



FINAL REPORT

March 26, 1999 – December 31, 2006

USAID CA # 690-A-00-99-00148-00

Submitted to

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MALAWI PRIVATE DAIRY BUSINESS DEVELOPMENT PROGRAM

USAID CA # 690-A-00-99-00148-00

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**MALAWI PRIVATE DAIRY BUSINESS
DEVELOPMENT PROGRAM**

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Attachment A: Financial Report

Attachment B: Cooperation with Partners and Other Implementers

Attachment C: Membership Information

Acronyms	
ADD	Agricultural Development Division (an agriculture administration zone; Malawi is divided into 8 ADDs)
CABUNGO	Capacity-Building for Non-Governmental Organizations
CAHLDO	Chief Animal Health and Livestock Development Officer
CARER	Center for Advice, Research and Education on Rights
CREMPA	Central Region Milk Producers Association
DAHLD	Department of Animal Health and Livestock Development
DEMAT	Development of Malawi Entrepreneurs Trust
FIAH	Foundation for Improvement of Animal Health
FO	Field Officer (previously known as Field Agent)
MARDEF	Malawi Rural Development Fund
MBG	Milk Bulking Group
MDFA	Mpoto Dairy Farmers Association
NASFAM	National Smallholder Farmers Association of Malawi
OIBM	Opportunity International Bank of Malawi
RDP	Rural Development Program (a subdivision of ADD)
SHMPA	Shire Highlands Milk Producers Association
SSLPP	Small-Scale Livestock Promotion Program

1. PROJECT OVERVIEW

Land O'Lakes, in partnership with World Wide Sires (WWS), implemented the Malawi Private Dairy Business Development Program from March 26, 1999 to December 31, 2006 with support from USAID/Malawi mission funding.

1.2 Goal and Objectives

The goal of the program was to increase rural incomes by increasing the number of rural poor households deriving their main livelihood from dairy business through managing high-productivity enterprises, while delivering improved quality and affordable dairy products on the local market.

1.2.1 Specific Objectives

On the basis of the key problems and needs and consistent with the broad objective, the following were the program's specific objectives:

1. Improve dairy farm business management from a subsistence to professional level;
2. Increase the population of improved dairy cattle in focus areas by the end of 2006;
3. Increase the number of rural households owning dairy cattle in focus areas by 2006;
4. Increase the quality of milk at dairy farms and factories;
5. Increase processing utilization capacity in the focus areas by the end of 2006; and,
6. Increase the adoption of cost-effective, brand-building packaging.

2. PROGRAM COMPONENTS

The program utilized a regionally focused implementation strategy with the following key areas of intervention:

2.1 Dairying Productivity

- Trained farmer artificial insemination (AI) technicians
- Implemented the heifer scheme
- Initiated dairy inputs procurement and distribution systems
- Developed animal health care skills

2.2 Cost-Effective Processing

- Provided technical assistance to processors
- Provided technical assistance to national quality control authorities and team

2.3 Improve Marketing Approaches

- Conducted consumer research
- Assisted with catalyst support to select milk marketing (cooling and distribution) infrastructure investment

The Malawi Dairy Business Development Program supported USAID/Malawi's Strategic Plan, which focused on the Mission goal of *“reducing poverty and increasing food security through broad-based, market-led economic growth.”*

PROGRAM SUPPORT OF STRATEGIC OBJECTIVES

SO6: “Sustainable Increases in Rural Incomes”

Performance Indicators:

- Percentage change in rural household incomes in targeted sub-sectors
- Household income of households with dairy enterprises

Intermediate Result 6.1: Agricultural productivity increased.

Performance Indicators:

- Total and value of milk produced by members of associations (MBGs).
- Number of viable agribusinesses and cooperatives (MBGs).
- Membership in agribusinesses and cooperatives.
- Total and value of raw milk collected by processors.
- Average milk yield of cows owned by members of MBGs.
- Number of calves born from improved genetics.
- Mortality rate of calves

3. HIGHLIGHTS

Land O'Lakes, in partnership with World Wide Sires (WWS), implemented the Malawi Dairy Business Development Program from March 26, 1999 to December 31, 2006 with support from USAID/Malawi mission funding. The main accomplishments of the program were as follows:

- The cumulative total volume of milk produced by farmers in the central and northern region milk shed areas increased from **1.295 million liters** in 2001 to **6.133 million liters** by the end of the project, representing **373.59%** increase over the baseline value. This accomplishment was mainly attributed to placement of high grade and high yielding heifer scheme cows, increased use of dairy mash supplementary feed and adoption of good animal health care practices by the heifer scheme beneficiaries.
- The cumulative volume of milk collected by processors in the central and northern region milk shed areas increased from **1.023 million liters** in 2001 to **4.276 million liters** in 2006, an increase of **317.98%** over the baseline figure.
- The total value of raw milk collected by processors in the central and northern region milk shed areas increased from **US\$ 347,000** in 2001 to **US\$ 1,296,730** by the end of the program, equivalent to a nominal value of **MK 179,713,810** in 2006. This performance represented **273.7%** increment in revenue earned by dairy farmers within the program sites.
- The number of viable Milk Bulking Groups (MBGs) (*These are MBGs and groups with 10+ actual members with dairy animals*) increased from 16 in 2001 to 57 in 2006, an increase of **256.25%** during the program period.
- Membership in MBGs reached **6,244 (3,369 males and 2,875 females)** by the end of the program as compared to **1,019** in 2001. This accomplishment represented **512.76%** growth in membership in the program areas.
- Improved animals attained an average yield of **21.2 liters per cow per day** in 2006 as compared to **8 liters per cow per day** in 2001, representing an increase in dairy productivity of **165%** over the baseline figure. In some MBGs, some cows achieved a daily yield as high as **32 liters per day**. The average yield for local cows was **3.4 liters per day**.
- The cumulative number of improved dairy offspring calves born from improved genetics reached **6,674** since 2001. This was due to the program's intensive efforts to stimulate dairy business development combined with the expansion of WWS activities and the high performance of WWS improved genetics.
- Calf mortality for WWS crossbred cows was at **4 percent** in 2006 as compared to **7%** in 2003.

4. PROGRAM PERFORMANCE AND RESULTS

Specific End-of-Program Results

Key end-of-program results monitored by Land O'Lakes throughout the implementation of the program included but are not limited to:

- Number of participating producer groups;
- Milk production volume and value;
- Milk yield (liters per cow per day);
- Percentage increase in processors' utilization of processing capacity (Lilongwe and Mzuzu);
- Percentage of participating producers practicing environmentally friendly practices; and
- Percentage increase in annual per capita consumption of dairy products.

The achievement of the above end-of-project results for which data was available is summarized in Table 1 below.

Table 1: Actual Program Performance Indicators against Targets as of December 2006

Project Code	MDBDP					PHASE II (Mar-26-2001 to Jun-30-2003)				PHASE III (Jul-01-2003 to Dec-30-2006)						Cumulative or Periodic	Criteria	Achievement
	CA#690-A-00-99-00148-00			Baseline		[Year 3]		[Year 4]		[Year 5]		[Year 6]		[Year 7]				
	Performance Indicator	Unit of Measure	Dis-aggregation	Year	Value	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual			
SO 6: Sustainable Increases in Rural Incomes																		
USAID M 1	Percentage change in rural household incomes in targeted sub-sectors	US\$	None	Cumulative	1998	92.92										Periodic	>	
LOL 1	Increase in household income of households with diary enterprises	US\$	None	Cumulative	2002	1170.00										Cumulative	=	
Intermediate Result 6.1: Agricultural Productivity Increased																		
LOL 2	Total milk produced by members of associations (MBGs)	Million liters	None	Cumulative	2001	1.295		1.424	1.116	1.480	2.157	3.158	3.494	6.457	6.133	Cumulative	> =	95%
LOL 3	Number of viable agribusinesses and cooperatives (MBG)	#	None	Cumulative	2001	16		21	18	24	48	27	55	31	57	Cumulative	> =	184%
LOL 4 and 5	Membership in agribusinesses and cooperatives	#	Gender	Male (Cum)	2001	852		937	1282	1125	1584	3102	3444	3500	3369			96%
LOL 6	Volume and value of milk marketed by farmers' associations	Million liters	None	Cumulative	2001	1.023		0.931	0.882	1.036	1.518	2.211	2.479	5.101	4.276	Cumulative	> =	84%
		US\$		Cumulative	2001	347.00		317.00	299.00	396.00	577.00	846.00	752.00	1730.00	1296.73			75%
LOL 7 and 8	Average milk yield of cows owned by members of MBGs	liters/cow/day	Breed	Local	2001	2.6		2.9	2.9	3.1	2.5	3.7	3.8	3.7	3.4	Periodic	> =	91%
				Improved	2001	8.0		8.8	7.2	10.6	8.6	11.7	21.5	11.7	21.2			181%

