Union Milk Collection Center.

Training activities were designed to improve practices and increase productivity at the farm level and to improve the management of the collection centers. Training covered the areas of milking sanitation, milk reception, milk tank and equipment cleaning, milk quality testing and management of the center.

### 3.1.2 Expand Milk Collection Centers into Full Service Centers

Expansion of Milk Collection Centers into Full Service Centers occurred as a result of the various group's quests for lower-cost inputs, greater operating efficiency, and purchasing and negotiating power. The Full Service Centers, unlike regular Milk Collection Centers, purchased farm inputs such as seed, feed, medicine and veterinary services in bulk and resold the supplies or services at a cost lower than if each farmer had purchased the input individually.

### 3.1.3 Promote value-added manufacturing at processors

The primary focus while assisting processors was improving manufacturing quality of artisanal cheeses and introducing value-added milk products. To this component, the program provided training to artisanal processors in topics such as: Good Manufacturing Practices (GMP), Standard Sanitation Operating Procedures (SSOP), Hygiene and Branding, Food Borne Illness (FBI), Hazard Analysis and Critical Control Points principles (HACCP) and proper manufacturing procedures for both traditional and non-traditional products.

The program assisted artisanal processing plants in the regions of Olancho, Choluteca, Comayagua, Atlántida, Cortés and Colón. Plant conditions were evaluated to develop mature enterprises with legal status and improved procedures, infrastructure and finished products. The program allied with local institutions and processing plants to develop hands-on training agendas. Training took place in facilities provided by the Professional Formation Institute (INFOP), Alimentos de Cortés (ALCOSA), Leches de Olanchito (LECHOSA) and Lácteos de Montecristo (PROLACMON). To support this activity, the program provided internship opportunities at Land O'Lakes stateside facilities and partnered with Universidad EARTH from Costa Rica to provide internships from their institution to our producers and processors in the departments of Atlántida and Colón.

With artisanal processing clients, the program assisted with business and product registration since most of the artisanal facilities were operating in an informal status. The program also assisted with improving product packaging, registering bar codes and logos, obtaining sanitary registration for products and securing state certification for the plants. Evaluation of processing plants was performed periodically by the technical staff and Land O'Lakes consultants.



Photo of training on GMP and HACCP by Land O'Lakes Employee, Steve Fiedler.

## 3.2 Engaging the U.S. dairy industry

### 3.2.1 Central American – U.S. Dairy Link Center



The Central American – U.S. Dairy Link Center provided assistance to the host country and the region to support the purchase of dairy technology, agricultural inputs and commercial services. The program assisted with visits from U.S. dairy companies to the country. Strategic partnerships with local farmer associations provided a useful means to disseminate information on U.S. dairy goods and services to producers and processors. A web-based information center was established to share dairy information collected from the U.S. and Central America with clients. The project also published newsletters and brochures on the international and regional markets.

### 3.2.2 Regional marketing activities

Research and information on regional markets was collected and disseminated to producers and processors through the Dairy Link Center. Research on regional markets included cheese markets, safety and quality requirements, branding and packaging strategies and potential new products and distribution channels including wholesale and retail markets. Information collected included contacts from tasting fairs and cheese fairs and new technology from on-site training by U.S. suppliers. The project also initiated during its extension the design of a market information database in partnership with the Ministry of Agriculture's agency, INFOAGRO. Lastly, the project began to promote a Seal of Quality program, which set industry health and sanitation standards and recognized local Honduran products.



Photo of artisanal processors participating in cheese fair.

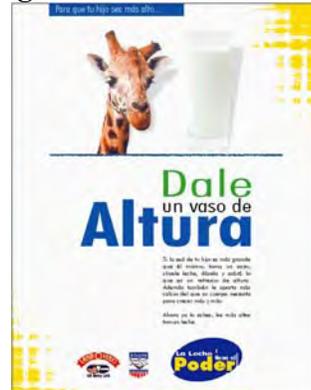


Photo of artisanal processors on a field trip to learn from Nicaraguan cheese processors in 2005.

### 3.3 Improving the nutrition of children and pregnant women

#### 3.3.1 Nutrition education and marketing campaigns

To improve nutrition, the program focused on education targeted to infants, pregnant women and children. Educational and promotional materials appropriate for Honduran school children were developed and distributed as part of promotional campaigns, farmer association and city fairs, and a School Nutritional Program. The project focused marketing on children because they are more likely to develop new habits of consuming dairy than adults.



Poster from “Milk is Power” marketing campaign.

As part of the School Nutrition Program, children were provided with a daily dairy snack. The pilot program began the second quarter of 2004 and reached 4,500 children at poor rural schools in Honduras. The snack consisted of milk, corn tortilla and pasteurized cheese. The foundation of the program was built upon procuring milk from the local Milk Collection Centers.



Photo of students in the School Nutrition Program.

### 3.4 Strengthening the regional dairy organizations

#### 3.4.1 Organizational and marketing support

During the life of the program continued support was provided to organizations inside the dairy sector. These organizations became implementation partners and played an important role in the success of the program. The program worked with farmer associations, such as AGAS (Asociación de Ganaderos y Agricultores de Sula), AGAA (Asociación de Ganaderos y Agricultores de Atlantida), SAGO (Sociedad de Agricultores y Ganaderos de Olanchito); the farmers federation (FENAGH); governmental institutions, such as SAG (Secretaría de Agricultura y Ganadería), PRONAGO (Programa Nacional de Desarrollo Agroalimentario) and SENASA (Secretaría Nacional de Salud Animal); and with other projects, such as PROEXLAC (Proyecto de Exportación de Lacteos), and other non-governmental organizations.

