PD-ABK-762

Land O'Lakes, Inc.

International Development

PD-ABK-762
ISN 93475

UGANDA DAIRY DEVELOPMENT PROJECT
GRANT NUMBER: 617-0136-G-00-0001-00

QUARTERLY REPORT
OCTOBER-DECEMBER, 1994

FEBRUARY 7, 1995

QUARTERLY REPORT
First Quarter/Year One
October-December, 1994

ACTIVITY SUMMARY

The USAID/Land O'Lakes Dairy Development Program in Uganda got off to a quick start during the first quarter of the program. The major activity during this quarter was a baseline survey of eight dairy production facilities performed by a team of U.S. and Ugandan dairy experts. The facilities were chosen to represent specific cooperative societies.

The scope of work for the survey team was to establish baseline conditions at the dairy production facilities and to assess the current level of husbandry, management, production and knowledge in these designated locations. Each facility was also informally inspected to provide information regarding cleanliness, milking technique, quality of pastures, record-keeping skill and conditioning of animals. This baseline information will be used to monitor progress and impact of future training and technical assistance.

Dr. Valery S. Shean and Dr. Lori L. Walker, both veterinarians, were part of the baseline survey team. They expressed satisfaction that the baseline survey was a good tool to provide a basis through which to measure impact. They commented on the wide variety of dairy production in Uganda:

> *"The variation observed among dairy farmers in Uganda was great. We saw [everything] from a one local cow dairy to a zero grazing unit made up of fresian and fresian crosses."*

Their final report is included as Attachment A.

The other members of the baseline survey team were:

Kathy Horgan - Land O'Lakes Project Officer
Richard Bakojja - Land O'Lakes In-Country Coordinator
Muhamed Serunjogi - Department Head, Food Technology, Makerere University
Benon Sebina - Livestock Specialist

The profiles of the dairy production facilities which were prepared by the survey team are included as Attachment B. Pictures from the survey team assignment are included as Attachment C.

IMPACT

Land O'Lakes has a standard impact evaluation process which involves conducting interviews with beneficiary organizations at 4-6 month intervals after a technical assistance intervention has taken place. Because of the length of the current USAID/Land O'Lakes program, these impact evaluation interviews may be conducted at slightly shorter intervals. The evaluation process itself will be evaluated and adjusted for maximum effectiveness in this particular program; however, some significant impact is expected to occur after the end date of the current grant.

PROGRAM MANAGEMENT

Land O'Lakes personnel directly involved with implementing this project are:

Kathy Horgan, Project Officer, (612) 481-2106
Mary Hotchkiss, Program Specialist, (612) 481-2912

Land O'Lakes senior management with oversight responsibilities for this project are:

Martha Cashman, Vice President, (612) 481-2585
Rolf Campbell, Director of Operations, (612) 481-2693
Helen Nelson, Director of Planning and Administration, (612) 481-2942

Any of the above personnel may be contacted with questions concerning the implementation or administration of the project. In particular, Ms. Horgan and Ms. Hotchkiss are available to respond to requests for information and resolution of issues.

In addition, two Ugandan nationals have been retained as long-term consultants to provide logistical coordination and technical expertise to the project. They are Richard Bakojja and Benon Sebina.

Mr. Bakojja is a dairy production specialist who has been involved in training and technical assistance to Uganda dairy farmers for many years. He has been particularly effective in disseminating new information and technology to other dairy farmers. Many of the techniques, management and production, which will be introduced at program training courses and technical assistance interventions have already been introduced by Bakojja within his own operation. He is interested in increasing competition among dairy farmers to bring the quality of dairy products up and to provide compensation for producing quality products. Pending approval by USAID, Bakojja will be in-country coordinator and technical expert for Land O'Lakes during the course of the program. He will be providing logistic arrangements for trainers and technical assistance experts as well as actual technical assistance to recipient organizations.

Mr. Sebina was formerly employed by the Ministry of Animal Industry and Fisheries at Wandegeya. He is an expert at producing practical teaching manuals. He will be providing office management support and training manual production expertise to the project.