	Performance Indicator	Unit of Measure	Dis-aggregation		Year	Value	Target	Actual											
LOL 9	Number of calves born from improved genetics	#	Project sites	Heifer scheme (Cum)	2003	230								275	690	471	Cumulative	>=	68%
				Non Heifer scheme (Cum)							800	2400	2659	2800	6203	222%			
LOL 10	Mortality rate of calves	%	Project sites	Heifer scheme	2003	12						7.0	6.0	3.8	5.0	0	Cumulative	<=	200%
				Non Heifer scheme	2003	7					6.0	6.0	4.0	5.0	4.0	120%			

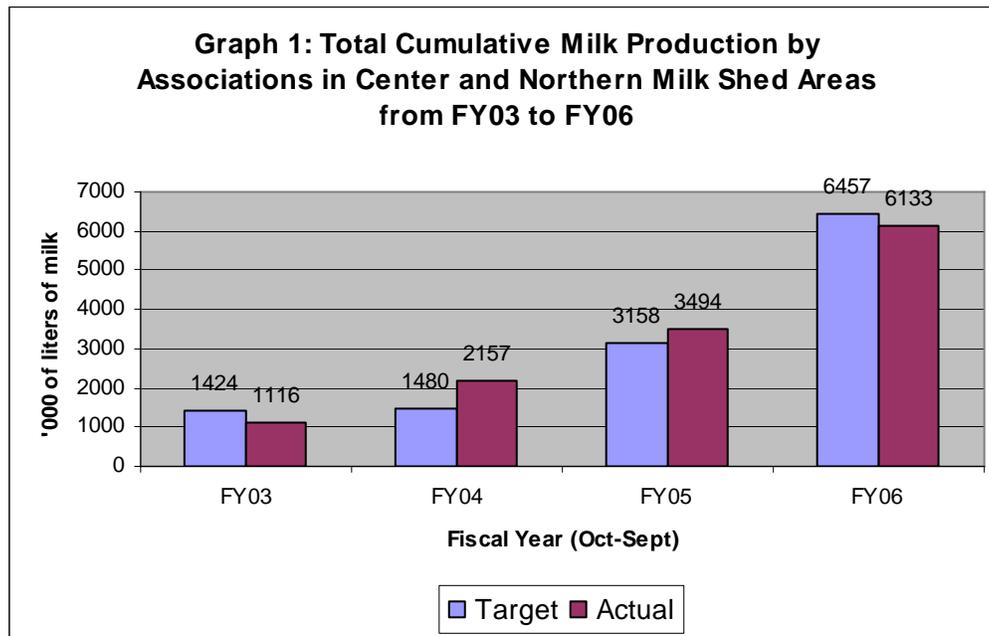
Acronyms-Cum: Cumulative; LOL: Land O' Lakes; SO: Strategic Objective; US\$: United States Dollar; #: Number; %: Percentage; /: per; Gaps imply data not available

1. Increase in Household Income of Households with Dairy Enterprises

This indicator was captured using annual farmer survey in 2002. The surveys were not conducted in the subsequent years due to budgetary constraints.

2. Total Volume/Value of Milk Produced by Members of Associations (MBGs)

Milk production estimates by members of the associations were made by extrapolating the cumulative volume of raw milk collected by processors and milk disposal information from Field Officers Reports in the same reference period. Based on these data sources, the resultant estimates of total milk production by associations for the two regions (central and northern) by end of December, 2006 was 6.133 million liters against a target of 6.457 million liters. This represented 95% achievement of the target by the end of the project period. Refer to Graph 1.



The graph shows that total volume of milk produced by members of associations consistently maintained an upward trend over the years. It has moved from 1.295 million liters in 2001 to 6.133 million liters by the end of the project, representing 78.92% increase over the baseline value. The actual performance for FY04 and FY05 was actually above the planned target. The actual performance by the end of the project in FY06 is attributed to two co-joint factors. Firstly, the actual procurement of dairy cows was 62% of the planned target (411 against 660) due to escalation of the procurement costs (Refer Table 2 for cow placement details). At project formulation, it was envisaged that dairy cows would be sourced from Zimbabwe landing in Malawi at US\$1000 and below. The unexpected unfolding political and economic crisis in Zimbabwe nullified this assumption. Instead, cows were procured from alternative suppliers in South Africa, Zambia and Tanzania, with landing cost in the region of US\$1,400. Secondly, the

planned target for total volume of milk produced by members of associations was not revised to reflect the shortfall in actual number of cows procured. Instead, the project intensified efforts in good nutrition, animal health and good dairy husbandry practices to increase the productivity of the available cows. Indeed, the project managed to assist farmers increase milk yields of their cows from an average of 8.0 liters/cow/day in 2001 to an average of 21.2 liters/cow/day by the end of the project, an increase of 62.26% over the baseline value. This is why the project managed to achieve 95% of the planned target despite a shortfall in the actual number of cows procured. The numbers are likely to improve with time.

Table 2: Placement of Heifer Scheme Cows as of October 2005*

MILK SHED AREA	NAME OF MBG	NUMBER PLACED
NORTH	KAPACHA	91
	LUKONKHOWE	14
	CHAKHOLA	40
	Sub-total	145
CENTRE	CHITSANZO	79
	NAMWILI	49
	LUMBADZI	42
	MAGOMERO	40
	DZAONEWEKHA	40
	MACHITE	16
	Sub-total	266
Grand total		411

*Last procurement for heifer scheme was done in May, 2005. Procurements thereafter were funded by Prosperity Worldwide.

3. Number of Viable Agribusinesses and Cooperatives (MBGs)

Viable MBGs and groups are MBGs/groups with 10+ actual members with dairy animals. The number of viable MBGs and groups was 57 by the end of the project as compared to 16 MBGs in 2001. This represents 71.93% increase from the baseline value. Focusing on end of project target alone, the actual performance represents 184% achievement of the planned target of 31 MBGs for FY06. The definition for viable MBGs notwithstanding, the number of groups with 10+ members was 80 by the end of the project. Some of these groups are now being supported by other partners such as Malawi Rural Development Fund (MARDEF), World Vision International and Plan International although these organizations face a serious challenge of providers of quality dairy technical assistance.

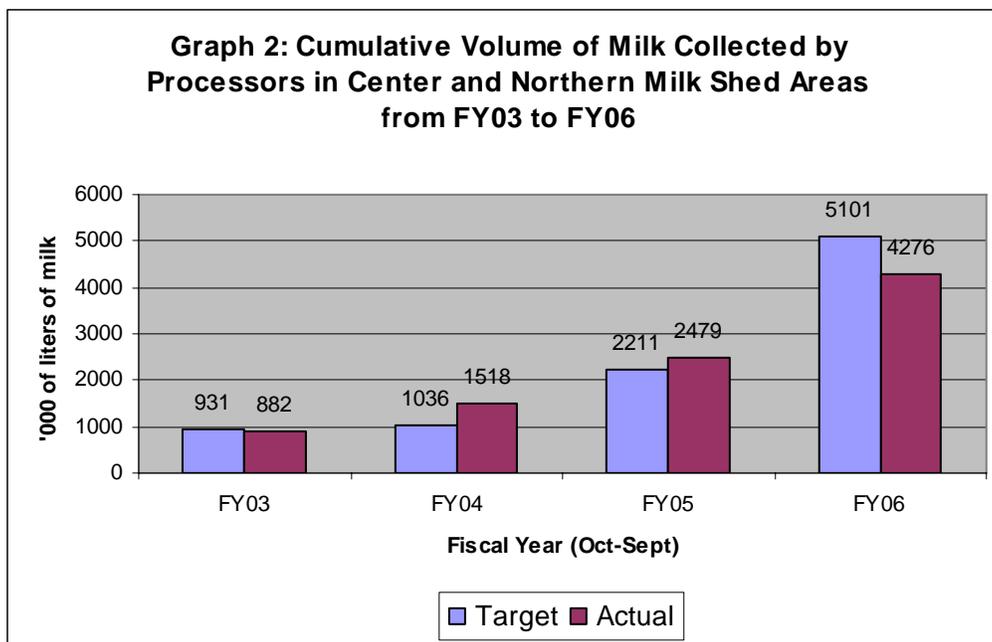
4. Membership in Agribusinesses and Cooperatives (MBGs) – Males and Females

Membership included actual and potential members. Actual members were those farmers who were members of an MBG or group with dairy animals, while potential members were those farmers who were members of a MBG or group but were waiting to acquire animals. The total membership was at 6,244 in the dairy groups in the two milk shed areas of North and Center as compared to 1,019 members in 2001, representing a growth in membership of 83.68% over the baseline value.