## 4. RESULTS

The Dairy Enterprise Initiative achieved its goal of increasing farmers' incomes and employment at agribusinesses through its activities. The project monitored its results with progress indicators that were set at the beginning of the project, which primarily monitored outputs like trainings and technical assistance. The project met or exceeded its indicators set for the Dairy Enterprise Initiative, and new indicators were set for the initiative's extension from September 30, 2004 to September 30, 2005. Appendix D lists all indicators planned and actual results. Additionally, at the end of the project, a consultant conducted an impact analysis of activities and their outcomes and results.<sup>2</sup> The findings from the impact analysis and the tracked progress indicators are reported in the following sections.

### 4.1 Results with Producers

The program during the past four years helped small dairy farmers form Milk Collection Centers and produce high quality milk. The project's impacts on milk producers include:

- Higher and more reliable milk prices that improve farmers' cash flows, reduction in credit needs, and encouragement of investments to increase production and quality;
- New Milk Collection Centers formed and operationally functional, sometimes without financial assistance; and,
- Recognition by Milk Collection Center members that high milk quality is the basis for their success.

The project increased the number of Milk Collection Centers from the 13 Milk Collection Centers, established before 2001 by the Hurricane Mitch reconstruction Land O'Lakes program, to 75 Milk Collection Centers. Nine Milk Collection Centers in Olancho will begin operating soon for a total of 62 new Milk Collection Centers from 2001 to 2005 with 1,340 new members, eight percent of whom are women. An estimated 6,710 people, including members and their families, benefit directly from increased milk sales, estimated at \$4.7 million, as shown in Table 2.

Milk Collection Centers generate many new jobs and substantial income. Center operations require three full-time employees, on average. Farmers hire an additional three permanent and three seasonal workers, on average, after joining a Milk Collection Center. Employment in centers and on the farms of center members increased by an estimated 6,227 jobs, generating about \$5.8 million in income for over 31,000 direct and indirect beneficiaries. The total incomes of more than 38,000 beneficiaries, including farm families, farm workers, and center employees, increased by more than \$11 million. The multiplier effect of increased income on rural communities is unknown, but anecdotal evidence indicates that it is substantial.

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<sup>2</sup> For the methodology of the Impact Analysis see Attachment A. The Impact Analysis has been incorporated into section 4. Results and section 5. Challenges and Lessons Learned of this Final Report.

**Table 2. Impacts of Milk Collection Centers in US\$ from September 2001 to September 2005**

<b>Income</b>	
Avg. annual increased milk sales/center members	\$3,500
Total annual increased milk sales of center members	\$4,700,000
Increased milk sales and income from new Milk Collection Center jobs and member farms	\$11,000,000
<b>Employment</b>	
New jobs on Milk Collection farms	6,000
New Milk Collection Center employees	190
<b>Investment</b>	
Cost to establish each new Milk Collection Center	\$63,000
Total cost of 62 new Milk Collection Centers	\$4,000,000
Member contribution to new Milk Collection Centers	\$1,300,000
RERURAL contribution to new Milk Collection Centers	\$1,500,000
<b>Beneficiaries</b>	
New center members during the project	1,340
Indirect beneficiaries from increased center milk sales	6,700
Indirect beneficiaries from new Milk Collection Center farm jobs	31,000
Indirect beneficiaries from new Milk Collection Center jobs	930

After joining Milk Collection Centers, farmers gain access to new industrial markets offering higher and constant prices. Most center members previously sold their milk to small, artisanal cheese processors. For example, sources of milk used by two industrial processors in northern Honduras, Lacteos de Honduras S.A. (Lacthosa) and Leche y Derivados (LEYDE), have changed significantly during the project. The processors now purchase an estimated 60 percent from Milk Collection Centers, up from virtually zero in 2000. Both processors purchase a combined 82 million liters of liquid cold milk from Milk Collection Centers per year, which constitutes over 14 percent of national production.

In addition to higher and more constant prices, milk yields also increased and became more stable due to quality assurance and training at the centers. Milk Collection Centers are outfitted with basic quality testing laboratories and refrigeration tanks to store milk in order to assure quality. To increase milk yields and quality, the project trained farmers to improve pastures,

upgrade herd genetics, use feed concentrates, and adopt hygienic practices. More than 1,800 farmers were trained on sanitation on farm and in milking, milk reception and management of centers. Other training activities reached 209 Milk Collection Center technicians on Good Manufacturing Practices (GMP) and the California Mastitis Test and 115 technicians on milk reception and use of lab equipment. In many cases, this training resulted in rapid increases in yields.

#### **Yield Increases in Jutiapa and Taulabe**

Olivar Meldar y Asociados in Jutiapa, consisting of seven women and four men, had average yields of five (5) liters per cow per day in 2004 when the Milk Collection Center began. After one year, yields increased to 30-40 liters per day. In 2000, when Marleny Nieto y Asociados Center began in Taulabe, the center production was 729 liters per day. Now it produces 5,177 liters.

The incomes of Milk Collection Center members increased quickly due to higher milk yields and prices. An average member now produces 121 liters per day and sells over \$11,750 per year, up from about \$8,250 when the project began. The farmer also receives additional income when Milk Collection Centers distribute accumulated profits at the end of the year.

Milk Collection Centers are now able to also help their members cut costs by providing low-cost production inputs. One strategy used was to provide low-cost production inputs to expand centers into Full Service Centers. The program assisted 14 centers to expand and become Full Service Centers. These Full Service Centers now sell either feed concentrates or veterinary medicines to their members at discounted prices. A few centers provide credit to their members. One center bought a bull to upgrade the genetic potential of their herds. Two centers even process their members' milk into cheese. Total investments in Full Service Centers at the end of the program reached \$76,268. These centers have attracted agribusinesses that recognize that Milk Collection Centers are places where producers transact business and exchange information.