An office has been leased at Plot 42, Kampala Road, Africa House. As soon as security measures are in place, this office will become the base of operations for Land O'Lakes in Kampala.

PROGRAM CHANGES/OBSTACLES

There were no significant obstacles to program implementation or program changes in the last quarter. Land O'Lakes continues to learn the correct procedures for obtaining clearances and shipping program materials not available in Uganda. Land O'Lakes is also awaiting approval of Richard Bakojja as in-country coordinator.

ATTACHMENTS

Attachment A. Shean/Walker Final Report
Attachment B. Baseline Survey Profiles
Attachment C. Pictures from Survey Team Assignment

ATTACHMENT A

Baseline Surveys of Eight Selected Dairy Production Facillities In Uganda

by

Valery S. Shean, D.V.M.
Lori L. Walker, D.V.M.

for

Land O'Lakes
International Development Division

Minneapolis, Minnesota

Introduction

From November 23-December 1, 1994, we conducted a series of Baseline Surveys in eight dairy producing localities of central, western and southwestern Uganda. Selected dairies were chosen to represent specific cooperative societies which have been locally formed to assist farmers in marketing their dairy products. Selection of specific dairies was done by the leaders of the various cooperatives in an effort to give a reasonable sampling of each cooperative. Our survey tool was designed to assess the current level of husbandry, management, production and knowledge in these designated locations. The surveys were conducted on the farm with the owner or manager of the dairy production facility. Each facility was also informally inspected and assessed to give information regarding cleanliness, milking technique, quality of pastures, record-keeping skills and conditioning of animals.

The following is a list of the farms, their associated cooperative society, their owners and/or managers, and the number of cows they are currently maintaining:

	Farm Name	Cooperative	Owner/Manager	# Head
1	Iganga Women's Dairy Project	Iganga Women's Cooperative	Nakubuye Nightengale	1
2	Bakama Farm	Kamuli Dairy Farmers Cooperative Society	Bakama Katherine	2
3	Tawe Enterprises	Kamuli Dairy Farmers Cooperative Society	K. Tabulwane	15
4	Kubirima Dairy Farm	Kamuli Dairy Farmers Cooperative Society	Mugwere/Kundhuba	120
5	Rwobuziizi Ranch	wife(Women's Coop)	James Byentalo	130
6	Mironyo Dairy Farm	Mutonto Dairy Farmers	Birigwa	
7	Keirungi Farms,Ltd	Mbarara Cooperative	Francis Rugunda	183
8	Liberty Farms	---	Richard Bakojja	33

All of these farms are interested in elevating their standards of husbandry and production. Because they fall along a wide range of management levels and farm sizes, each producer should be considered individually when designing intervention strategies to take into account both economic and managerial variables.

The variation observed among dairy farmers in Uganda was great. We saw anything from a one local cow dairy, to a zero grazing unit, made up of fresian and fresian crosses. Some of the general recommendations made will hold true for any dairy and other recommendations will be aimed toward the larger more intensely managed dairies. The visits made to each dairy were very brief, and it was impossible to gain a complete understanding of each dairy. The recommendations were made utilizing the information gained through the questions asked on the survey and observations made on the farm. Each individual farmer will be best suited to decide the practicality of the recommendations for his/her particular situation.

CALVES

1. All calves should receive 2 liters colostrum within 15 minutes of birth and another 2 liters 12 hours later. This ensures the best protection against disease. Here in the states we would be emphatic about dipping the umbilicus with iodine but of the dairies visited there was no indication of umbilical infection. If they are not having a problem, the protocol should not be changed. Calves should receive about 10% of their body weight in milk per day. At 2 weeks of age a "calf starter feed" and forage can be introduced. Vaccinations should be given as recommended by local veterinarians. Dehorning should be done at 2-8 weeks of age, if animals are to be kept in confinement and competing for food in small area. Extra teats are a potential site for future mastitis. Removal of extra teats should occur when vaccinating/deworming at 3 months of age. Extreme care should be taken to remove the correct teats. Control of internal and external parasites should be done according to label of chemical used. Deworming should be initiated at one month and repeated every 6 months. All calves should have permanent identification such as ear tags, so that health and production records can be kept.