Of the 6,244 members, 1,971 were actual members (i.e. with cows) and 4,283 were potential members. Of the 1,971 actual farmers, 59% were male members and 41% were females. Out of 4,283 potential members, 52% were male members and 48% were female members (refer to Attachment D). The introduction of the heifer scheme program had helped increase the membership of females. In addition, intensified dairy extension, the distribution of pass-on heifers as well as good performance of female-managed dairy cows had also influenced more female farmers to maintain their membership. The increase in female membership might also reflect the fact that dairy was promoted as a backyard household activity (zero-grazing), hence it was considered by women as fitting their normal household chores. Farmers might also be aware that women had a higher chance of being selected than men as most of development approaches emphasize women empowerment.

5. Total Raw Milk Collected by Processors

The total milk collected by processors was reported in millions of liters per year, and it was calculated from the quarterly milk collection data from processors. The cumulative total milk collected by processors by the end of the project was 4.276 million liters against a target of 5.101 million liters, representing 84% achievement of the planned target for FY06. Refer to Graph 2.



The trend in total raw milk collected by processors was positive, over the years, moving from 1.023 million liters in 2001 to 4.276 million liters in 2006, an increase of 76.01% over the baseline value.

The impact of the project to processors has been an increase in amount of raw milk collected per day. Refer to Table 3 below for current processor raw milk collection per day as reflected by progress registered by Lilongwe Dairy.

Table 3: Individual Processor Raw Milk Collection

NAME OF PROCESSOR	Baseline milk processing volume (liters/day of raw milk)	Current milk processing volume (liters/day of raw milk)	Baseline processing capacity (liters/day of raw milk)	Current processing capacity (liters/day)
LILONGWE DAIRIES	1,000	4,000	9,000	40,000*

NB: *The UHT plant only

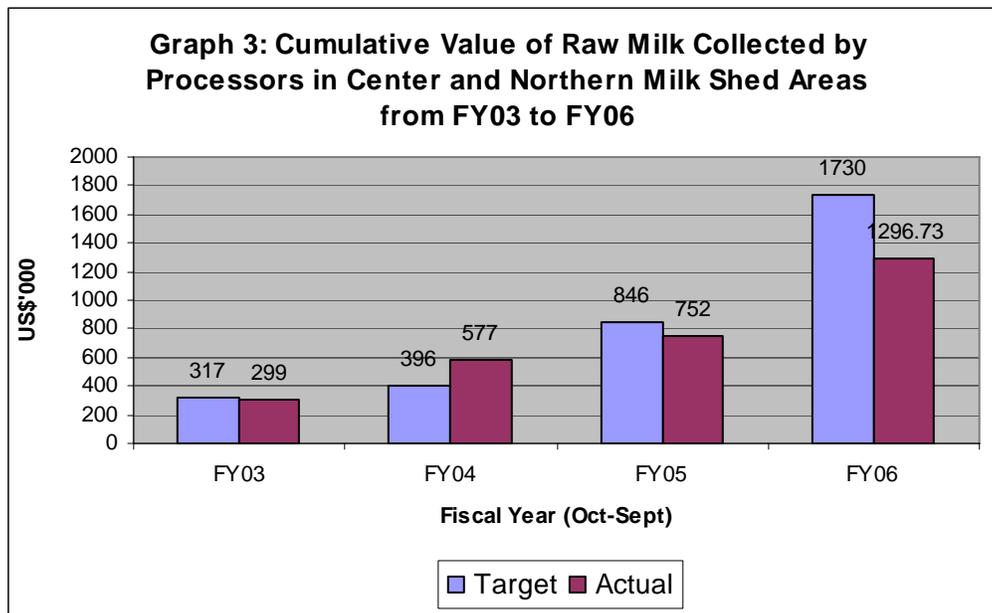
The Table shows that Lilongwe Dairy has increased its daily collection of raw milk in the central milk shed from an average of 1,000 liters to the current 4,000 liters. The assessment of progress in processing capacity utilisation over the project period is a bit tricky in the sense that the increase in raw milk collection has also been accompanied by new investment in the processing capacity – the addition of the state of the art UHT (long shelf life) machinery with a capacity of processing 5,000 liters per hour. In a standard 8 hour shift and assuming one shift per day, Lilongwe Dairy can handle 40,000 liters of raw milk. The other complication is that processors import powdered milk (Lilongwe

Dairy orders from Fonterra in New Zealand) and pack juices as a strategy to break even considering the low production of raw milk in Malawi.

The processors have transferred the benefits from increased raw milk processing volumes to farmers by increasing MBG prices. For instance, Lilongwe Dairies Limited has increased MBG price from MK13/liter in 2001 to MK40/liter by the end of the project, an increase of over 200% over the baseline value. Similarly, Northern Dairies Limited has increased MBG price from MK13/liter in 2001 to MK36/liter in 2006, an increase of about 177% over the baseline value. New Capital Dairies is usually a price-taker of Lilongwe Dairies Limited.

6. Value of Raw Milk Collected by Processors

The cumulative value of raw milk collected by processors was US\$1,296,730 by the end of the project, translating to **179.71 million Malawi Kwacha** at current middle exchange rate (1 US\$ = MK138.59) of commercial banks. This represented 75% achievement of the planned target of US\$1,730,000 for FY06 but an increase of 73.24% over the baseline value from 2001. Refer to Graph 3.



Due to a sharp increase in the amount of income accrued to the farmers in the project sites, a number of economic activities have taken place both at household level, MBG level and the surrounding community.

Informal interviews with the farmers indicated that most of the beneficiaries have constructed modern houses with iron sheets, have sent their children to private schools, are able to access better health services in private clinics, and have accumulated assets in form of bicycles, furniture and radios. In addition, there has been an increase in budgetary allocation to procurement of agricultural inputs like chemical fertilizers,

improved seed and seasonal labour. As a result, most farmers are also enjoying a state of household food and nutrition security (See photo gallery of the success stories).

At MBG level, increased volumes of milk sales have increased MBG revenues through milk levies. This has significantly increased the effectiveness and efficiency of service delivery by MBGs to the members. For instance,

- Chitsanzo MBG procured an additional 2,250 liter milk tank through a loan of MK2.5 million from Opportunity International Bank of Malawi. The MBG has also constructed a hall. (See photo).
- Magomero MBG procured a new engine for the cooling center at MK400,000 through a loan from Lilongwe Dairies Limited.
- Dzaonewekha MBG constructed a new cooling facility house at a cost of MK320,000.
- Namwili MBG procured a new engine at MK633,088 through a loan from Opportunity International Bank of Malawi.
- Chakhola MBG procured a new cooling at MK1.8 million through a loan from Opportunity International Bank of Malawi.
- CREMPA received a grant of MK10.8 million (US\$80,000) from EU/GoM Income Generating Program, part of which was used to procure dairy cows in addition to cooling tank facilities

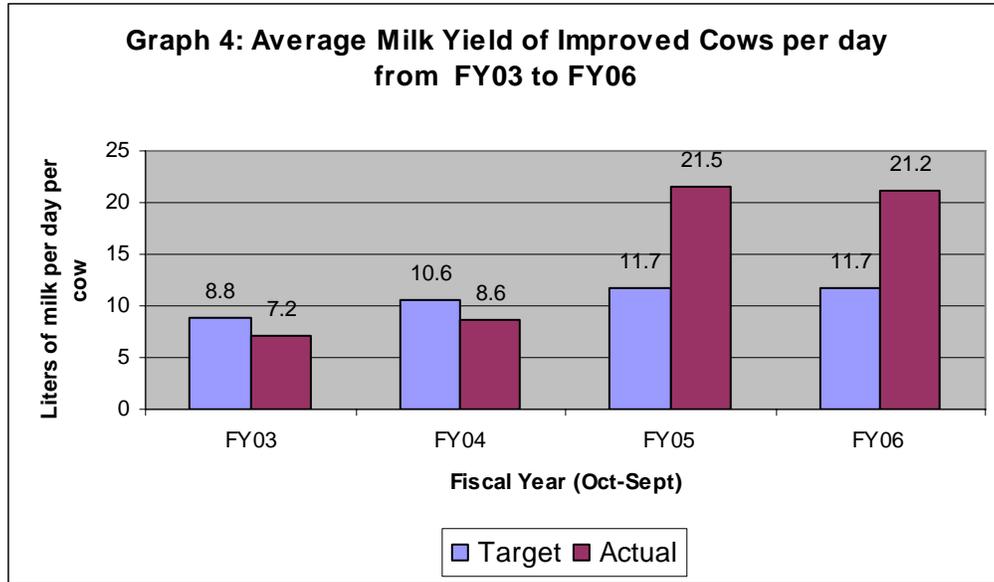
The impact at community level was qualitatively assessed through key informant interviews with shop proprietors. The indicators of increased economic activity were enumerated as increase in volumes of business transactions for chemical fertilizer, improved maize seed, groceries, private school enrollment, among others.

