



Collaborating Partners

*Cooperativa San Francisco
Cooperativa Mosiguito
Cooperativa Santa Thomas
Cooperativa La Embajada*

Dairy Enterprise Initiative

PCE-G000-01-00007-00

**Building Business Linkages
Between
Dairy Producers and Dairy
Processors in
Camoapa, Nicaragua**

Submitted by:

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In Cooperation With:

← **Land O' Lakes, INC. (LOL)**

Submitted to:

**U.S. Agency for International
Development**

**M/OP/EGAT/DHWA
Ronald Reagan Building
International Trade Center
1300 Pennsylvania Avenue
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August 1, 2004

**Final Performance Report
March 10 – March 9, 2004**



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August 23, 2004

RE: Developing Business Linkages between Milk Producers and Milk Processors in Camoapa, Nicaragua (PCE-G-00-01-00007-00), Final Performance Report, Presented by Cooperative Resources International in collaboration with Land O' Lakes, Inc.

Dear Joyce:

CRI is pleased to present its final performance report, Developing Business Linkages between Milk Producers and Milk Processors in Camoapa, Nicaragua (PCE-G-00-01-00007-00).

In 2000, local cooperative managers and producers, as well CRI-LOL program planners, could not have imagined or anticipated the beleaguered position of Parmalat, the illicit \$5 million dollar cash transfer from Parmalat Nicaragua in an attempt to salvage the multinational's solvency, and finally its ripples across the industry with the Parmalat pipeline to store shelves constricted by contracted volume caps.

Programs such as the Dairy Enterprise Initiative do not often factor in economic and marketing disasters—contemplating only growth. This, however, can understate the impacts of program activities that realized even modest growth by overcoming market complexities in doing so. In this particular case, the potential loss averted is nearly greater than program gains. This DEI, with the energy and determination of participating cooperatives and the dynamic partnership of CRI and LOL, turned industry shockwaves into a near windfall in net market share, while preserving farm income.

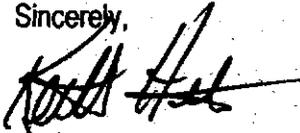
→ CRI and LOL are pleased to report its primary objectives have been met and several categories exceeded, with a 60% increase dairy cooperative member-patronage, cooperative revenue flows rising 17%, cooperative cost-savings of 21.9%, cooperative processing profitability rising 33%, and annual production increasing 4.5% annually. → Cost reductions translating to member savings are particularly significant as Nicaragua continues under a 5.4% annual inflation rate, real dairy prices have declined 32% per liter, and the 4.5% increase in dairy production matches the current annual industrial growth rate, insuring that agriculture is keeping pace with industry. CRI and LOL are certain USAID will be extremely excited with these program results.

Joyce Turk
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If you have any questions or comments about this annual performance report, please do not hesitate to contact me.

Thank you.

Sincerely,



Keith A. Heikes
Vice President
International Programs

KAH:js

cc: Jim Yazman

Executive Summary

Background: In March 2001, Cooperative Resources International and Land O' Lakes Inc. (as subcontractor to CRI) concluded a cooperative agreement with the United States Agency for International Development (U.S.A.I.D.) under the Fiscal Year 2000 Dairy Directive Program. Designed to improve business linkages between the production agriculture cooperatives and their associated producers, while additionally reaching out to non-members and expanding cooperative memberships.

Working in Camoapa, Department of Boaco, Nicaragua, CRI and LOL chose in-country partners in consultation with Finland's PRODEGA rural development initiative. Working in the region since 1990, PRODEGA had assisted in establishing 10 cooperatives across the region with two primary cooperatives established with dairy processing capacity, while the remaining cooperatives focused upon milk collection and consolidation for resale. Cooperative participants were Cooperativa San Francisco de Asis (124 members), Cooperativa Mosiguito (154 members), and Cooperativa La Embajada (80 members); San Francisco and Mosiguito were the two primary cooperative processing centers for the region.

Components and Goals: CRI and LOL defined three primary components and corresponding goals in developing business linkages between milk producers and processors. Across components, this project proposed to increase cooperative membership by 20% while increasing cooperative profitability by 30%.

- **Component 1: Dairy Cooperative Profitability**
 - Strengthened cooperative systems, including financial, managerial, and service delivery will result in increased membership by 20% and cooperative revenue flow by five percent annually;
 - Cooperative holding company initiatives results in a merge of at least two shared services and cost-saving to members of significant percentage (at least 15%)
- **Component 2: Value-Adding and Marketing Activities**
 - Augmented value-adding and quality control processing capacities of cooperatives resulting in improved cooperatives' profitability by 10 percent;
 - Increase availability of quality, pasteurized dairy product sold domestically and regionally by cooperatives' increase by five percent annually;
- **Component 3: Food Safety Awareness**
 - Distribution of information on the nutritional value of milk and dairy products consumption to at least 15,000 people, particularly children;
 - Dissemination of information on the health problems resulting from consumption of poor quality milk products to at least 15,000, particularly children.