HEIFERS

Heifers should be bred according to weight rather than size. For the Fresian breed the heifers should be bred at approximately 350 kg. Breed Ankoti or local cows at 60% of mature weight. The approximate weight can be established using weight tapes. AI (artificial insemination) will add hybrid vigor to all herds and dramatically increase genetic potential for milk production if exotic breeds are used. AI will also reduce sexually transmitted disease. First calf heifers should be inseminated with an AI proven bull that sires smaller than average calves. To utilize AI to its potential, heat detection methods must be well developed. Continue parasite control established for calves. If heifers are to be raised on pasture, the pasture should be well drained, free of holes or objects that can injure feet, and free of poisonous plants. Heifers on pasture should receive 2-3 kg of supplemental feed such as a legume fodder, and a trace mineral salt. If heifers are calving at 24 months they are still growing and should be fed accordingly.

COWS

Cows should receive regular parasite control, and annual vaccinations for diseases found in local area. Proper nutrition is essential for high milk production, such as adequate protein and energy as well as balanced vitamin and mineral ratios. When the cows are receiving fresh forage (90% moisture) dry matter intake is the limiting factor due to volume

restriction. An additional ½ kg of dry matter consumed has potential to increase milk yield by 1 liter. Nutritional analysis of feed stuffs was not available and therefore specific recommendations in this area cannot be made. If milk fever is present the calcium/phosphorous ratios and levels need to be addressed. Most forages are low in calcium and do not meet lactational requirements. The addition of 30-40 gm of clam shells (calcium carbonate) or other calcium supplements can be added to the lactation diet. For the dry cows the calcium should however be decreased until 2 weeks prior to parturition. Body reserves of dairy cows can be evaluated by a procedure known as body condition scoring. This system allows farmers to accurately determine energy balance and optimize production while minimizing disease.

When chemicals are used in excess of label to control ticks there exists a concern about subclinical toxicity to cows and excess levels in milk. If a farmer loses a number of cattle to tick borne diseases then an increase in frequency of chemical application should be considered but if a little is good, a lot must be better isn't always the best solution.

Normally a cow would produce sufficient milk to satisfy her calf which would most likely be less than 1500 liters. However, with selective breeding we have fresian cows producing over 15,000 liters per lactation. To achieve this level of production intense management and fine tuned nutrition is required. The fresian cows are more susceptible to diseases found in Uganda, therefore more rigid vaccination schedules and tick control need to be implemented. Potential for milk production may exist but cannot be utilized unless the nutrition is there to support it. Ankoli cattle and calves are more tick and heat resistant and therefore are easier to raise with less management. The best of both world would be to use crosses that have disease resistance and higher milk yields.

The potential for zero grazing exists in Uganda, but there are numerous factors that need to be considered before a farmers decides to go to zero grazing which will not be discussed at this time. Of the dairies visited none appeared ready to make that change. The one dairy currently utilizing zero grazing was doing well.

Efforts should be made, whenever possible, to use local resource people and materials to assist in the development process to both increase the feasability and sustainability of proposed improvements. District Veterinary Officers (DVO) and their personnel, present in each of the proposed project areas, have been helpful and would be valuable assets in implementing new innovations and providing technical assistance to the local farmers. They can usually provide AI services as well as other veterinary services. They often have seeds available for pasture grasses and legumes as well as fodder seeds. Other companies also provide insemination services, such as the ABC Breeders in Kampala.

District Agricultural Officers (DAO) can provide assistance in crop production and agricultural chemical use. Each district also has a District Farm Institute (DFI) which conducts research on agricultural production which is applicable to the local situation and community. They may have napier and guatemala grass cuttings available or other seeds. Several Kampala based companies sell veterinary medicines and supplies in Uganda. Most medications needed can be obtained by contacting these distrubutors. (See Uganda Yellow Pages for addresses and phone numbers).