7. Average Milk Yield for Local Cows Owned by Members of MBGs

The average milk yield of local cows was 3.4 liters per cow per day against a target of 3.7 liters per cow per day. The project only provided AI services to farmers with local cows through World Wide Sires while technical assistance was provided in heifer scheme MBGs only. It was anticipated that interaction between farmers keeping local cows and heifer scheme farmers (keeping improved dairy cows) would have a trickle-down effect of good animal husbandry practices in heifer scheme areas to non-heifer scheme areas.

8. Average Milk Yield for Improved Cows Owned by Members of MBGs

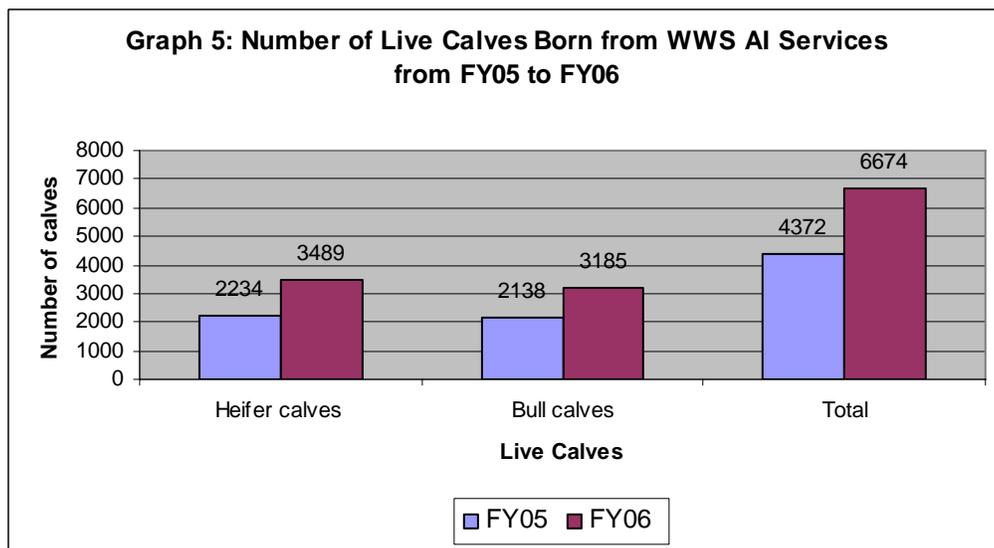
The target for average milk yield from improved cows was 11.7 liters per cow per day by the end of the project. Graph 4 shows that improved animals attained an average yield of 21.2 liters per cow per day by the end of the project. This is a direct result of increase in uptake of the high productivity dairy mash due to the efficient functioning and collaboration between upstream service providers like dairy mash suppliers, transporters and the MBGs.



Since the introduction of the high productivity dairy mash formulated by Dr. Roy Chapin, Animal Nutritionist, consulted on the program between September and November, 2004 as a Farmer to Farmer Volunteer, private sector companies like Protofeeds and Asumi Millers are now manufacturing dairy mash using the formula developed by Dr. Chapin. The program has assisted the MBGs to directly link with the feed suppliers and transact business independently from Land O’Lakes.

9. Number of Calves Born from Improved Genetics through A.I.

The total cumulative number of live calves born through WWS AI services was at 6,674 from 2001 to December 2006 (3,489 female offspring and 3,185 male offspring) as shown in Graph 5.



A total of 471 offspring (238 female offspring and 233 male offspring) were from the heifer scheme MBGs of which 404 are alive. From the heifer scheme offspring, 37 female offspring were distributed as pass-on heifers and 98 bull calves were sold as breeding bulls. Table 3 below presents the details on the number of calves in the heifer scheme MBG at close of the project.

Table 5: Calves in heifer scheme MBGs as of December 2006

NAME OF MBG	Heifer calves alive	Heifer calves received as pass-on	Bull calves alive	Bull calves sold
KAPACHA	45	1	35	23
LUKONKHOWE	14	0	6	3
CHAKHOLA	24	0	16	10
CHITSANZO	44	12	26	24
NAMWILI	22	4	20	12
LUMBADZI	33	0	14	20
MAGOMERO	33	20	19	6
DZAONEWEKHA	18	0	24	0
MACHITE	5	0	6	0
TOTAL	238	37	166	98

The figures in Table 5 demonstrate the long-term multiplier and scaling-up effects of the heifer scheme program as already evidenced by the pass-on heifers and availability of the high grade bulls. The MBGs have also institutionalized AI services within the revolving funds to help members continue accessing the improved AI services.

10. Mortality of Calves Born to AI (Crossbred Cows)

The calf mortality was 4 percent for calves born from WWS cross-bred AI services at close of the project. This compared favorably with the rate of mortality in 2003 which was at 7%. Improved dairy husbandry practices in calf rearing, animal health, animal housing and animal nutrition contributed to the reduction in calf mortality. In addition, farmers greatly valued improved dairy cows; hence they were committed to the survivability of dairy calves.

11. Mortality of Calves Born to Imported Animals

Calf mortality was zero for the Heifer Scheme Program at close of the project in December, 2006 as compared to 12% in 2003 when the heifer scheme program was introduced. This achievement resulted from the improved health and nutrition services provided to the imported animals. The program has stimulated the private sector to direct supply veterinary pharmaceuticals to the MBGs (Refer Table 6 for a list of active private traders in the target milk sheds of north and center). Further to this, there was stringent

project staff surveillance of farmers in the heifer scheme to make sure that planned targets were met to prove viability of the scheme.

Table 6: Veterinary Pharmaceutical suppliers

MILK SHED	NAME OF SUPPLIER
NORTH	ALFA MEDICS
CENTRE	ALFA MEDICS
	SSLPP
	VAAM

The development of the heifer loan scheme drug revolving funds has been a key driver of increase in sales of veterinary pharmaceuticals as farmers get drugs on loan and repay through deductions from milk sales.

5. PROJECT STRATEGY

The overarching project strategy was an integrated dairy value-chain approach, with interventions directed to all key intervention points in the value chain: producers, processors, consumers and input suppliers and service providers. In the last phase of the project a new product was launched, the heifer loan scheme. This aimed to demonstrate further the viability of the dairy business and generate market information to enable entrepreneurs to develop dairy business plans and invest in the dairy sector. It was also meant to excite financial service providers commit financial lending to the dairy sector. The strategy paid dividends as a lot of big investors have started investing in the dairy sector. Two cases in point are: Lilongwe Dairy (they have recently invested in a new UHT plant to the tune of US\$2.8 million) and CP Feeds/CAPS Limited, who have embarked on a dairy project of raising 2,000 dairy cows (they have already bought 200 cows from Zambia and placed them at their farm in Kasungu District).

6. LESSONS LEARNED AND CHALLENGES

The key lessons learned in the Malawi Dairy Business Development Programme were as follows:

- ✓ The commercially based model of the heifer loan scheme is a key driver of dairy project implementation to generate results to excite both the target farmers as well as input suppliers and service providers as it brings out results in a shorter period (within one year) compared to the normal crossbreeding programs (five to seven years).
- ✓ It was striking to note that new farmers (those who have never kept cows before) tend to adopt dairy technologies much faster than old farmers (those who have kept dairy cows before). This defeats the common adage of “experience is a good teacher”. Instead it reinforces the notion that “old habits die hard”.
- ✓ For a milk bulking group to break even and generate results, an MBG in the central milk shed needs at least 80 cows in milk. If this is not realized, the MBG struggles to post results and input suppliers and service providers have problems recovering their payments timely due to the lack of the critical mass.
- ✓ The large number of farmers with cows in an MBG is a necessary but not sufficient condition for success of an MBG. It must be accompanied by strong leadership and professional management of an MBG as well as functional milk cooling facilities that are accessible by a processor all year round.
- ✓ Although a lot of other NGOs in Malawi (such as World Vision, Plan, etc.) are interested to add dairy business to their project portfolios, there is a limited stock of people with dairy business development skills, especially dairy extension and animal health workers. Land O’Lakes had the largest collection of this cadre, (about 14 field officers).