Table 1: Milk Prices 2000 – 2004 (Per Liter)

Class	2000		2004	
	C\$	US \$	C\$	US \$
A	4.00	0.32	3.50	0.22
B	3.40	0.27	3.00	0.19
C	2.75	0.22	2.54	0.16

Through these key activity components, CRI and LOL increased membership by 60%, and net surplus cash flows realized a 50% increase as the cooperatives erased an annual \$37,130 deficit to post a \$36,965 surplus. This was accomplished despite the

depressed milk prices and declining value of the Cordoba (Nicaragua dollar). *Table 1* above notes that in 2000 when the project began, producers earned \$0.32 per liter of grade A milk, while today producers collect the 2000 grade C price of \$0.22 per liter for the same grade A milk. Increasing cooperative and producer income in high inflation, expanding economies requires cost reductions which do not sacrifice quality, while still netting a consumer savings of \$0.10 per liter and preserving commodity competitiveness in the international export market.

Building Business Linkages Between Milk Producers and Milk Processors in Nicaragua
Final Performance Report

Narrative: Impact measurements contained and detailed in this report are gathered from 2002 and 2003 annual, independent audits conducted by Nicaraguan certified public accounting firms for participating project cooperatives, certified and authorized by the Nicaragua Ministry of Labor, having legal jurisdiction over agriculture cooperatives. Full financial disclosure of these audits is provided for the express purpose of program impact analysis and may not be distributed without the consent of those cooperative entities.

Component 1: Dairy Cooperative Profitability – Membership and Efficiency

- Strengthen cooperative systems, including financial, managerial, and service delivery will result in increased membership of 20% and cooperative revenue flow by 5% percent annually.

The challenge to cooperative membership was immediate with the collapse of Cooperativa La Embajada at the project's opening. This collapse came under charges of embezzlement citing the husband-wife team of board president and treasurer respectively. Strictly a marketing cooperative with no real physical assets, members had committed a small operating fund to provide for collective marketing of raw fluid milk. Working closely with the PRODEGA project, CRI worked to insure that the two remaining cooperatives honored milk payments due to La Embajada producers. These incidents do however foster a great deal of concern among all members for the strength and stability of their cooperatives.

Table 2: Cooperative Membership

Table 2 illustrates the changes of cooperative membership during the duration of this program. Immediately losing La Embajada's 80 members, the remaining cooperatives moved to create alternative membership policies for expanding inclusion. The primary

Cooperative	2000		2004	
	Members	Patrons	Members	Patrons
San Francisco	124	0	138	81
Mosquito	154	0	165	215
La Embajada	80	0	0	0
Sub Total:	358	0	303	296
Total:	358		599	

obstacle to membership is the necessary capital for required equity contributions. The cooperatives responded by establishing the patron or *non-associate* status which includes non-members who are currently making monthly payments to meet their equity contribution. Since 2000, 25 new members had achieved their equity contribution to become full members with an additional 296 patrons currently making monthly payments towards their equity commitment.

To support the cooperatives membership expansion efforts, CRI provided a total of two groups of 5 volunteers (each) in cooperative organizing. Group 1 conducted cooperative organization activities in January 2001 and Group 2 provided a follow-up initiative in February 2003. Group 1 was sponsored by the *Farmer-to-Farmer* program, conducted by the *Partners of the Americas*. The cooperative membership organization activity provided cooperative training sessions and individualized farm business planning sessions with attending producers. Producers were provided the *Farm Business Planning Guide* and *Farm Financial Notebook* developed in cooperation with Greenstone Farm Credit Services of Wisconsin. Farmers were able to plan their production, project income, allocate monthly equity contributions for full membership, and determine the value of cooperative membership in the farm business plan.

Expanding the cooperative membership and patrons raised non-processing profit center cash flows 17.6% (from \$795,335 to \$935,175). Non-processing includes cooperative store, gas station, farm equipment, and credit union, which are the key profit centers that support agriculture extension services and reduce administration and financial overhead in dairy processing. Milk processing cash flow did however decline due to general inflation and deflation in the milk price. While fluid milk collection rose 18% on volume, value of milk collected declined 12.6% (\$4,146,971 in 2002 and \$3,624,442 in 2003).

- Cooperative holding company initiatives results in a merge of at least two shared services and cost-saving to members of significant percentage (at least 15%).

Struggling with an average annual rate of inflation of 5.4% and milk price declining 12.6%, dairy cooperatives increasingly feel the vise of resource scarcity and product surpluses. Expanding cooperative savings and the producer-member profit margin is earned through reducing costs. Total cooperative operating expenses declined 21.9% from \$2,273,329.69 (2002) to \$1,774,812.07 (2003), exceeding the cost-savings of goal of 15%. Additionally, it is important to note that with increases of 60% in producer utilization, 18% in fluid milk collection, and 17.5% in revenue flows, real expenditures still declined.