The government of Uganda has set up a good system for the development of farmers' cooperative societies. The programs are instituted under the Ministry of Commerce and include both training and support for new cooperatives. District cooperative officers will meet with groups to discuss their formation, registration, record-keeping, marketing and problem-solving. There is a particularly strong push currently to help form women's coopertives in rural communities. Additional assistance in cooperative management could be helpful to all of these groups.

The results of the above survey should be helpful in formulating an appropriate strategy for future interventions in Uganda and in evaluating the effectiveness of these interventions. This survey should be repeated in about two years to assess the progress made as a result of such interventions.

Conclusions

Each facility surveyed has the potential for improvements and adjustments in several areas which would significantly increase their quality and quantity of production and ultimately lead to economic benefits. Whereas increases in quantity of milk can show an immediate economic benefit, increases in quality do not necessarily give a profit to the producer under the current system in Uganda. Milk and milk products are not quality tested and little encouragement is given to those who procuce a superior product. Introduction of incentives based on quality would motivate farmers to desire to produce a more wholesome product. Husbandry changes related to increasing milk quality would result in a healthier environment for the animals as well.

Based on the survey results, the following interventions should be considered:

Nutrition:	Pasture Improvement/Management Fodder Establishment Silage Production Formulation of Rations
Reproduction:	Heat Detection AI strategies/Pregnancy checking
Production:	Improved milking technique
Health:	Improved calf care Recognition of diseases and performance of basic treatments
Management:	Record keeping systems Cattle identifiction

ATTACHMENT B

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IGANGA WOMEN'S COOPERATIVE SOCIETY

A) COMPANY CONTACT

Address: P.O. Box 64 Iganga

Primary Contact: Mrs. Nightingale Nakaboye Lupampa (Chairperson)

Secondary Contact: Ms. Erone Mukanza (Member)

B) COMPANY INFORMATION

The only major product produced by the Company is chilled unpasteurised milk. We were informed that members produce other products, i.e., pan cakes, wedding cakes (on order) and ice cream. However, there were no physical facilities for the production of such products at the plant.

The plant is essentially a collecting centre located in the middle of Iganga town. It has a capacity of 2,000 litres although only 500 litres are currently handled per day.

Annual Volume

The annual volume of milk sold by the company is estimated at 180,000 litres. This is probably an overestimate because it is based on the assumption that 500 litres of milk is received and sold every day throughout the year. The reality, however, is that frequently the milk sours and cannot be sold as fresh milk. We were informed that soured milk is often sold to some people who like. Furthermore, the milk supply is not constant throughout the year.

Annual Sales

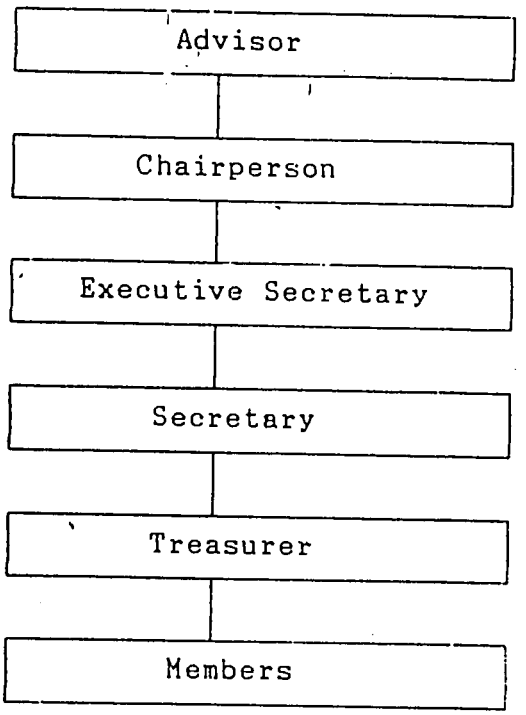
Assumptions had to be made to derive annual sales because books of accounts provided very scanty information. We estimated this at UGSh. 14,400,000=. This is a very rough estimate based on the assumption that 400 litres were sold every day (based on the information provided to us). We also assumed production costs to be 20% of the total revenue. The observed operations did not also reflect such a profit.