Some groups sourced other donor assistance to finance Milk Collection Centers; others were able to fund the initiatives themselves. The Land O'Lakes program from 1999 to 2001 funded an original 13 Milk Collection Centers, and the Proyecto de Reactivacion de la Economia Rural (RERURAL), a Ministry of Agriculture and Livestock program financed by the Interamerican Development Bank (IDB), funded 57 more. Even after project closeout, interest in forming new Milk Collection Centers remains strong, and the rate of formation was unaffected by the project reducing its support in establishing new Milk Collection Centers. Producer groups continue to make requests for formal assistance, but

Milk Collection Centers keep forming even after project closeout. Five Milk Collection Centers financed their own infrastructure and equipment.<sup>3</sup>

## 4.2 Results at Industrial Processors

During the past five years, the sources of raw milk used by processors have changed. Before the Dairy Enterprise Initiative, virtually all of the milk used by agro-industrial processors came from large dairy farms. Now about 60 percent comes from Milk Collection Centers, 30 percent from large producers, and 10 percent from small producers who are not Milk Collection Center members. Changes in the sourcing of milk have been accompanied by higher milk quality. Before the project, an estimated 12 percent of LEYDE's raw milk was refrigerated before delivery. Now about 90 percent is refrigerated. Table 3 highlights impacts at industrial processors.

**Table 3. Selected Impacts at Industrial Processors from September 2001 to September 2005**

Increase in products with sanitary registration with the Government of Honduras	17
Increase in plants certified by Government of Honduras	7
Increase in refrigerated raw milk to LEYDE	78%

Marketing and branding support was provided to medium/large processing plants, such as LECHOSA, LEYDE and LACTHOSA. Also, the project conducted branding seminars. During the life of the program, cheese masters as well as plant owners, were trained in Good Manufacturing practices (GMP), Standard Sanitization Operating Procedures (SSOP), Hazard Analysis and Critical Control Points (HACCP) and Hygiene. A total of seven plants received certification by the Agriculture and Husbandry Secretary (SAG) and a total of 17 products received sanitary registration, including an international registration for Queso Frijolero and Quesillo del Blanco.

## 4.3 Results with Small Processors

Annual local sales of 40 participant dairy processors reached \$586,012 in 2005, as shown in Table 4, against a target of \$500,000. A survey was coordinated at the end of the program to collect the figures. From ten (10) primary participating artisanal processors, the end of program survey demonstrated a 44 percent increase on incomes during the program's assistance. The target for this indicator was a 25 percent increase.



Photo of small processing operation.

<sup>3</sup> For example, a group of small dairy farmers in Arizona, near La Ceiba, formed a Milk Collection Center without any financial assistance from donors.

**Table 4. Selected Impacts at Small Processors from September 2001 to September 2005**

Annual sales by 40 artisanal processors	US\$ 586,012
Increase in income of 10 primary artisanal processors	44%

Competition for high-quality milk increased over the life of the project. Like large processors, some small processors expanded their production capacities as a result of the project. However, Milk Collection Center members who previously supplied small processors are now selling to large, agro-industrial processors offering better prices and payment terms. Small processors are losing many of their best suppliers. To avoid competing with industrial processors for Milk Collection Center milk, most small processors rely on small farmers who are not center members<sup>4</sup> and who supply milk at lower prices.

To help small processors justify the cost of high-quality milk required for high-quality processed products, the project provided technical assistance to 27 small processors to establish high quality, attractively packaged, and appropriately labeled dairy products. Infrastructure was upgraded, new equipment was installed, new methods were adopted and new marketing methodology was conceived and applied as part of the technical assistance efforts.

Nine high value-added courses were implemented, benefiting 197 dairy processors who received knowledge and skills to manufacture 26 traditional and 26 non-traditional dairy products. They also received Good Manufacturing Practices (GMP) and Food Borne Illness (FBI) principles. In order to provide market access for the selected artisanal processing plants, the program coordinated cheese contests, cheese tasting fairs and trade shows. Surveys were taken at the events, providing an excellent tool to diagnostic the local market; proper feedback was given to the dairy sector.

**Growth of Grupo Coppeli**

To access upscale domestic markets, a group of small processors is forming a cooperative – Grupo Coppeli. It plans to purchase vacuum packing equipment to increase product shelf life and handling convenience. It is also standardizing its members’ products to become reliable suppliers for high-volume markets like supermarkets, and adopting labels that comply with international standards. The opportunities and constraints it faces are indicative of other small processing plants. Its growth depends on supplier credit, and its future depends on the ability of the cooperative to penetrate upscale markets.



Photo of Coppeli labels.

<sup>4</sup> Currently, only one small processor contracts a MILK COLLECTION CENTER to supply high-quality milk to make cheeses for upscale domestic markets.

#### 4.4 Results with Engaging the U.S. Dairy Industry

The Dairy Enterprise Initiative coordinated the purchase of over \$4 million of dairy equipment from vendors in the United States. The Honduran farmers benefited from access to technical assistance and the low-cost, well-maintained used equipment provided by the U.S. suppliers. On-site training to Honduran farmers by U.S. suppliers was arranged in the second and fourth quarters of 2002. During the first visit, approximately 25 milk producers received technical information and orientation regarding milk storage tanks. As a result, Honduran farmers purchased four used milk tanks and related refrigeration equipment valued at \$21,000. During the second visit, farmers purchased 12 tanks and other equipment valued at \$155,000. By the end of the exchange, one U.S. supplier sold over 60 used farm bulk tanks with an approximate total value of \$ 4,200,000. Table 5 lists accomplishments related to the U.S. dairy industry and marketing.

**Table 5. Selected Impacts on the US dairy and regional marketing from September 2001 to September 2005**

Dollar value of equipment purchased through the US Dairy Link	US\$ 4.2 million
Plants participating in national trade shows	18
Plants participating in international trade shows	2

In addition to purchasing exchanges, the program provided producers with ideas to improve productivity at the farm and processing levels. On the farm, for example, the use of feed-grain concentrate, milk replacement and electric fences were tested. Many farmers were able to use the ideas to the benefit of their farms' management. For processors, three market research studies were performed to inform processor activities.