To realize these savings CRI focused upon cooperative services while LOL concentrated on dairy products, plant operations, and marketing. In the immediate, combined cooperative analysis of CRI and LOL, it was evident that dairy processing units were subsidizing service units—specifically artificial insemination services, supplement feed concentrates (concentrate plant), experimental farms, and field services (farm equipment). Cooperatives were, for example, operating artificial insemination service at an annual loss of nearly \$90,000, the concentrate plant losing \$7,300 annually, and incalculable losses in experimental farms and farm machinery services for want of improved accounting. While dairy processing subsidized cooperative services, those services were rationed to less than one-third of cooperative members utilizing specific services. Only the cooperatives stores and gas station netted positive income to reduce cooperative overhead and strengthen financial position. The solution was consolidation and closure.

In artificial insemination services, farm machinery services, and concentrate feed supplements were not competitive with private commercial firms and suppliers. Cooperatives had nonetheless attempted to establish these enterprises in direct competition with existing firms within the local marketplace, and lacked volume. Not all producer-members, for limits of livestock and land holdings or infrastructure could utilize these key cooperative services, for which the cooperatives lacked a sufficient sales base. For example, artificial insemination technicians were performing between 1 and 1.3 inseminations per day compared to the five needed to cover competitively cover costs. Few producers owned arable land, with the bulk of members operating permanent pasture. Finally, forages were too poor to supplement through concentrates and basic livestock concentrates were widely available in the common market at lower costs.

Consolidation was achieved in artificial insemination and forage production and storage, meeting the program goal of two shared services. Through this initiative CRI facilitated the expansion and integration of local, private enterprise to provide artificial insemination services and forage production and storage services to cooperative members at negotiated affordable rates. Artificial insemination and field services are now managed by the older SANSAN, SA and its subsidiary Genetic Resources Posoltega (GRP) of Nicaragua. The cooperatives combined to outsource these services, pooling contracted producer-member service demands to private sector firms.

Closure or downsizing is a necessary reality in cost reduction. To dramatically reduce cooperative costs, the experimental swine and stock farm and concentrate plant were closed and liquidated for underperformance. It is important to note that in this restructuring, no jobs were lost, as cooperatives and this project worked towards worker retraining for qualified worker reassignment to expanding cooperative activities and business units.

These consolidations and closures represent the primary lessons learned of this initiative, ending inefficient experimentations in entrepreneurial enterprises. Most importantly, it returned cooperatives to their core enterprises and competencies of commodity processing, marketing, and input access and procurement. Not every production factor is ripe for cooperative exploitation when already competitively established in the marketplace by longstanding firms and cooperatives can more effectively negotiate service and supply.

While initial cost-savings opportunities could be readily identified through cost-benefit analysis and were facilitated through service realignments and outsourcing, long term savings and cooperative growth would require developing both business and marketing plans.

Component 2: Value-Adding and Marketing Activities

- Augmented value-adding and quality control processing capacities of cooperatives resulting in improved cooperatives' profitability by 10 percent.

Through this initiative three participating cooperatives developed quality control standards and capabilities with development of dairy plant laboratories and blind analysis procedures. More significantly, the cooperatives dramatically shifted from raw product consolidation and fluid milk sales to value added market processing. *Total cooperative expenditures fell from \$0.18 per liter in 2002 to \$0.12 per liter in 2003, reduced 33% as the dairy processing plant utilization rose to nearly 70% of capacity.* Product sales increased 30% as cooperatives increased processing by 62.9% to offset a 62.7% decline in fluid milk sales to private processors.

In Table 3 below, we note that product sales rose 30% while fluid milk sales declined 66%. 2001 sales total \$4.1 million while 2004 sales fell \$3.6 million, demonstrating a real decline of \$500,000. This however ignores the averted catastrophe of declining milk prices (to the benefit of consumers) and the ongoing inflation rate of 5.4%. During this program, we must mention and consider the collapse of the international conglomerate of Parmalat which had controlled 15-20% of the local market (80% of formal market). Private processors limited cooperative collection centers to grade "A" volume contracts in 2003 at established price levels. For participating cooperatives, volume contracts totaled 15 million liters at \$0.23 per liter, with excess production (above contract quantity) valued at \$0.07 (C\$1.00) per liter. Milk collection exceeded 2001 processing levels and the 2003 contracts by 1.3 million liters. Sold to private processors, the milk would have grossed producers a meager \$92,336. With program assistance to promote market growth, the cooperatives continued to buy from producers at \$0.22 per liter for cooperative value added processing, grossing producers \$304,711 in milk sales. Forward contracting and Parmalat's financial ills nearly cost Nicaragua's prime dairy region \$212,000 in annual farm income. The 6 cents per liter drop in processing cost per liter insured cooperative competitiveness and protected consumers against inflation.

Table 3: Change in Volume and Sales Activities

	Fluid Milk Sales (Pounds)	Milk Processed (Pounds)	Milk Sales (US \$)	Product Sales (US \$)	Plant Utilization	(Per Liter) Cost
2001	18,662,175	9,967,063	\$2,109,955	\$2,037,016	36.19%	\$0.18
2003	6,955,742	26,830,401	\$714,414	\$2,910,027	69.48%	\$0.12
% Change	62.7%	62.9%	66.1%	30%	47.91%	33%

In 2000, local cooperative managers and producers as well CRI-LOL program planners could not have imagined or anticipated the beleaguered position of Parmalat, the illicit \$5 million dollar cash transfer from Parmalat Nicaragua in an attempt to salvage the multinational's solvency, and finally its ripples across the industry with the Parmalat pipeline to store shelves constricted by contracted volume caps.