Primary Competitors

The primary competitors are farmers who do not bring their milk to the plant.

C) ADDITIONAL INFORMATION

1. Business and Organisational Structure



Membership to the cooperative society is categorised in 3 groups: Honourary members, Ordinary members and Life members. The share capital is UG Shs. 50,000= and 1,000,000= for Ordinary member and Life members, respectively. At the time of the survey the Chairperson was the only Life member as her shares were bought for her by her deceased husband who was also the advisor to the cooperative society.

2. **Member/Management/Employee status relation**

the company employees 4 workers (paid employees). Members share profits proportional to their contributions. The executives also receive administrative allowances for the extra duties.

3. Milk Collection

The cooperation receives milk from an average di. ance of 40 miles away. Most of the members have no animals, hence most of the milk is supplied by non members. Two prominent farmers were reported to supply the bulk of the milk.

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4. Collection Methods/Transportation

a) Farmers deliver their milk to road sides where it is picked by commuter minibuses and dropped at the plant.

b) Milk delivered by bicycles from farms to the plant.

5. Operation of the Collecting centre

Upon reception the milk tested for acceptance, the strained, measured (in litres) and transferred to the cooling tank. The acceptance tests conducted include the following.

i) The lactometer reading (minimum acceptable range is 27-30 lactometer degrees).

ii) Clot-on-boiling test. This is used as a test for developed acidity (an indirect measure of microbiological quantity).

iii) Smell.

The milk is sold at the plant while but raw. Occasionally, it is boiled in large cooking pans when there is power failure. It is then sold as pasteurised milk.

6. Member Programs

We were informed that the following services are extended to members.

i. Sell milk cans cheaply to members.
ii. Sell lactometers to members.
iii. Advise them on milk handling techniques.

It was reported that members have once received training from an UNDP trainee.

We found it difficult to understand how the above mentioned services were delivered to members, since most of them did not own cows. We, saw only one calf at the senior member's residence, which is also the home of the society.

7. Physical plant and equipment inventory:

- Cooling unit (cooling tank of 2,000 litres capacity)
- Water reservoir
- Can washer (out of order)
- Milk cans (50L) 8
- Cooking pans (20L)
- Charcoal stoves

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8. Processing Lines

No processing is normally done at the plant. Milk is only boiled when there is no power to run the cooler.

9. Financial Information

Production cost per unit was estimated at 400= while the sales price per liter is UGSh 500/=.

10. Monthly Sales

Monthly sales of products could not be easily established but was estimated as UG Shs. 600,000=. This was based on the assumption that 400 litres were sold every day and that no spoilage occurred. However, assuming 20-30% spoilage and seasonal fluctuation in supply, the monthly estimate could be close to UGSh.450,000 -500,000=.

11. Income Statement

It was not easy to establish the Income Statement. The cooperation was apparently in the formative stage, and like many other aspects the accounting system was not sufficiently developed. We could not therefore, get a realistic picture of the income statement for the current and the past three years.

12. Marketing Information

The marketing methods employed are apparently not by choice. They are dictated by the low capital investment of the Company. Milk is sold in the raw form, directly from the plant, without packaging.

13. Product Pricing

Since most of the production costs were not sufficiently articulated it was difficult to price the product. However, the major determining factor is the buying price of the milk from the farmers.

14. Environmental Issues

The environment in which the plant is located is not suitable for a milk processing plant. Some modifications would be necessary to make it suitable. Here below are some of the factors that make the environment unsuitable.

a) The nearest source of water is a bore hole which is 1 kilometer away. Water is fetched in plastic 20 litre jerricans. On average 12 jerry cans are used per day.

b) The plant is surrounded by busy dusty roads.