The program assisted 18 processing plants with participating in national trade shows and two plants to participate in international trade shows. The experience brought fresh contacts for dairy products inside and outside of Honduras. For all eight trade shows, a total of 81 contacts were obtained.

A Spanish/English website was also designed and launched. This tool enabled program staff and clients to find dairy information from the region and the United States. For example, all equipment inquiries were conducted through contacts through the website. The website had space for participants in the U.S., Honduran and Central American dairy industries to share information.

#### 4.5 Results for Improved Nutrition

Targeted campaigns in the form of print and TV advertisements and a School Nutrition Program increased the consumption of dairy and nutrition of infants, children and pregnant women. The table below highlights impacts on activities to improve nutrition.

**Table 6. Selected Impacts of Nutrition Education Activities**

Increase in awareness of benefits of dairy consumption	96%
Children receiving daily dairy snack	4,500

#### 4.5.1 “Drink Milk” and “Milk is Power” Campaign

The Dairy Enterprise Initiative had two educational campaigns with the aim to help children and women understand the benefits on drinking milk. The TOMA LECHE (Drink Milk) and LA LECHE TIENE EL PODER (Milk is Power) campaigns, along with appearances at festivals and city fairs, aided in reaching 28,800 children and more than 12,000 women and infants. Post-marketing research demonstrated a 96 percent increase in awareness of the benefits of milk by the target population. A 2002 survey of children in San Pedro Sula and surrounding rural areas also showed high growth potential for dairy markets due to increased enthusiasm for drinking and eating dairy.



Poster from Drink Milk Campaign.

#### 4.5.2 School Nutrition Program

The School Nutrition Program is a public-private partnership involving Honduran agro-industries, USAID, the United Nations, national ministries, and substantial grassroots support from teachers and parents. The program began under the Dairy Enterprise Initiative and is continuing under a component managed by Land O'Lakes of USAID's Rural Economic Diversification Program. In northern Honduras, the School Nutrition Program complements the Ministry of Education's national School Lunch Program, which has been underway for more than 50 years. The program distributes milk, cheese, and grain-based food products to approximately 4,500 school children. The annual cost of the program is almost \$300,000 plus the labor donated by parents and teachers. The daily cost per student is about \$0.59.

The School Nutrition Program has direct benefits for children and indirect benefits for their communities. It is an effective way to change children's food preferences and consumption patterns. Nutritional evidence shows significant benefits from the program to the health of school children. Anecdotal evidence suggests that it also increases sales of dairy products.

The School Nutrition Program provides access to a critical target market – school children. It encourages them to test pasteurized milk and cheese products five times a week, making these items a major part of their diets. They become accustomed to its uniform taste and convenient packaging. They also benefit from its nutritional value. Information on the nutritional value of dairy products is provided by teachers and reinforced by parents preparing and distributing the food. In 2004, nutrition messages were further reinforced by a mass media “Drink Milk” campaign. Gradually, students’ taste preferences change. Moreover, the program uses foods produced in Honduras, reinforcing consumer preferences for local products.



Photo of School Nutrition Program.

In 2004, Lactosa donated milk and processed cheese to rural schools in Ocotepeque, Copal and, and Lempira departments. LEYDE provided milk and cheese to schools near San Pedro Sula and El Progreso. Grupo Alcon/Cargill donated maize flour for tortillas. The U.N. World Food Program provided rice, beans and soy-based cereal, as part of a food-for-work program. Productora de Alimentos EZC, S.A. donated vitamin supplements. The Ministries of Health and Education also contributed services to the program. The parents of students also play important roles in the School Nutrition Program. In 2004, they prepared tortillas and distributed the food at schools. In 2005, parents were also asked to pay part of the program costs. Organizers expect to recover about ten percent of the program costs from parent contributions in the future.

Over the life of the program, many students used the names of processors to refer to the program. Furthermore, according to LEYDE and Lactosa in the first year of the program, milk demand increased in some program areas, perhaps because parents saw its health benefits and learned the ease with which packaged milk could be transported and stored without spoilage. The link between the Milk Collection Centers and the parents and schools also made the program very accepted in the communities. Other results of School Nutrition Program are improved academic performance and communication between parents and teachers, including:

- More children attending school;
- Lower absenteeism;
- Lower drop-out and grade repeat rates;
- Rapid weight gain;
- Increased energy;
- Higher hemoglobin levels;
- School investments in refrigerators and stoves;

- Increased communication between parents and educators; and,
- Improved collaboration between parents and schools.

#### **4.6 Results with Regional Dairy Organizations**

During the Dairy Enterprise Initiative, Milk Collection Centers increased the size of regional livestock associations by 1,342 new members. (Milk Collection Center members were required to join a regional association as a condition of the project's technical assistance.) The Association of Ganaderos y Agricultores del Atlantico (AGAA) now consists of approximately 600 members in Yolo, Colon, and Atlantida departments. Prior to the project, it had about 400 members. The Asociación de Ganaderos y Agricultores de Sula (AGAS) grew to 280 members. New members of regional associations automatically became members of FENAGH, the national agricultural and livestock federation, representing dairy producers in policy advocacy.

Four milk agro-industrial cooperatives were formed and legally established in the departments of Colón, Cortés and Olancho. These cooperatives were able to unite most of the 75 Milk Collection Centers established throughout the course the program. Formed cooperatives are: COAPLHAL (Cooperativa Agroindustrial de Productores de Leche La Hacienda Limitada), COAPALL (Cooperativa Agroindustrial de Leche El Aguán Limitada), COAPLEGUAL (Cooperativa Agroindustrial de Productores de Leche de Gualaco Limitada) and COAPLESEL (Cooperativa Agroindustrial de Productores de Leche de San Esteban Limitada).