- ✓ Most farmers have been pressing for an “early release” of pass-on heifers, i.e. before the heifers are pregnant as stipulated by the model. This is due to scarcity of dairy cattle as allowing this to happen would collapse the viability of the commercial model.
- ✓ Although the project had sound implementation in its first two funding cycles (March 1999 to March 2001 and April 2001 to June 2003), the last funding cycle went through challenging budgetary situations. Initially, there was a lot of uncertainty regarding the availability of the final obligation. However, USAID Malawi successfully resolved this. Thereafter, there was uncertainty regarding the timing of the new funding for a GDA activity. This created further uncertainty and further staff cutbacks to the bare minimal to keep the program going. In all these challenges, USAID Malawi and Land O’Lakes senior project managers were very instrumental in finding solutions to otherwise impossible situations.

7. SUCCESS STORIES

UNLEASHING THE MIRACLES OF A DAIRY COW



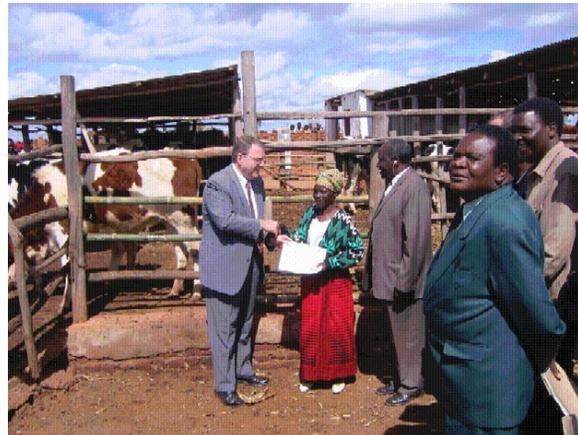
Dwelling house of Samson MacDonald's family in Chitsanzo MBG before benefiting from Land O'Lakes heifer scheme cow.



Dwelling house of Samson MacDonald's family in Chitsanzo MBG after benefiting from Land O'Lakes heifer scheme cow.



US Ambassador to Malawi, Alan Eastham viewing a newly procured cooling tank at Chakhola MBG with a loan from Opportunity International Bank of Malawi.



US Ambassador to Malawi, Alan Eastham presiding over hand-over ceremony of 20 pass-on pregnant heifers in Magomero MBG. June, 2006.

ESTERY LAITON TRAMPLES POVERTY WITH A COW

<p>Challenge</p> <p>Estery Laiton of Chimbiya area, central Malawi, was abandoned by her husband four years ago who married another woman. She was left with the responsibility of supporting her two children on a monthly income of MK500-MK800 (US\$4.35-US\$6.95) generated from selling local beer and beans. She also grew maize, but this staple food usually lasted only four months after harvest, and she could not afford chemical fertilizer and improved seed to increase production. Her children did not attend school because she lacked money for school fees and uniforms. Though she lived in an area with a climate favorable for dairy farming, she did not have the financial means to buy a cow and reap the multiple benefits such as a steady income the sale of milk could provide her and her family.</p>	<p>Challenge</p> <ul style="list-style-type: none"> ✓ Laiton family had a very low income (less than a dollar per day) and food-insecure ✓ Monthly income was MK500-MK800 (US\$4.35-US\$6.95)
<p>Initiatives</p> <p>The Land O'Lakes Inc/Malawi Dairy Business Development Programme's heifer loan scheme lends pregnant heifers to farmers who meet eligibility criteria such as active participation in group activities, no previous cattle ownership, access to pasture, proximity to a milk cooling center, and a household ranking in the intermediate to poor wealth range. Estery Laiton met all these qualifications and was accepted into the loan scheme. In preparation for the new dairy business, she built an improved khola (animal housing) for the cow at a cost of MK25,000 (US\$217.39), attended animal husbandry training, paid a veterinary drug revolving fund contribution of MK2000 (US\$17.39), and became a certified member of a milk bulking group. In March 2004, after signing the heifer loan agreement to repay the cost of the cow through a pregnant female offspring and to care properly for both the parent cow and the offspring, she took possession of an imported high grade pregnant cow from South Africa valued at a cost of MK161,000 (US\$1,400), inclusive of transportation and quarantine costs. She also committed herself to paying MK600 (US\$5.21) per month for 21 months as a contribution towards dead cow replacement fund (Cow Insurance fund), once the parent cow lactated, deducted from her monthly milk checks by the milk bulking group. Land O'Lakes provides ongoing technical assistance and advice through the project's dairy extension services so that Estery knows how to properly manage her flourishing dairy farm. Her cow produced a heifer calf, and in keeping with the requirements of the loan scheme, she must pass the heifer offspring on to another beneficiary once it is pregnant.</p>	<p>Initiatives</p> <ul style="list-style-type: none"> ✓ Estery Laiton met heifer loan requirements, for example, being a member of milk bulking group, attending dairy husbandry training, establishing pasture ✓ Estery built a khola at a cost of MK25,000 (US\$217.39) ✓ Estery contributed MK2000 (US\$17.39) towards drug revolving fund ✓ Estery signed a heifer loan agreement and received a high-grade cow imported by Land O'Lakes from South Africa at a landed cost at her place of MK161,000 US\$1,400) ✓ Estery will pay the cost of the cow through passing-on a pregnant heifer to another farmer ✓ Estery pays MK600 (US\$5.21) per month and will pay for 21 months as a contribution towards cow insurance fund through monthly milk check deductions
	
<p><i>Estery Laiton and her cow from the Land O'Lakes heifer loan scheme.</i></p>	<p><i>Estery Laiton and children</i></p>

Results

In order to assess Estery’s situation after a year participating in the program, an economic and financial analysis was performed with the following results. For the period March 2004–March 2005, Estery Laiton’s cow has been producing an average of 15liters of milk per day. She has been delivering an average of 13.15liters/day to the milk bulking group and the remainder was used for home consumption. Her cost of producing a liter of milk was US\$0.10 (MK11.50). She made US\$0.13 (MK14.95) for every liter of milk produced and delivered to milk bulking group. This resulted in a daily net profit of US\$1.71 (MK196.65), compared to the daily national minimum legal wage rate per person of MK73.60 (US\$0.64) and an international income poverty line of less than one dollar a day. Refer to Figure 1 below.

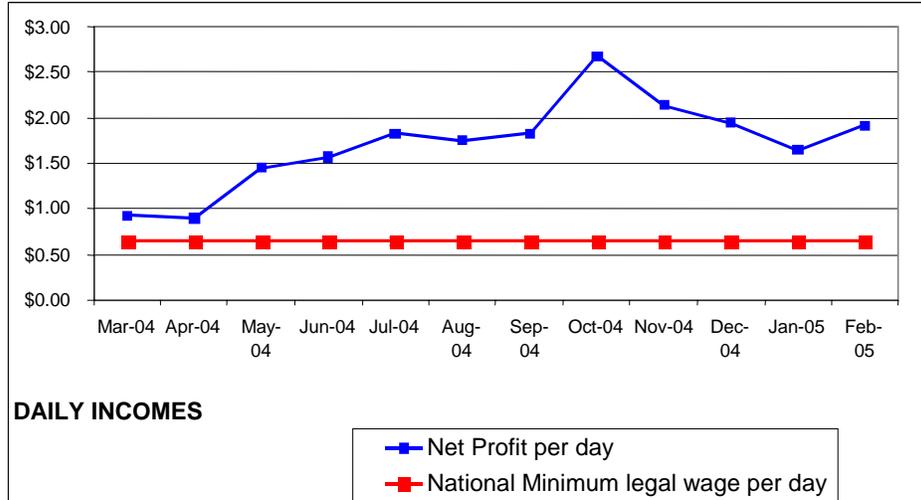


Figure 1: Estery’s Daily Net Profit Compared to National Minimum Legal Wage, Mar 04-Feb05

Her monthly household income improved tremendously, from an average of US\$5.65 (MK649.75) per month before the Land O’Lakes intervention to US\$51.3 (MK5899.50) per month, a nearly tenfold increase. For every dollar she spent, she made US\$1.40 (MK161.00) (net profit to total costs). Refer to Figure 2 for a month-by-month record of her net rate of return.