15. Company Strength and Weaknesses

Weaknesses:

1. Power supply is erratic and the generator is out of order.
2. No own transport to collect milk from farms.
3. Poor water supply.
4. Farmers keep indigenous breeds of animals which have low productivity.
5. Lack of training in technical and management aspects of running a cooperative society.
6. Lack of adequate financing.
7. Poor drainage system.
8. Unsuitable environment for the plant.

Strength:

1. Own business premises.
2. Own farm.
3. Have a good market (commands 70% of the market in the area).

KAMULI DAIRY FARMERS CO-OPERATIVE SOCIETY.

A) COMPANY CONTACT

Address : P.O. Box 324, Kamuli
Primary Contact : Mr. Tabukwane Kitimbo (Chairman)
Secondary Contact :

Company information

The company is currently producing only pasteurised milk. At the time of the survey it was being sold from the plant in polyethylene bags. However, we were informed that in the recent past it was packaged in pouched plastic bags of one litre each. Figure 1 is a photocopy of the print on the package.

Other products which were reported to have been produced by the company are butter, whit cheese and ghee. However, there were no physical facilities to indicate commercial production of cheese. A cooking pan fitted with an electrical kettle element was shown to us the modified cheese vat. Cheese had been stopped for lack of market. Butter and ghee were also not being produced as the milk separator and butter churn were out of order. Given the facilities and the manpower available it would be difficult to produce quality cheese, butter and ghee that could easily sell in a competitive market. The company therefore needs to overhaul and/or acquire more equipments and train their staff to produce quality products.

Annual sales

Annual sales for milk were 14, 484 and 125,150 litres for the years 1993 and 1994, respectively.

In 1994 (in a period of 11 months) a profit on sales worth UgSh 9,862,000/= was made while in the year 1993 a loss worth 191,511/= was made.

Size of market:

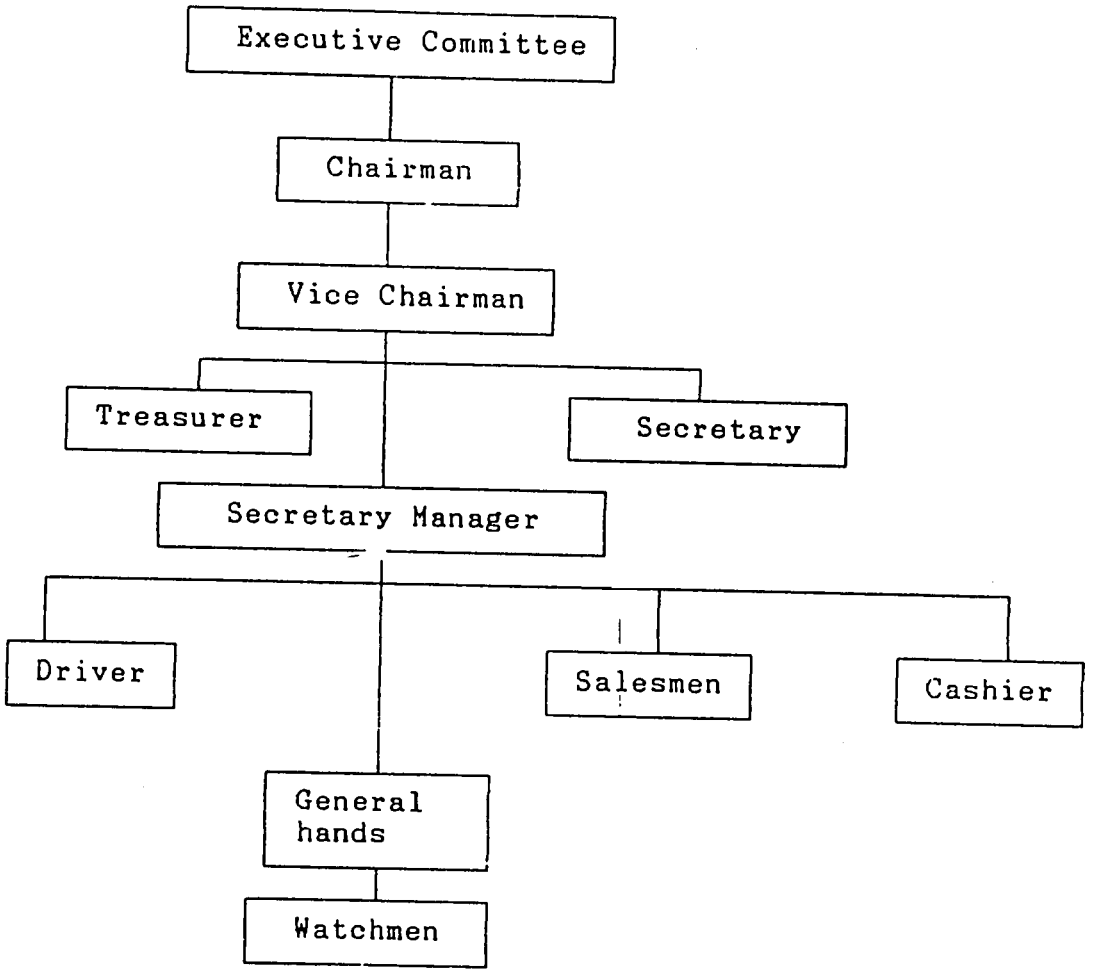
The size of the market in Uganda for the products produced by the company could not be easily established. However, in the local market (Kamuli and Jinja) it was estimated at 15, 100 and 100 for pasteurised milk, butter and ghee, respectively. We believe this is an extremely rough estimate because it does not take into account similar products produced by the Kenya Creameries Cooperative, the Uganda Dairy Cooperation or the milk produced by farmers around Jinja township.