Programs such as the Dairy Enterprise Initiative do not often factor in economic and marketing disasters—contemplating only growth. This however can understate the impacts of program activities which realized even modest growth by overcoming market complexities in doing so. In this particular case, the potential loss averted is nearly greater than program gains. This DEI, with the energy and determination of participating cooperatives and dynamic partnership of CRI and LOL, turned industry shockwaves into a near windfall in net market share while preserving farm income.

The primary and urgent issue for cooperative milk marketing and dairy products processing were the fluid milk grade "A" contracts. Fluid milk sales to primary processors such as Parmalat, Eskimo S.A., and Nestlé's Prolachsa provided the cooperatives primary source of working capital to make producer milk purchases and plant operation. Processors could often and freely downgrade milk shipments to class "B" and reduce payments to cooperatives. The absence of sufficient quality control at the cooperative level lent merit to processor claims. Facing two multinationals and one of the Central America's leading private processors, angry populist sentiment is inherent, though LOL provided the means for compliance.

Quality Control:

1. Under a previous Dairy Directive, Cooperativa San Francisco established a complete quality control laboratory. This laboratory would serve as the cooperative's quality control laboratory.
2. Through this initiative, LOL worked to established two additional laboratories at Mosiguito and Santa Thomas (\$17,086) to segregate milk by quality.
3. Participating cooperatives established milk quality control standards, defining grades A, B, and C classification with differentiated pricing. Producers qualifying in different production grades were then grouped by routes to reduce cross-contamination of milk grades during pooling. Adequate segregation preserved the now capped grade "A" contracts.
4. The introduction of quality control and price differential netted positive impacts at the farm-production level, as indicated in Table 4 below. Initial tested found that only 36% of raw milk qualified as grade A with 45% as grade B. With B and C suitable for cheese production, the greatest initial push was in increasing production of grade "A" for fluid milk consumption, rising to more than 51% of production in 2003. The actual growth of grade C as a percentage is not a farm production regression, but tighter quality regression and influx of new producer-members.

Value-Adding Processes

As noted in Table 3 above, cooperatives had significantly underutilized processing capacity in cheese making, with sufficient collection, cheese vat, press, and cold storage capacity. LOL staff and consultants provided study and support in market development to participating cooperatives.

Table 4: Raw Fluid Milk Quality

	2001	2003
Grade A	36.3%	51.4%
Grade B	44.8%	10.5%
Grade C	18.9%	38.1%

- Victor Ganoza, LOL Honduras, and Mel Jolly, LOL Plant Consultant, provided advance assessments of cooperative plants for export standard compliance. The time provided recommendation for hygienic conditions and follow-up. These pre-inspections were essential to export certification to Honduras and El Salvador, and preliminary (probationary) export license to the U.S.A., reaching the Nicaraguan-American market of Miami. With operational quality control laboratories and hygienically certified facilities, the cooperatives now had an outlet for surplus production suppressing domestic prices.
- Peter Reese and David Hull, LOL consultants in marketing (product branding) and plant management (efficiency) provided the next essential technical assistance to cooperatives. The cooperatives had been exporting in 40 pound blocks to Central America. Presentation for the cooperatives was inadequate for market growth and US market penetration. LOL experts recommended diversification with packaged cream and improved presentation with smaller packaging for convenient marketing. Previous exports had been re-cut and repackaged under national brands, denying exporting cooperatives the retail premium and brand identity. Additionally, Nicaraguan emigrants could not identify national product (trade being the preferred form emigrant remittances). Actions included:

- Cooperatives redesigned their package logos through focused consumer testing;
- The DEI provided minor equipment augmentation to improve plant utilization and performance:
 - Cream Separators (\$4,507) for fluid cream and cream cheese product development;
 - Piston Filler (\$11,645) for packing fluid cream;
 - Multi-Purpose Cheese Manufacturing Kettle (\$12,735) for hard cheeses product development;
 - Double Chamber Vacuum Packager/Sealer (\$11,963) for incremental cheese packaging;
 - Butter Chum (\$503) for butter product development.

These inputs raised plant utilization from 36% to 70% and reduced per liter processing costs from \$0.18 to \$0.12—mobilizing plant capacity to market local production in the international marketplace. Additionally, this initiative stressed cooperative capacity in product research and development with the hand operated cream separator, micro-butter chum, and cheese processing kettle for alternative cheese. With packaging capacity in cheese and cream, exports surged to liquidate full product volumes, expanding exports from its 2001 levels 900,000 pounds of cheese to 2003 production of 2.5 million pounds of various cheeses, increasing product sales by \$900,000 or 30%.