### **5. PUBLIC PRIVATE PARTNERSHIP**

The Dairy Enterprise Initiative activities resulted in investment by producers, processors, and public sector organizations, including:

- Milk Collection Center members providing 35 percent of the funds used to start Centers;
- Small processors investing in improved infrastructure and new equipment;
- Lacthosa expanding its processing facilities;
- LEYDE building a new dairy processing plant;
- Private firms donating US\$ 200,000 per year in products and services for the School Nutrition Program;
- Teachers and parents donating their labor to SNP;
- Ministry of Health investing US\$ 35,000 in services for SNP;
- SAG's Agro-informacion Department of the Ministry of Agriculture and Livestock (INFOAGRO) developing a Dairy Cluster Information System; and,
- IDB extending financing for RERURAL, the principal source of funding for new Centers.

Small farmers also contributed 35 percent of the funds used to start Milk Collection Centers, a total investment of approximately US\$ 1.3 million during the Dairy Enterprise Initiative. The rate of investment is slow, however, due to the high cost of credit.

Despite high interest rates, small producers continue to gradually invest in ways to increase production and quality. Forty-five (45) small processors invested in infrastructure and equipment to improve hygiene and increase capacity. Seven of them registered their processing plants and products. Industrial processors continue to invest in new products and increased capacity. In fact, Lacthosa is expanding its processing facilities and LEYDE is building a new UHT milk plant.

Promotional activities also stimulated participation from the private sector, resulting in increased demand in the intervention areas. Both major industrial processors LEYDE and LACTHOSA participated in the pilot School Nutrition Program in 2004, providing all the milk used during the pilot. The School Nutrition sponsors donated nearly US\$ 300,000 in products and services each year, and private Honduran firms contribute almost US\$ 200,000 of these costs. The Ministry of Health also invested over US\$ 35,000 of services. Teachers and parents of SNP students invest their labor to prepare and distribute food and dairy products. At fairs and trade shows, industrial and artisanal processors became highly involved and donated dairy products to these activities, stimulating the enthusiasm of the public for dairy products.

RERURAL, a Ministry of Agriculture program funded by the Inter-American Development Bank, was and still is the principal source of funding for the milk cooling equipment in Milk Collection Centers, providing US\$ 1.5 million during the past four years to start 57 Milk Collection Centers. The Ministry of Agriculture's INFOAGRO invested in a Dairy Cluster Information System, a digitized map providing information on milk producers, processors, and their communities. A project consultant set up the database and taught INFOAGRO on its use and management.

## **6. CHALLENGES AND LESSONS LEARNED**

Monitoring and evaluation revealed changing conditions, and the project adjusted accordingly by increasing certain indicators, adding new indicators and canceling some others that the project determined to not be the best use of project funds. Three main challenges were making quality raw milk and products profitable for dairy producers and processors, strengthening missions of the agricultural associations and assuring sustainable growth of the School Nutrition Program. Despite the challenges, the project has learned ways to overcome these obstacles and will apply the lessons learned in the subsequent project managed by Land O'Lakes under USAID's Rural Economic Diversification Program.

## 6.1 Milk Prices and Link between Producers and Processors

Though industrial processors are increasingly depending on small farmers producing good quality milk, industrial processors often have a monopoly in their milk collection areas and dominate many of their distribution areas. For example, the closing of LACTHOSA's powder plant in Colón delayed the start-up of operations of 14 centers, which were constructed nearby to ensure raw product supply to the powder plant. Industrial processors also like milk prices low, which dissuades producers from investing in efficiency and quality. The small increases in milk prices during the past five years inadequately reflect improvements in quality, increased dependence on Milk Collection Center suppliers, or higher milk production costs. Milk prices rose in January 2005, but production responded less than expected, indicating that the current price of \$0.30 per liter is insufficient to motivate farmers to increase production. To overcome this monopoly situation and low prices, Milk Collection Center cooperatives representing thousands of dairy farmers have begun negotiating milk prices with the industrial processors. The larger groups are able to match their supply better to changing demands.

Small processors have their share of challenges too. Many artisanal processing plants do not want to formalize and improve their businesses to make quality products because the raw milk they receive is too poor of quality. This sentiment is changing, however, due to the increase in quality milk. Now most plants located near a Milk Collection Center must pay the price for quality raw milk and make needed processing improvements. The program worked with selected plants located in these areas to ready them for quality raw materials and quality finished products. The strengthening of new processors required constant assistance, training and long term support. Technical assistance and access to inexpensive credit helped modernize small processors, standardize their products, and ensure reliable supplies of consistently high quality products.

Most Honduran consumers also resist paying premium prices for high-quality, so some small processors had to recover their investments by reducing production costs, targeting upscale markets, and increasing volume. Some processors have started to use special packaging for products sold in upscale markets. Others sell to supermarkets. As dairy markets continue to grow and attract more imported products, and particularly when CAFTA comes into effect, consumers will become increasingly discerning and willing to pay based on quality and safety.

The Central American Customs Union, like CAFTA, will introduce highly competitive dairy products from low-cost Nicaraguan processors. In anticipation of free trade agreements, industrial as well as small processors need to keep milk prices low to remain competitive. Processors will remain competitive by having access to inexpensive credit and other production inputs and by offering technical services to producers in order to stimulate milk production, improve quality, and cultivate strategic relationships.

## **6.2 Associations' Missions**

The regional and national associations with which the program collaborated are having difficulty defining their missions. For example, promotional campaigns need organizational and monetary contributions from beneficiaries; however, it is unclear whether Honduran livestock associations are prepared to undertake sustained dairy promotion campaigns or whether other beneficiaries would contribute to advertising that helps their competitors. From 2002 to 2003, the project tested a pilot "check-off" program to fund the "Drink Milk" campaign. Sula participated in the pilot program, contributing \$0.02 per liter of milk. Farmers contributed another \$0.02 per liter. FENAGH, responsible for coordinating the use of these funds for promotions, used them for other activities. Draft legislation to establish a national check-off program was submitted to the National Assembly, but political support was insufficient for approval. The project addressed this challenge of association involvement by renewing relations between the associations and the project. The Dairy Enterprise Initiative began participating more actively in association meetings and fairs during 2005, which should provide a bridge with assisting the associations to define their missions to meet the needs of their members.