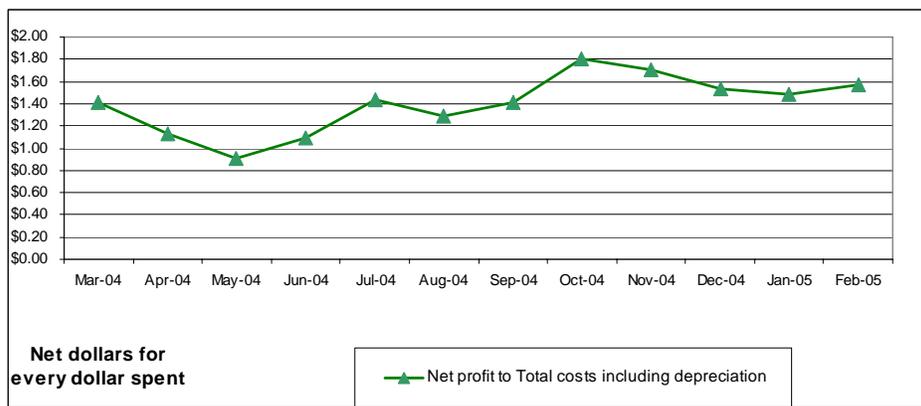


Figure 2: Estery’s Month by Month Net rate of Returns for every dollar invested, Mar04-Feb05

Using a savings interest of 10%, the net cash profit¹ from the sale of milk (allowing for depreciation) is US\$595 (MK68,425) and the herd value² is US\$1,263 (MK145,245)-the

¹ Cash profit is derived from revenue from sale of milk only

² The herd value is calculated by multiplying the number of animals by the market price

Results

- ✓ Estery’s cow produced an average of 15liters of milk per day.
- ✓ Estery’s household consumed an average of 1.85liters of milk per day.
- ✓ Estery delivered an average of 13.15liters/day to the milk bulking group.
- ✓ Estery spent US\$0.10 (MK11.50) on the cow to produce one liter of milk.
- ✓ Estery made US\$0.13 (MK14.95) for every liter of milk produced and delivered to milk bulking group.
- ✓ Estery made daily net profit of US\$1.71 (MK196.65) compared to daily national minimum legal wage of US\$0.64 (MK73.60) and an international income poverty line of less than one dollar a day.
- ✓ Monthly income increased tenfold from an average of US\$5.65 (MK649.75) to US\$51.3 (MK5899.50).
- ✓ Estery made an average of US\$1.40 (MK161.00) for every dollar spent.
- ✓ At 10% savings rate, the number of dollars generated for every dollar invested by the donor is

<p>value of the cow on the market at a one-year payoff. At this interest rate, the net present value (NPV)³ considering Estery's personal investment is a positive US\$403 (MK46,345). In this scenario, the number of dollars generated for every dollar invested by the donor is US\$1.33 if the value of the herd is included.</p> <p>Alternatively, using a loan interest of 25%, the net cash profit from the sale of the milk (allowing for depreciation) is US\$558 (MK64,170) and the herd value is US\$1,099 (MK126,385). The net present value (NPV) considering Estery's personal investment is a positive US\$364 (MK41,860). In this scenario, the number of dollars generated for every dollar invested by the donor is US\$1.19 if the value of the herd is included.</p> <p>The Internal Rate of Return (IRR)⁴ when considering Estery Laiton's investment is 23%.</p> <p>(NB: Please bear in mind that the figures in this case study reflect analysis of only one year. Four or more years of analysis are necessary to better estimate the returns of this dairy business).</p>	<p>US\$1.33 if the value of the herd is included.</p> <p>✓ At 25% loan interest, the number of dollars generated for every dollar invested by the donor is US\$1.19 if the value of the herd is included.</p> <p>✓ IRR: From Estery's (beneficiary) perspective is 23%.</p>
<p>The Difference Brought by Dairy</p> <p>1. Estery has improved household monthly income</p> <ul style="list-style-type: none"> • Over 65% of the Malawi population lives below the international income poverty line of less than one dollar a day. However, Estery's dairy business has lifted her way above the poverty line. Her average net income was MK5899.50/month (about US\$51.3/month, translating to over US\$1.71/day). <p>2. Estery has improved household food and nutrition security</p> <ul style="list-style-type: none"> • The unique advantage of dairy business is that it enables households to tackle household food security from both the supply (production) and demand (market access) side. In the case of Estery in the 2004/05 agriculture season, her dairy business enabled her to: <ul style="list-style-type: none"> ➢ Apply three oxcarts full of cow manure to the maize garden ➢ Buy two 50-kg bags of UREA at MK5600 and one 50-kg bag of 23:21:0 + 4S at MK3500 ➢ Buy 10 kg maize seed at MK1800 • Consumed an average of 1.85 liters of milk per day <p>3. Estery is able to meet basic household needs</p> <ul style="list-style-type: none"> • Affords a balanced diet meal-buys meat, fish, cooking oil, sugar, salt, vegetables • Buys body care products • Buys clothes and shoes <p>4. Estery is able to support education of her children</p> <ul style="list-style-type: none"> • Pays school fees (MK3000/term) for her son at a private secondary school. <p>5. Estery is able to support other family members</p> <ul style="list-style-type: none"> • Gives her mother MK500 every month <p>6. Estery is able to acquire assets</p> <ul style="list-style-type: none"> • Bought a bicycle at MK2,700 • Bought 16 iron sheets at MK7000 	

³ The net present value is calculated by projecting a stream of benefits and costs converted into equivalent values at year 0 discounting projected benefits and costs using saving and loan interest rates, which are 10% and 25%, respectively.

⁴ The internal rate of return is the discount rate that makes the NPV of the intervention equal to zero

6.3 BEFORE-AND-AFTER STORY

THE IMPACT OF HEIFER SCHEME COWS IN CHITSANZO MILK BULKING GROUP

1. Historical Background

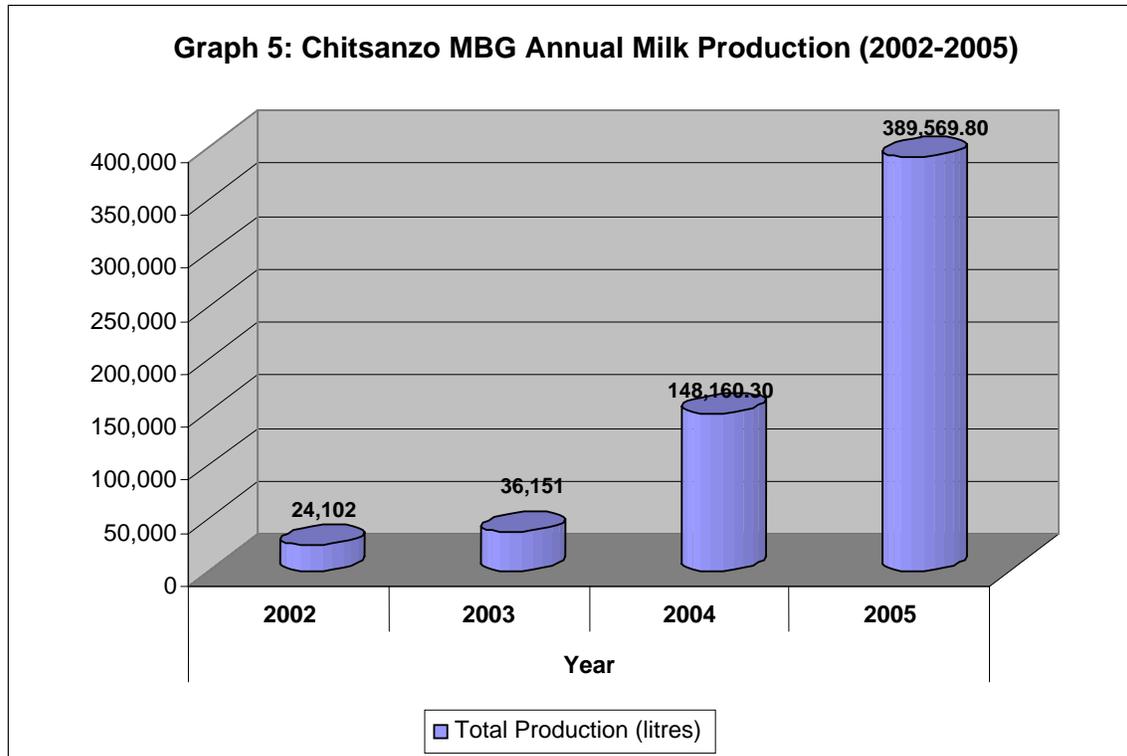
- The MBG started in 1976 with 10 farmers and 14 cows with support from the Government. Average milk production per cow per day was 4.5 litres.
- Monthly milk collection was less than 2,000 litres.
- In 1998, six women bought 6 cows with loans from National Association of Business Women and Government.
- In 1998, there were 24 farmers with 31 cows.