- To sustain these market and processing efficiency gains, Land O' Lakes assigned cooperative business consultant Gretchen Dhooge, to assist the three participating cooperatives each in developing a five year business plan to include: :
 - 1) Description of the business (history, mission, legal structure, necessary licenses, products, services, and membership requirements),
 - 2) Market components (clientele, process from raw material to finished product, and sales),
 - 3) Promotional strategy,
 - 4) Description of competition,
 - 5) Future plans
 - 6) Administration,
 - 7) Financial documentation and projections,
 - 8) Risks, and
 - 9) Complete SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis.

More than an academic exercise; cooperatives were challenged to develop plans of self-sustain market share gleaned in the wake of Parmalat's financial convulsions and US technical program assistance. Under the guide of their own marketing and business plans, cooperative increased marketing and sales expenditures by \$315,335 annually or 11% of gross income—a key and convention re-investment for any marketing firm and demonstrative of their commitment to self-sustained market access and expansion. Cooperatives established wholly owned distributorships in El Salvador and Managua.

The near collapse of Parmalat was both blessing and curse to Nicaraguan producers. First they learned that the conglomerate's market hold was precarious coupled with the reality that profit margins were not as gross as previously perceived. Parmalat and La Embajada stressed two essential points among surviving cooperatives—processing efficiency and quality to sustain and grow market share. USAID's Dairy Enterprise Initiative with CRI and LOL was there to exploit these opportunities and garner producer market share—realizing target cooperative profitability increase of 10%, the DEI assisted cooperatives in mobilizing processing capacity as fluid milk sales collapsed. We discount the 66% decline in fluid milk sales to private processors as an untenable and unsustainable market condition. Multinational conglomerates which migrate through developing and emerging economies inevitably retreat as cooperative and national processing capacity coalesces to marshal domestic and regional market share. Private processors enable cooperatives to amass working capital and then decline in sector evolution.

Component 2: Value-Adding and Marketing Activities (Continued)

- Increase availability of quality, pasteurized dairy product sold domestically and regionally by cooperatives' increase by five percent annually;

During the course of this program, fluid milk under cooperative management and processing increased 9.1% or 4.5% annually over two years of program support. The only target to fall modestly short of its objective, this gain represents nearly 2 million pounds (1,000 tons) of fluid milk or more than 6% of daily plant capacity—an essential component of reaching 70% plant capacity and reducing processing costs.

The source of the increase is two fold—increased farm productivity and increased membership. Farm productivity gains realized through improved genetics and forage production and storage were estimated at nearly 400 tons of fluid milk annually while the remaining gains of 600 tons are attributed to increased membership patronage of 60% (241 new member-patrons).

➤ **Farm Productivity Gains**

- CRI introduced the forage bagging system with the Kelly Ryan 7 foot bagger (\$16,718) to provide for store forage during Nicaragua's dry winter. Currently the system is storing 1,600 tons of feed annually. The 1,600 tons of stored feed is producing an estimated 384 tons of milk during the low period of milk production when prices are higher. This means an addition income to participating producers totaling over \$73,000 in new income, and an additional \$50,000 in new income for the cooperatives derived from additional milk supplies for processing and resale (annually). The total farm investment in bags and tractors was a cost of \$6,400, generating this additional \$120,000 in new community income. To provide essential training forage, feeding, and livestock management, CRI produced training videos in Forage Production and Livestock nutrition (\$10,000).

➤ **New Membership**

- Incorporating 241 new patrons brought an additional 600 tons of milk annually into the cooperative dairy processing sector. This same 600 tons had previously been in production and under artisan (non-pasteurized) processing and sale for more than a decade. This removes nearly 60 tons of non-pasteurized cheese and fluid cream products from the marketplace annually. With average consumption in Nicaragua of 57 pounds of dairy products annually, these 60 tons will feed more than 2,000 people.

The total new production of 1,000 tons (new production plus new members) passing through cooperative processing and pasteurization will feed 3,472 people annually.

Nicaragua's Department of Boaco is located in its central highlands with plateaus and valleys. It is important to note the impact upon the foodshed-watershed. As the cooperatives typically collected and marketed whole raw milk, it was shipped outside the food-watershed to the capital of Managua. Whole raw milk is 87% water, meaning that at the height of milk shipments outside the foodshed, water was exiting at a rate of 4,780 gallons daily or 1.75 gallons annually. With the sharp decline in raw milk shipments to value added dairy processing, products primarily exit in the form of cheese, reducing milk ships with a water composition of only 718 gallons daily or 262,000 gallons annually, a reduction of 85%.

Finally, with the assistance of TechnoServe (also through the cooperation of USAID), the cooperatives established a water treatment facility serving both plants to handle the dramatic increase in effluent, returning clean water to the Boaco watershed. While there was no component within this initiative to support or address environmental issues, CRI offers this point as a significant by-product of other program successes.

Component 3: Food Safety Awareness

- Distribution of information on the nutritional value of milk and dairy products consumption to at least 15,000 people, particularly children.
- Dissemination of information on the health problems resulting from consumption of poor quality milk products to at least 15,000, particularly children.