Primary competitors.

Local farmers who sell milk directly from their farms are the major competitors. Supplies whose milk is rejected at the

B. ADDITION INFORMATION.

1. Business and organisational structure.



Members had not started received dividends. All members would receive dividends proportional to their shares. The executives were paid allowances for administrative duties.

2) **Member/Management/Employee status relation.**

The secretary manager is the highest paid employee of the company. He is also the senior technical personnel responsible for all the operations in the plant.

3) **Milk Collection System**

The company receives milk from farmers located, on average, 10 miles away. The milk plant is supplied by approximately 20 farmers. Most of them keep local breed animals. Very few keep improved breeds. Mr. Kaitsa, the biggest farmer visited keeps improved breeds. He also supplies the biggest quantity of milk processed by the company.Half of the farmers supply

litres per day. It is delivered to the plant on bicycles, mainly in plastic containers.

The collecting tank has a capacity of 3,000 litres. However, at the time of the survey only 1000 litres were received per day. The small amount of milk received at the plant was attributed to the poor quality of milking animals. However, under the current circumstances it is not practical to handle higher volumes of milk due to the following reasons:

a) Erratic supply of water.
b) Erratic supply of electricity (the standby generator was not yet operational).
c) Milk handling is still very poor which leads to high levels of product spoilage.
d) Production personnel are lacking in technical competency.
e) Farmers need to be educated on good milk handling techniques.

Processing Plant Operations

Upon reception, quality assessment tests are conducted in order to accept or reject the milk. The following tests are conducted:

a) **Lactometer reading**

The minimum lactometer accepted from farmers milk is 29 - 30 lactometer degrees.

b) **Organoleptic tests**

These include; smell, visual and taste (by tongue). The tasting of raw milk is discouraged because of the associated health risks.

c) **Resazurin test**

At the Kamuli plant, milk is classified into 2 groups based on the Resazurin test; Group 6 (Colour reduction time: 10 minutes) and Group 5 (colour reduction time: 5 minutes). Both groups are received and fetch the same price. Group 5 was reportedly used for cheese production although at the time of the survey no cheese was being produced.

The milk testing facilities were generally inadequate.