2. Land O'Lakes Entry Point and Interventions

- Land O'Lakes started providing technical assistance in March 1999 with support from USAID Malawi.
- Its sub-contractor, World Wide Sires, has been providing artificial insemination and improved genetics services.
- In March, 2004, Land O'Lakes distributed 45 improved dairy cows imported from South Africa and Zambia.
- Land O'Lakes introduced revolving funds (dead cow replacement fund, supplemental feeds, veterinary pharmaceuticals) and heifer loan fund.
- In January, 2005 Land O'Lakes distributed additional 34 improved dairy cows.

3. Current Situation

- Membership increased to 181 (98 females)
- Total number with dairy cows increased to 103 (56 females).
- Total number of calves born from improved genetics was 85 (49 heifer calves and 36 bull calves).
- The average milk production per cow per day has increased to an average of 17.5 litres per day.
- The milk is sold to Lilongwe Dairy Limited at a gross price of MK40 per litre (the highest in Malawi).
- On average, the MBG collection has increased to 19,181 litres of milk per month. Refer graph 5 for trends in milk production.



4. Key Results, Impacts and Achievements

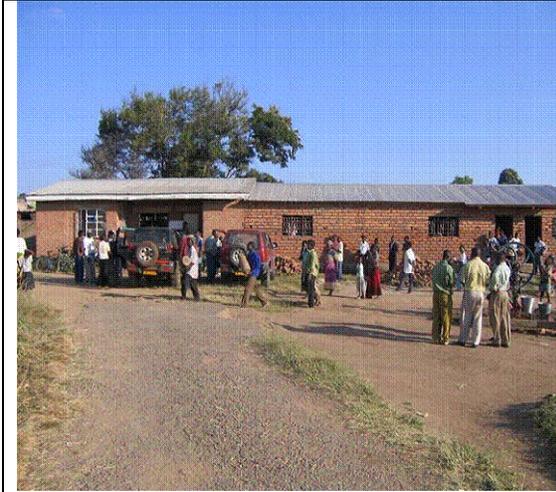
4.1 Household level

- Increase in average milk yield per cow per day from 4.5 litres per day to 17.5 litres per day.
- Household average monthly income of MK14, 600.
- Members standards of living improving every day:
 - People improving their homes from mud-grass-thatched houses to burnt-brick-iron roofed houses
 - Improved household food security
 - Improved nutrition status –affording a balanced diet and consuming milk
- Farmers paying school fees for children including in private schools.
- Farmers accumulating assets e.g. bicycles, oxcarts, radios, furniture.
- Use of manure which has improved crop production.

4.2 MBG level

- Growth in membership from 10 to the current 181.
- About 73 farmers bought fertiliser worth MK414,470 in 2005/06 season.
- On average, the MBG gross revenue has increased to MK921,600 (US\$6,500) per month.

- MBG has constructed a hall (so far spent MK600,000) using its internal finance mobilised from its members (*see picture 1*)
- MBG obtained a MK2,488,270 loan from Opportunity International Bank of Malawi to procure a bigger milk cooling tank of 2,250 litre capacity. (*see picture 2*)



Chitsanzo MBG multipurpose hall annexed to the MBG cooling house.



Land O'Lakes International Development Vice President, Tom Verdoorn viewing newly procured Chitsanzo MBG milk tanks. May 2006

Attachment A: FINANCIAL REPORT

Attachment B:**COOPERATION WITH PARTNERS AND OTHER IMPLEMENTERS**

CNFA (Citizens' Network for Foreign Affairs), supported by Rockefeller Foundation, has recently opened its project in Malawi. It focuses on the credit guarantee scheme to support rural traders of agricultural inputs. They have agreed to include producer associations or cooperatives (MBGs) to participate in the program for procurement and distribution of dairy inputs such as drugs and feed ingredients.

Chowwano for Development, a local NGO in Lilongwe milk shed, who, among other things, has mobilized their membership into dairy business.

Bothar (Irish livestock aid agency) is working with Small-Scale Livestock Promotion Program, which in turn works with Land O'Lakes on implementation of heifer schemes in Lilongwe and Mzuzu milk shed areas. Bothar donated 66 pregnant heifers from Ireland to Malawi in November 2001. They plan to donate another 70 pregnant heifers in February 2002.

SARRNET/IITA: Is working with Land O'Lakes to pilot cassava-based dairy feed supplementation.

World Wide Sires is working with Land O'Lakes to train private artificial insemination (AI) technicians and develop AI business units in dairy co-operatives under the project.

Africare is working with Land O'Lakes to develop a youth-based goat project in their catchment area of Ntcheu.

Plan International is working with Land O'Lakes to develop dairy interventions in their program areas of Lilongwe and Kasungu. Their interests are in the school milk program, dairy farming and processing for women groups.

Concern Universal is working with Land O'Lakes to develop a goat project in their catchment area of Dedza.

Chitedze Research Station is working with Land O'Lakes in the testing and promotion of technologies.

CEVAs/ Kenya: This French drug company is working with Land O'Lakes on the possibility of supplying drugs to Malawi cost-effectively.

ShareCare Veterinary Limited is working with Land O'Lakes in the supply of feed ingredients (especially mineral salts such as monocalcium phosphate), supplying of synchronizing hormone for AI services, frozen semen distribution point, drugs, etc.

Animal Breeders Company/Zimbabwe is working with Land O'Lakes to supply grade Holstein-Friesian heifers to farmers in Malawi.

Ministry of Agriculture and Food Security is working with Land O'Lakes to supply grade Holstein-Friesian heifers to farmers in Malawi.

Association for Rural Community Development is exploring working with Land O'Lakes on the goat project in their catchment area.

Ministry of Gender, Youth and Community Services has interests in the school milk program and is exploring possibilities of extending the pilot milk program to rural areas. Land O'Lakes is supporting women dairy groups under their Women In Development Project with technical advisory services.

Church Groups (Kasina Parish Orphans Project at Linthipe, Guillime Parish Dairy Project in Mchinji, Mtendere Marist Brothers, Gowa Parish in Ntheu, Falls Baptist Church), Salima Rural Development Project: Land O'Lakes is providing technical support and they provide financial and management support

Malawi Broadcasting Corporation links radio listening clubs and other rural groups to Land O'Lakes services through their Commonwealth Award winning Broadcasting for Development Program.

Malawi Investment Promotion Agency collaborates with Land O'Lakes on dairy investment analysis and information dissemination as well as dialoguing with Government on policy issues

Youth Groups assist with promotional events and Land O'Lakes has initiated strategic planning training for the Mzuzu youth groups. They will participate in goat improvement program through programs to be implemented by Africare in Ntcheu and Concern Universal (Lilongwe milk shed area) as well as programs of Scripture Union of Malawi (Nkhatabay in Mzuzu milk shed area).

Center for Development of Enterprise (CDE), Brussels collaborates with Land O'Lakes on dairy investment analysis and technical support for dairy investors

Donor Community (Danida, British DfID - Department for International Development, formerly ODA) provides assistance to some dairy groups such as producer associations.

British Volunteer Services Organization collaborate with Land O'Lakes on technical advisory services to dairy farmers and needs assessment for and recruitment of volunteers under the VSO program.

Veterinary Assistants Association of Malawi collaborates with Land O'Lakes on development of associations and improved delivery of animal health services.

Department of Animal Health and Industry collaborates with Land O'Lakes on all aspects of dairy development.

Scripture Union: Land O'Lakes/Malawi has agreed on a request to facilitate the goat production element in Scripture Union's set of income generating activities for their target group in Nkhatabay, northern Malawi, through the provision of technical and advisory services.

GTZ/BAHP/FIAH collaborates with Land O'Lakes/Malawi developing cooperative/association member services and institutional strengthening.

In June 2000, Land O'Lakes assisted GTZ/BAHP, evolving into the Foundation for the Improvement and Animal Health Services (FIAH) with institutional scanning or diagnosis. The exercise took about 4 hours and the output was a revised collaboration matrix. A total of 8 areas of collaboration were identified for follow-up.