In creating food safety awareness CRI and LOL found its single greatest challenge, primarily for the logistical obstacles to reaching the target audience of 15,000. Nicaragua has been a primary target of other donors such as Care, Hope, and the World Bank support Institute for Rural Development (IDR), as well the numerous operating initiatives with nutrition components of their own. Recipients and individual households readily expressed training fatigue with health and nutrition issues and found supplement food safety awareness redundant and rudimentary. Home pasteurization of raw milk for home use was routine and widespread. Diets were exception with dairy use supplementing staples of rice, beans, chicken, fish, and some beef (red meat). Household demand was more immediately concerned with or interested in integrating dairy products into the diet through alternative menu choices.

CRI provided quarterly technical assistance in diversifying the household diet, providing consultant/volunteers in alternate training segments. The food awareness program focused upon cooperative employees, member-producers, and producer employee households. Technical assistance personnel were assisted and collaborated with local IDR staff and locally assigned Peace Corps volunteers to convene training sessions throughout the project regions. Technical experts included Joanne Gardner, certified human nutritionist to provide essential dietary education and training, and Roxanne Runge, restaurant manager to provide education in training in menu choices, food preparation, and presentation.

- ***Dietary Education and Training:*** Training emphasized the nutritional value of milk and dairy products, the potential for illness and common parasites (bacteriological) associated with the consumption of unprocessed dairy products. The dietician provided training in balancing the daily home menu to address nutritional deficiencies and meeting the nutritional stages during childhood development. Additional training was provided in home gardening for seed and plant selection to supplement common and traditional food staples.
- ***Food Preparation and Presentation:*** The use of dairy was limited in the Nicaragua diet for a lack of preparatory and presentable familiarity. In these activities CRI emphasized *cooking with dairy*, providing instruction in integrating dairy into the family menu. Participants were encouraged to accent traditional Nicaragua dishes with dairy products, adding cheeses and cream to enrich protein composition of food staples and provide greater appeal in appearance and taste, increasing child consumption of essential vegetable, cereal grains, and meat dishes.

Consultant volunteers worked in Nicaragua alternately providing one 10-day trip per quarter with 5 training programs. Average attendance was 35 people. Alternate days were devoted to individual group sessions with other program trainers to provide follow up to technical training session attendees. This provided a total of 80 training days (40 per year) with 1,500 households (7,500 people @ 5 per household) reached through cooperative employees, cooperative members, and member employee households. Additionally staff provided training for three local elementary (grades 1-8) and one orphanage of 35 children. The challenge of food safety awareness it should be noted, is a primary issue of affluence. Nicaragua audiences were well steeped in food safety and family nutrition, but both safety and nutrition (among farm employees for example) was all too often superseded by issues of income and affordability, were awareness and knowledge is undermined by need.

Conclusion: This program concludes on its assigned termination date of March 9, 2003, achieving its objectives and more than \$100,000 under its proposed budget. Despite the collapse of two area cooperatives (La Embajada and Casa Bouy), the dairy cooperative movement in Nicaragua moved dramatically forward with membership rising and their commitment undaunted. Long challenged by the formal market dominance of Parmalat, cooperatives mobilized human and capital resources to maintain and expand their market position. That stability and rebound of Parmalat Nicaragua is all but assured—but market share lost is never easily or entirely reclaimed.

The real benefactors of this program were both producers and consumers. The fall in milk prices are a function of the world price with Nicaragua and the region pressed to alignment through free trade agreements. Despite the decline in milk prices however, increased milk production and productivity gains netted producers 96% of their 2001 income while consumer prices for dairy held steady amidst 5.4% inflation. Decline in milk prices do not immediately translate into reduced consumer prices, as transportation and store shelving costs rise with inflation and quickly consume cost reductions in production and processing.

The real dynamic of this program was the collaboration of CRI and LOL. This was particularly important in addressing plant utilization which was instrumental in reducing processing costs. The cooperatives had amassed a nearly detrimental processing capacity with minimal market share in the value added market. Readily attuned to their cooperative's position, member-farmers were reluctant to increase production to levels above cooperative market-share. As LOL opened regional markets and product shifted to the cooperatives value-added processing capacity, producers immediately mobilized their own excess production capacity to raise production to nearly their 2001 income level. LOL studies revealed that with every new 10,000 pounds of fluid milk produced, 1 additional job is created in the sector. This enables to target production in stimulating employment. In this case, production increased by 2 million pounds and potentially netted 200 new jobs.

This report cannot stress enough the inevitable volatility of agriculture commodity prices which can only be modestly moderate through government subsidy programs. In absence of such programs, the donor community must emphasize cost reductions and target assistance to position producers and their cooperatives to meet the world commodity price level. Higher incomes cannot be sustained through measures which arbitrarily raise prices either through production controls or market protection, but instead through sustained growth in productivity and growing markets to dispose of rising production. Additionally, programs are needed to retire marginal land and disadvantaged regions through education programs emphasizing worker mobility and transition. Nicaragua is not in any immediate danger of drowning in dairy surplus and suppressing prices, with per capita consumption only 25% of that of the developed, industrial nations. The market can readily continue to absorb higher dairy production providing producers and processor can continue to reduce costs. This cost reduction in staple food production and processing is where emerging economies can check inflation.