## **6.3 School Nutrition Program**

The School Nutrition Program has enjoyed much success and support but its sustainability is threatened in the areas where it has the greatest impact – rural schools where students are unaccustomed to pasteurized dairy products. Distribution costs are high and potential sales in remote villages are unlikely to justify support for the program. The current program depends heavily on the benevolence and generosity of agro-industrial processors. The two major processors provided dairy products to the program in 2004, but only one – LEYDE – is participating in the 2005 program. Paying processors for their products and subsidizing their delivery may be required if the program is to continue and expand to more schools. Future programs may have to divide program costs more evenly between processors and other donors. Alliances with the private sector must be encouraged and strengthened for activities to have continuity.

Several firms that did not participate in the first two years of the School Nutrition Program, including two public relations companies and some of their clients, want to sponsor future programs. Part of the program's appeal to donors, particularly private companies, is its potential independence of public funding. Private funding fosters confidence in the program's sustainability. Also, parents allegedly are more willing to pay more for food and services provided by the private sector than those from the government. By documenting program benefits, establishing a foundation, and developing a plan to expand the program, the School Nutrition Program can be marketed to potential new donors as a way to promote Honduran food products. The principal donors want to establish a foundation to institutionalize the program. Cultivating new interest in the School Nutrition Program will help it grow and continue in the future.

**Attachment A. METHODOLOGY OF IMPACT ANALYSIS**

The assessment team, including agricultural economist Kingsley Bash and project monitoring and evaluation specialist Arturo Rosales, focused on the following questions: “What are the most important achievements of the project during the past four years,” and, “How can future activities best achieve the strategic results of increasing the competitiveness of Honduras’ dairy sector?”

To assess the impact and future opportunities for improving competitiveness and growth of the national dairy sector, the team used the following methods. Throughout the assessment, the team reviewed project reports and studies. These included Land O'Lakes agreements with USAID, quarterly reports, dairy subsector evaluation studies and documents provided by national livestock organizations.

At the enterprise level, the team interviewed a sample of private firms involved in the supply chain for dairy products. These included large and small dairy farmers, Milk Collection Center officials and hired administrators, cooperative leaders, and small artisanal dairy processors. At the macro level, the team interviewed officials of regional livestock associations, donor-funded financial institutions, and government ministries and agencies.

During the first week, team members traveled to La Ceiba. They conducted interviews with small dairy producers, officials, and administrators of Las Palmas and El Diamante Centers, the president of the cooperative COAPALL, a small dairy processors using modernized, hygienic equipment, the president and vice president of the Association of Ganaderos y Agricultores del Atlantida (AGAA). During the second week they visited two schools participating in the School Nutrition Program, and a second cooperative - COAPLHAL – to discuss its plan to build an agro-industrial dairy processing plants that would compete with the two major agro-industrial processors in Northern Honduras. In the third week, the team traveled to Tegucigalpa to interview RERURAL concerning equipment financing for new Milk Collection Centers, FENAGH to discuss prospects for dairy industry competitiveness, and the Ministry of Education to discuss the future of the School Nutrition Program.

The team posed questions regarding their businesses, technical assistance received and desired, impact of project services, and macro and micro constraints to the development of their operations and to the dairy sector in general. The team found that responses were generally consistent between stakeholders concerning the key constraints and opportunities for improving the competitiveness of the subsector.

**Attachment B. SUCCESS STORIES**

## Milk Collection Success Story

**Oliva Melgar y Asociados**

In 2003, a small group of farmers started the venture of building a Milk Collection Center in the town of Venus, Jutiapa, Atlantida. Sponsored by the project and with linkage to the RERURAL – IDB program, the group obtained funds for cooling equipment. The group faced great challenges with this idea, as Mr. Miguel Oliva, President of the Milk Collection Center recalls,

*“The group was comprised of 16 members, nine female and seven male farmers, where maximum production for female farmer was of 5 liters per day. The start-up fund for the Milk Collection Center was nearly \$1,000 and the group spent a full year raising money, holding raffles for livestock and eventually investing their own money to start the Milk Collection Center; The town of Venus along with two neighboring towns did not have electrical power, a critical component for the establishment of a Milk Collection Center.”*

Nevertheless, the Milk Collection Center was not discouraged and with help from the project, a feasibility study to bring electrical power to Venus and El Diamante was presented to the Local Government, to the National Congress and to the National Electricity Company. Having seen the successful economical impact of existing Milk Collection Centers, all parties approved the project and electrical lines were installed at Venus and El Diamante in the third quarter of 2004. The Empresa Nacional de Energía Eléctrica (ENEE) led the project contributing funds of \$23,337. Sixty-four (64) percent of the funds were contributed in materials by either the communities or the National Congress of Honduras. Electrification of the towns benefited more than 100 families in both communities. To date, a second phase to expand electrical lines is on its way, planned to reach Salado Lis Lis by the beginning of 2006.

The Milk Collection Center finally started operations in March 2005 when negotiations with one industrial processor reached agreement, providing the center farmers with a secure payment all the year long. After almost two years, the group achieved results in a short period of time: Female farmers increased production of raw milk from five liters to 30-40 liters per day contributing to overall production of 600-700 liters per day, with a maximum yield of 900 liters. Most of the members implemented pasture improvement and feed concentrates, and they purchased a bull to improve herd genetics. The dirt road connecting the towns to the nearest city was improved and the local government has agreed to maintain the road.