USAID/MAFE: This is an agro-forestry project known as Malawi Agro-forestry Extension project, supported by USAID/Malawi. Collaborative discussions between Land O'Lakes/Malawi, USAID/Malawi and MAFE have focused on the possibility of feeding trials of the local tree species with high nutritive value. MAFE has so far collected about one ton of seed of one of such tree species. Land O'Lakes/Malawi plans to run the feeding trials with its volunteer farmers in the focus areas.

FAO-UNDP/Farm Animal Genetic Resources Project. Land O'Lakes was appointed member of National Advisory Committee for the Project's National Focal Point in Malawi in March 2001.

Molecular Biology and Ecology Research Unit (MERU). A working relationship was recently established between MERU, a local scientific NGO based in Zomba, and Land O'Lakes/Malawi. MERU will assist Land O'Lakes with establishing a dairy genetic base by developing DNA profiles of high-performing dairy cows. This work will particularly assist commercial breeders of dairy cattle, a strategy Malawi is taking in view of the critical shortage of dairy cattle.

Parliamentary Committee on Budget and Finance. Provides consultative forums for civil society organizations on priority sectors (agriculture, education and health) to discuss key concerns to be channeled to and addressed by the Government of Malawi.

National Democratic Institute. Facilitates advocacy and lobbying of civil society organizations by linking them with parliamentary committees and assists the development of the civil society in agriculture network (CISANET).

Vet Aid Maputo is exploring possibilities of partnership with Land O'Lakes especially on private animal health care services and heifer loan schemes.

Story Workshop is a local media-based NGO that facilitates policy changes supporting sustainable agriculture and rural development. Recently organized a radio debate on constraints of livestock and dairy business and a stakeholder radio recording of the surtax issue on the dairy industry.

JICA is working with Land O'Lakes/World Wide Sires – Malawi and the Department of Animal Health and Industry in the Ministry of Agriculture and Irrigation to train Government and farmer AI technicians.

Department of Energy Affairs is working with Land O'Lakes and Dairy Associations in implementing the UNDP/Danida-funded Biogas Demonstration Project.

Snowmans (Uganda) is working with Land O'Lakes/Malawi through the Regional Processing Specialist based in Kampala, Uganda, to facilitate dairy equipment procurement as efficiently and cost-effectively as possible.

Malawi Rural Development Fund (MARDEF) has put dairy as one of the priority credit facilities. Dairy groups have started benefiting from this credit facility.

World Vision International has embarked on dairy as key intervention in its area development programs of Mwanza, Lilongwe and Ntchisi.

Opportunity International Bank of Malawi is giving loans to dairy groups and individuals. Chakhola MBG got a loan of MK1.8 million to purchase a cooling tank.

Total Land Care is promoting irrigation farming and dairy farmers in heifer scheme MBGs are buying green maize crop for green chop from their fellow farmers.

ASUMI enterprise is experimenting with standard dairy mash and the feed is on trial basis in Lumbadzi and Magomero MBGs

Attachment C: MEMBERSHIP INFORMATION FOR DECEMBER 2006

MBG/Group	Actual and Potential		Actual			Potential		All	
	All	Male	Female	Male	Female	Male	Female	Actual	Potential
Action Aid Groups	52	30	22	30	22	0	0	52	0
Bembere DG	27	22	5	8	0	14	5	8	19
Bula	30	11	19	8	6	3	13	14	16
Chadongo	105	58	47	9	5	49	42	14	91
Chakhola	137	42	95	20	35	22	60	55	82
Chatoloma	75	30	45	26	21	15	23	47	38
Chifundo	14	2	12	2	12	0	0	14	0
Chigwirizano	0	0	0	0	0	0	0	0	0
Chikusa	10	8	2	8	2	0	0	10	0
Chikwina	52	33	19	26	12	7	7	38	14
Chilima	52	24	28	15	5	9	23	20	32
Chiluwa	16	10	6	10	6	0	0	16	0
Chimwemwe	140	60	80	0	0	60	80	0	140
Chipoka	167	94	73	16	6	78	67	22	145
Chitsanzo	182	81	101	48	56	33	45	104	78
Chulu	108	63	45	23	13	40	32	36	72
Dedza-M	0	0	0	0	0	0	0	0	0
Doroba	90	47	43	32	23	15	20	55	35
Dwambazi	17	13	4	7	1	6	3	8	9
Dzaonewekha	131	69	62	42	30	27	32	72	59
Ekwendeni	91	47	44	7	3	40	41	10	81
Elamuleni	50	41	9	4	1	37	8	5	45
Ekwaiweni	23	16	7	0	0	16	7	0	23
Enyezini	35	15	20	2	3	13	17	5	30
Fumbwe	80	45	35	9	3	36	32	12	68
Gondoli	170	80	90	19	3	61	87	22	148
Gunguluwe	31	23	8	6	5	17	3	11	20
Kabwazi	139	59	80	0	0	59	80	0	139
Kachakokolo	10	8	2	8	2	0	0	10	0
Kamaliwa	80	59	21	13	9	46	12	22	58
Kamilaza	46	32	14	7	5	25	9	12	34
Kafinya	85	42	43	0	0	42	43	0	85
Kapacha	157	59	98	29	52	30	46	81	76
Kasangazi	41	10	31	0	0	10	31	0	41
Katchembere-M	15	0	15	0	15	0	0	15	0
Kavuzi	96	52	44	40	29	12	15	69	27
Kawindula	168	84	84	70	43	14	41	113	55
Lamya	61	32	29	7	4	25	25	11	50
Liganga	140	61	79	21	5	40	74	26	114
Likuni	62	17	45	12	25	5	20	37	25
Lisungu	20	1	19	1	19	0	0	20	0
LL Bridge	67	48	19	32	2	16	17	34	33

MBG/Group	Actual and Potential		Actual			Potential		All	
	All	Male	Female	Male	Female	Male	Female	Actual	Potential
Lukonkhowe	78	42	36	14	11	28	25	25	53
Lumbadzi	219	137	82	50	30	87	52	80	139
Lumowo	37	21	16	0	0	21	16	0	37
Lusangazi	98	48	50	39	20	9	30	59	39
Machite	136	90	46	67	13	23	33	80	56
Magomero	123	70	53	30	23	40	30	53	70
Majiga	92	59	33	14	3	45	30	17	75
Malingunde	375	288	87	0	0	288	87	0	375
Masasa	46	18	28	0	0	18	28	0	46
Mlombwa	84	56	28	0	0	56	28	0	84
Milala	55	17	38	6	15	11	23	21	34
Mpalo	137	93	44	64	21	29	23	85	52
Mpamba	37	22	15	8	5	14	10	13	24
Mpasa	75	30	45	4	2	26	43	6	69
Mpasantjoka	78	37	41	12	5	25	36	17	61
Mphompha	45	35	10	1	2	34	8	3	42
Mponela	132	77	55	50	23	27	32	73	59
Mwayiwathu	45	30	15	0	0	30	15	0	45
Nadzenje	12	4	8	4	8	0	0	12	0
Namwili	140	56	84	18	31	38	53	49	91
Nathenje	60	46	14	25	1	21	13	26	34
Ndunduma	41	10	31	4	3	6	28	7	34
Ngodzi	32	28	4	4	0	24	4	4	28
Nkhamenya	149	99	50	13	10	86	40	23	126
Nkhweza	165	97	68	12	1	85	67	13	152
Nyakankhe	40	25	15	15	4	10	11	19	21
Phwechi	39	24	15	16	1	8	14	17	22
Santhe	90	54	36	21	7	33	29	28	62
Sonda	52	28	24	22	10	6	14	32	20
Sungwi	23	16	7	16	7	0	0	23	0
Takondwa	46	17	29	1	4	16	25	5	41
Takumano	11	2	9	2	9	0	0	11	0
Taphunzira	2	2	0	2	0	0	0	2	0
Tayambanawo	28	23	5	4	0	19	5	4	24
Tidzuke-M	105	17	88	0	23	17	65	23	82
Towwirane	40	20	20	2	3	18	17	5	35
Umodzi	12	7	5	0	0	7	5	0	12
Wakama	60	32	28	2	11	30	17	13	47
Weni na weni	84	41	43	4	6	37	37	10	74
Zombwe	49	23	26	8	5	15	21	13	36
Total	6244	3369	2875	1171	800	2209	2074	1971	4283
%	100%	54%	46%	59%	41%	52%	48%	32%	69%