Note: Following the collapse of La Embajada and Casa Bouy, program activities incorporated Cooperativa Santa Thomas with its 80 members. Santa Thomas received equal professional and technical program assistance as reported for cooperatives Mosiguito and San Francisco, but was not included in the economic analysis as the cooperative had no base line data to substantiate improvements and its relative growth or decline.

Table 5: Program Goals and Impact Matrix

Component	Objective	Measure	Base Line	Goal	Achieved	% Change
1. Dairy Cooperative Profitability (CRI)	Strengthened cooperative systems, including financial, managerial, and service delivery will result in increased membership and annual cooperative revenue flow	Members	358	20%	599	60%
		Revenue Flow	\$795,335	5%	\$935,175	17.6%
	Cooperative holding company initiatives results in a merge of at least two shared services and cost-saving to members of significant percentage.	Cost Savings	\$2,273,329	15%	\$1,774,812	21.9%
2. Value-Adding and Marketing Activities (LOL)	Augmented value-adding and quality control processing capacities of cooperatives resulting in improved cooperatives' profitability	Profitability	\$0.18	10%	\$0.12	33%
		Cost/Liter	36.19%		69.48%	47.91%
	Increase availability of quality, pasteurized dairy product sold domestically and regionally by cooperatives	Milk Product Sales Quality	18,177,782 (Pounds) \$3,815,419 36.3%	5%	20,004,547 (Pounds) \$3,624,442 51.4%	9.13% (2 Years) - 5.00% ¹ 29.4%
3. Food Safety Awareness (Consultant Volunteers)	Distribution of information on the nutritional value of milk and dairy products consumption, particularly children	Persons Trained – Dairy In the Diet	0	15,000	7,500	50%
	Dissemination of information on the health problems resulting from consumption of poor quality milk products, particularly children	Persons Trained – Safe Dairy Use and Nutrition	0	15,000	7,500	50%

¹ Product sales adjusted for inflation, as milk prices decline 30% in real value and inflation.

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CRI Nicaragua Budget	Budget Total	Total To Date	Budget Variance
US. Program Management			
Senior Project Officer in U.S.	40,600.00	37,058.90	3,541.10
Project Assistant in U.S.	17,763.00	16,124.99	1,638.01
Accountant in U.S.	12,180.00	11,007.24	1,172.76
Support Person in U.S.	7,613.00	6,820.82	792.18
Fringe	23,836.00	21,691.91	2,144.09
Total U.S. Program Management	101,992.00	92,703.86	9,288.14
Monitoring & Evaluation			
RT Airfare (Madison-Managua)	9,896.00	12,714.55	(2,818.55)
Per diem	15,347.00	7,847.04	7,499.96
Medevac coverage	98.00		98.00
Local Transportation	761.00	4,073.67	(3,312.67)
Communication and Supplies	1,523.00	903.23	619.77
Total Monitoring & Evaluation	27,625.00	25,538.49	2,086.51
US. Office Costs			
Office Supplies	7,308.00	7,003.01	304.99
Printing	609.00	583.62	25.38
Postage and Shipping	3,653.00	3,503.00	150.00
Communications	24,360.00	23,332.00	1,028.00
Total Office & Equipment Cost	35,930.00	34,421.63	1,508.37
Short Term Technical Assistance			
CRI Consultant Fees	12,408.00	19,084.70	(6,676.70)
CRI Volunteers	-		-
DBA insurance for Volunteers	84.00	-	84.00
RT Airfare Consultants (Madison-Managua)	6,913.00	12,554.91	(5,641.91)
RT Airfare Volunteers (Madison-Managua)	2,954.00	3,336.74	(382.74)
Per diem consultants	10,720.00	1,482.24	9,237.76
Per diem volunteers	4,581.00	864.68	3,716.32
Medevac Insurance for Consultants	68.00		68.00
Gateway Insurance for Volunteers	136.00		136.00
Passport/medical exam/visa/inoculation for volunteers	709.00	-	709.00
Passport/medical exam/visa/inoculation for consultants	303.00		303.00
Local Transportation for consultants	3,722.00	848.46	2,873.54
Local Transportation for volunteers	1,589.00	1,324.27	264.73
Communication and Supplies for consultants	1,064.00	615.89	448.11
Communication and Supplies for volunteers	455.00	150.02	304.98
Volunteer Briefing Books	45.00	-	45.00
Translators for Consultants	2,660.00	719.45	1,940.55
Translators for Volunteers	1,136.00	622.13	513.87
Total Short Term Activities	49,547.00	41,603.49	7,943.51
Technical Equipment			
Equipment	180,000.00	122,686.84	57,313.16
Shipping	14,876.00	28,833.97	(13,957.97)
Total for Technical Equipment	194,876.00	151,520.81	43,355.19
Total CRI Costs	409,970.00	345,788.28	64,181.72
Land O'Lakes Subagreement	190,030.00	153,247.02	36,782.98
Total Incurred Costs	600,000.00	499,035.30	100,964.70