Impact is clear at the farm. Female farmers used to do all the labor by themselves, but now they each hire one full-time employee and one seasonal worker. At the Milk Collection Center, members are planning on providing financial services similar to a savings and loan cooperative. As Mr. Oliva states, “Our Board of Directors has been very efficient and dynamic, which must be due to the number of women in leadership positions that we have.” For this Milk Collection Center, female leadership is strong and present in positions such as the treasurer, the secretary and three more in the Oversight Board.

## Processing Success Story

### Lacteos Palmares

Fidel Caballeros and his wife own a modernized, artisanal cheese production plant in Tela, near La Ceiba. Lacteos Palmares is the pioneer in this region for cheese processing, having started operations in 1960. They began making “queso crema” cheese in 1999 as a way to stabilize income and add value to the milk produced on their family farm. It continues to be their standard and most profitable product, but they also make low-fat, semi-dry, and chili pepper types of queso crema, as well as “quesillo,” “requeson,” and “queso frijolero.” When overproduction lowers milk prices, they also produce traditional “queso seco.” The slow development of Lacteos Palmares has been primarily due to poor infrastructure/equipment, lack of hygiene during milk reception and processing, poor technical expertise and inferior marketing approach. By the end of 2003, the project provided the Caballeros and their employees with technical assistance and training in Good Manufacturing Practices (GMP), sanitary standards and the opening of new markets for its improved products.

The Caballeros recently began selling cheese to supermarkets. Prices are similar to those paid by pulperias and each product must be registered with the Ministry of Health. Supermarkets want one pound packages, preferably vacuum-packed. They delay payment at least 30 days, requiring short term commercial loans to finance ongoing operations. To minimize returns of expired and damaged goods, selling to supermarkets requires a cold chain. Despite the increased costs of producing and selling to supermarkets, however, the large volumes of cheese purchased by supermarkets represent major opportunities to expand their business.

Lacteos Palmares participated at the Expo Comida Latina trade show in New York in October of 2004 along with along with the Industry and Commerce Ministry and the Fundación para la Inversión (FIDE). At this expo, Lacteos Palmares made solid contacts with U.S. based distributors such as Rio Grande Foods, Honduras Foods and Mama Lycha among 15 other contacts.



Lacteos Palmares has been actively involved with the project, it has participated in the establishment of a permanent display at the Supermercado El Junior and recently joined with four more processing plants in the establishment of a distribution center Mercado El Dandy in San Pedro Sula. Results from technical assistance provided by the project are more than evident:

- Fidel Caballero invested over \$50,000 improving plant conditions, including a 5,000 pounds cold storage area;
- A 15 percent increase in sales was realized for 2004; and,
- The plant desires to complete HACCP and FDA requirements in order to fulfill the demand for Honduran cheese in the United States.

## Milk Cooperative Success Story

**Cooperativa Agroindustrial de Productores de Leche El Aguán Limitada  
(COAPALL)**

Heriberto Alfaro, President of COAPALL, is an early adopter and enthusiastic promoter of new crops and technologies. He is a member of one of the 75 Milk Collection Centers sponsored by the project in Honduras and he was elected as the President of one of the two major cooperatives, COAPALL, which comprises 26 Milk Collection Centers and over 600 farmer members. The vision that is shared by all the members from COAPALL is to establish their own processing facility. They want to participate from a large margin through processing and provide better and more benefits to each cooperative member.

Mr. Alfaro lists Milk Collection Center benefits to its members; Higher and stable prices, constant demand, reliable payments, and low-cost tools and veterinary medicines. He acknowledges its benefits to the community; more farm employment at higher wages, better road maintenance by municipal governments, and improved relations between farms. He is quick to point out, however, that milk collection, cooling, price negotiations, and input supply services are insufficient to make dairy farming an attractive business for small operators. He maintains that Milk Collection Centers can capture more of the value added by processing. He wants COAPALL to start a large-scale processing plant.

Although Alfaro is cautious about investing in the processing plant, he is already planning other ventures. He wants COAPALL to be a wholesaler of production inputs for Milk Collection Centers. He wants it to rent, renovate, and operate an abandoned slaughterhouse. He wants to produce fish in ponds and market them through the cooperative. He insists, however, on knowing where COAPALL will sell the products before they are produced and before it makes any investments in plant and equipment.

He adds that with the help from the project they were able to more clearly see the idea of forming a cooperative and transition from production to processing and marketing as it was the only answer that Honduran small producers have in order to maintain their activity and search for more dividends. As a cooperative, price negotiations with industrial processors are better managed than when an individual Milk Collection Center would undergo this tedious task.

COAPALL was legally formed in the third quarter of 2004 and all members have received proper training and assistance in cooperative development and the Board of Directors has received training in Business Management topics.

## Attachment C. RESULT INDICATORS

### D.1 Results: Assisting Producers and Small/Medium-sized Business in Honduras

Indicator	Results	
	Planned	Actual
<b>1.1 Establishment of producer-owned Milk Collection Centers</b>		
Establishment of producer-owned Milk Collection Centers	30	62
Organization of cooperatives for Milk Collection Centers	30	62
Identification of financing mechanisms	4	4
Supervise construction of Milk Collection Centers	30	62
Formal contracts with processors	11	47
Start-up of Milk Collection Centers	30	53
Milk Collection Center training – Sanitation on farm & in milking (farmers)	550	1,817
Milk Collection Center training – Training in milk reception (sessions)	30	40
Milk Collection Center training – Milk management training (sessions)	30	44
<b>1.2 Milk Collection Centers into Full Service Centers</b>		
Expanding Milk Collection Center into Full Service Centers	5	14
<b>1.3 Value-added manufacturing performance for processors</b>		
Support to artisanal cheese makers (courses)	1	4
Internships in LOL plants	1	1
Consultant support (days)	14	180
Evaluation of artisanal cheese plants	40	88
Plants selected to assist	10	12
Formalization of businesses	5	12
Certification of plants by SAG	5	7
Sanitary registration of products	10	17
Branding seminar	2	2
Assistance in business development	10	12
Regional Quality Seal – Program implementation	1	1
Regional Quality Seal – Consultant support	14	180
National artisanal cheese contest	1	6
<b>Extension indicators</b>		
Annual export and local sales of value-added products increased (dollars)	500,000	586,012
Incomes of 10 MSM dairy processors increased (percentage)	25	43.99
Processing plan layouts	11	13
Traditional dairy products standardized	26	26
Non-traditional products standardized	26	26
Higher value-added product courses	9	9
Participants for higher value-added product courses	160	197
Employment of 10 MSM processors increased (percentage)	20	29.54
Members of centers trained in processing and marketing	20	42
HACCP and GMP courses for processors	2	2
Food Borne Illness course for processors	1	1
Quality supervision on 90,000 liters of milk signed by LACTHOSA and COAPALL	1	1
GPS reference data on farmers from COAPALL	1	1
Volume of value-added milk production increased (percentage)	20	26.60
Agro-technicians trained in GMP and CMT	75	209
Center administrators trained in hygiene, milk reception and use of lab equipment	75	115
Quality performance award established	1	1
Pilot dairy goat programs established in Choluteca and Atlántida	2	2

MSM producers trained to increase production and improve quality of goat milk	30	53
Centers provided with pending equipment	56	56
Quality supervision on 90,000 liters of milk signed by LACTHOSA and COAPALL	1	1

## D.2 Results: Direct Engagement of U.S. Dairy Industry

Indicator	Result	
	Planned	Actual
<b>2.1 Central American – U.S. Dairy Link Center</b>		
Feed-grain concentrate analysis in Honduras	1	1
Feed-grain concentrate analysis in Nicaragua	0	1
Milk replacement study for heifers in Honduras	0	1
Milk replacement study for heifers in Nicaragua	1	Cancelled
Electric fences trial on Honduras	1	1
Upgrade/improve existing website	1	1
Improve existing office setup for supporting of U.S. Companies and local farmers in the region	2	2
Setup on-line and paper library for support of U.S. Dairy-Link activities	1	1
U.S. Dairy Link marketing and publications	4	4
Annual Central American Forum	1	Cancelled
Participation in World Dairy Expo (participants)	10	Cancelled
<b>2.2 Regional Marketing Activities</b>		
Market research and analysis	3	3
Economic evaluation of U.S. Suppliers	4	Cancelled
Feasibility studies for equipment installations and investments in new products or processes	10	0
On-site training by U.S. suppliers	2	2
Evaluation of constraints to trade of U.S. products	2	Cancelled
Detailed documentation on two international financing sources available to Central American dairy producers and processors	2	2
<b>Extension Indicators</b>		
Pilot information system with information from 75 Milk Collection Centers	1	1
Training provided to FENAGH for use of the information system	1	1
Information system established at FENAGH	1	1
Feasibility study of the dairy activity in Honduras/CAFTA impact	1	Cancelled
Established contracts with supermarkets	2	2
National dairy product trade shows	7	6
Participants on national dairy product trade shows	20	18
National product trade show reports	7	6
Contacts from national product trade shows	80	38
International trade shows	2	2
Participants on international dairy product trade shows	4	2
International product trade show reports	2	2
Contacts from international product trade shows	30	43
Marketing studies for deli stores	3	1
Permanent displays in supermarkets	6	1
New distribution channels established for processed products	9	4
Producers and processors trained in international market standards and food security requirements	102	97
Introduction of the Seal of Quality as a quality assurance instrument	1	1
Seal of Quality development report	1	1
Established commercial specialized unit	1	0

**D.3 Results: Improved Nutrition for Infants, Pregnant Women and Children**

Indicator	Results	
	Planned	Actual
<b>3.1 Nutritional Education and Marketing Campaigns</b>		
Education of children on benefits of drinking milk (children)	20,000	28,800
Increase awareness of milk benefits amongst children in major urban areas (percentage)	50	69.60
Pilot nutritional effort to reach pregnant women (women+infants)	5,000	12,290
Successful marketing campaign with check-off program funds – Set up fund management procedures	1	1
Campaign initiated and check-off funds used (children)	10,000	4,500
Increase consumer recognition of dairy promotional campaigns (percentage)	25	54.40
Increase consumption of fluid and flavored milks among school children (percentage)	20	21.30
<b>Extension Indicators</b>		
Progress reports for pilot school nutritional program	4	4
Sustainability strategy for pilot school nutritional program	1	1
Final report for pilot school nutritional program	1	1
Cheese tasting fairs reports and analysis	4	6

**D.4 Results: Strengthen Regional Dairy Organizations**

Indicator	Results	
	Planned	Actual
<b>4.1 Actions to Strengthen Regional Organizations</b>		
Organizational support to the Honduran Milk Chamber	1	1
Dairy summit meeting	1	Cancelled
Check-off program	1	1
Support for the implementation of standards and regulations	1	1
Regional marketing and support activities – Guatemala (market studies)	1	Cancelled
Regional marketing and support activities – Nicaragua (market studies)	3	3
Support national/regional organizations for CAFTA and other FTA initiatives	1	1
Meeting with U.S. key dairy sector players and dairy sector negotiations in the context of CAFTA guidelines – esp. sanitary practices (conference)	1	1
<b>Extension Indicators</b>		
Two milk cooperatives legally established	2	4
Business development courses for milk cooperative board of directors	14	6
Participants to business development courses	120	122
Field trip for board of directors	3	2
Participants to field trips	16	51
Internships for board of directors	3	2
Board of directors knowledge exchange (pasantías)	3	0
Cooperative development courses for milk cooperative members	89	32
Participants to cooperative development courses	3,450	2,490
Business plans developed for milk cooperatives	2	0
Cash flow developed for milk cooperatives	2	0
Integral strengthening for milk cooperatives	2	5
Feasibility studies for milk cooperatives supervised	2	1