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Land O' Lakes Budget Detail

Item Description	Budget	To Date	Variance
US Management Salaries	\$ 66,107.00	\$ 15,049.19	\$ 51,057.81
US Management Fringe	\$ 24,460.00	\$ 5,623.57	\$ 18,836.43
Local Staff Salary/Fringe	\$ -	\$ 2,115.77	\$ (2,115.77)
Consultants	\$ 3,553.00	\$ 33,595.63	\$ (30,042.63)
Travel Costs	\$ 43,151.00	\$ 42,738.56	\$ 412.44
Other Direct Costs	\$ 1,823.00	\$ 6,480.09	\$ (4,657.09)
CRI Support		\$ 15,484.75	
SUBTOTAL Direct Costs	\$ 139,094.00	\$ 121,087.56	\$ 18,006.44
Indirect Costs	\$ 50,936.22	\$ 32,159.46	\$ 18,776.76
Total Federal Funds	\$ 190,030.22	\$ 153,247.02	\$ 36,783.20
Cost Sharing	\$ 12,000.00	\$ 7,263.27	\$ 4,736.73

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Equipment Procurement and Disposition:

<u>Qty</u>	<u>Description</u>	<u>Cost</u>	<u>Disposition</u>
1	Milk Quality Control Laboratory (Raw Milk Testing) (Various Items @ \$1,500 or Less) (Inventoried: 7/10/04)	8,543.06	Cooperativa Mosiguito
	Shipping:	1,517.50	
1	Milk Quality Control Laboratory (Raw Milk Testing) (Various Items @ \$1,500 or Less) (Inventoried: 7/10/04)	8,266.89	Cooperativa Santa Thomas
	Shipping:	987.08	
1	Cheese Manufacturing Kettle, Claire Multi Purpose	12,735.20	Cooperativa
1	Cream Separator, Milky FJ600 115V/60HZ 900 Lts/Hour	3,912.96	Mosiguito
1	Cream Separator, Milky FJ40H, Manual	593.99	
1	Butter Churn, Milky FJ10 115V/60HZ	503.31	
26	Stainless Steel Utensils	1,502.42	
4,500	Livestock Identification (Tagging/Branding)	3,148.51	
48	Filters/Disposable (Boxes, 100 Count)	248.80	
125	Processing/Food Handling Utensils	739.71	
	Supplier Packaging/Shipping:	7.40	
	(Processing Utensils) CRI Shipping:	706.80	
	CRI Shipping:	907.18	
1	Piston Filler, Cream Packaging, Hinds Bach	11,645.00	Cooperativa San Francisco
	Shipping:	900.00	
1	Double Chamber Vacuum M/C S/S	\$11,963.25	Cooperativa
	Shipping:	722.24	Mosiguito
1	Ford Ranger Edge SuperCab 4.0L, 4x4, 2001 1FTZR15EX1PB35460	19,725.00	Transferred to: GDG-G-00-02- 00011-00
	Shipping:	5,554.78	
1	Polaris Ranger (6x6) Utility All Terrain Vehicle	13,850.00	Transferred to: GDG-G-00-02- 00011-00
1	Forage Bagging System, 7 Ft, Kelly Ryan	16,718.48	Transferred to:
10	Forage Storage Bags (7x200)	2,676.00	GDG-G-00-02- 00011-00
1	Forage Production Training Video	10,000.00	
	Shipping:	5,210.50	
	Total Taxes/Import/Agent Fees:	12,320.49	
	Total Equipment:	120,756.58	
	Total Consumables:	6,073.31	
	Total Supplies and Miscellaneous:	2,516.70	
	Total Shipping:	29,549.78	
	Total Equipment:	151,759.88	

Building Business Linkages Between Milk Producers and Milk Processors in Nicaragua**Final Performance Report****Program Matching Funding**

Cooperativa Mosiguito	Double Chamber Vacuum M/C S/S (50%)	6,000.00
Cooperative Water Treatment Facility (Dairy Plant) (To increase dairy plant utilization)		50,000.00
Coburn Company Inc.		1,470.52
Kelly Ryan Equipment Company		4,404.00
Cooperative Support		
Salaries		7,579.68
Transportation		3,050.42
Administration Support		670.97
Supplies		219.16
Volunteers		
CRI/LOL Business Management Volunteers (5 Volunteers, 28 Days, @ \$200 Per Day)		28,000.00
CRI Dietary and Nutrition Volunteers (2 Volunteers, 40 Days, @ \$300 Per Day)		24,000.00
LOL Volunteer Consultants		7,263.27
CRI US Program Management		
Senior Project Officer in US		7,443.30
Senior CRI Management (GM Overhead)		54,697.30
Clerical		2,902.90
Fringe		19,838.30
Indirect Costs		
CRI Monthly Rent (Office Space)		8,521.10
Equipment – I.T. Overhead		410.90
AS/400 System		692.20
Word Processing		4,019.40
Public Relations/Publishing/Reports/Articles		13,956.30
CRI Communications Overhead		4,443.70
Domestic Transportation (CRI Pool)		2,869.40
AgSource Lab Overhead		5,805.80
AgSource DHI Service Overhead		11,440.80
	Total Program Cost Share (Match):	269,699.42

CRI US Program Management is based upon internal indirect cost calculations.