Once the milk has been accepted it is strained through a cotton cloth supported by an aluminum sieve before it is boiled in cooking pans charcoal stoves.

Farmers are payed at the end of the month and no extra money is paid for premium quality.

The two people directly involved in the receiving of milk are the Secretary Manager and Chief Accountant who are trained as follows:

i) Secretary manager (Mr. Fred Gabula)

Qualifications:
- Dairy managers course (Kenya, 1965)
- Course in lactology and Dairy Technology (Kenya, 1965)

Experiences: Has been working in veterinary services, until he joined Kamuli Cooperative Society.

ii) Cashier:

Qualification:
- A levels certificate
- Basic accounting course.

The other employees including change-hands were either had only attained primary school education. Some of them seemed not to have attained any formal education.

Considering the level of education of the production staff it is extremely important that the company organises on job training for its employees coupled with recruiting of adequately trained manpower.

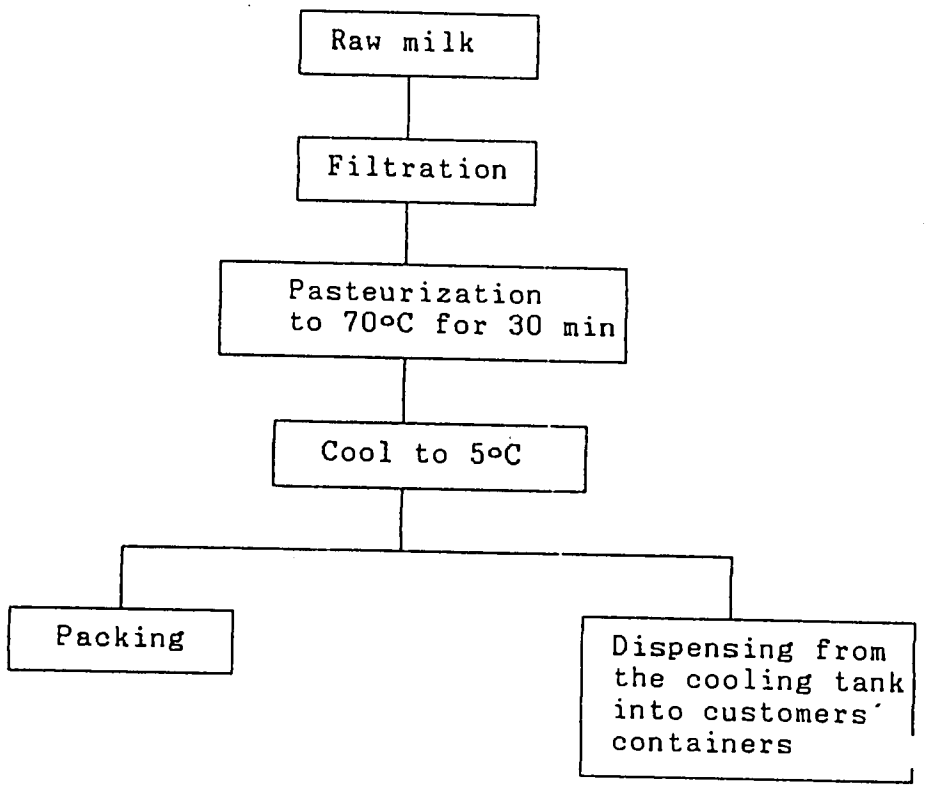
Milk is collected twice a day, in the morning and evening. It is pasteurised immediately upon reception. It is cooled thereafter in two stages. In the first stage it cooled by dipping 20 litre milk cans in a water bath to bring the temperature of the milk to 60°C. It is transferred, in the second stage, to the cooling tank where it is further cooled to 5°C. The first cooling stage posses a major source of post pasteurisation contamination because the cooling water level gets very close to the mouth of cans. Since the cans are kept open with constant stirring it is very easy for the cooling water to get into the milk.

4. Member programs

At the time of the survey, no services or products were extended to farmers. However, we were informed that in the past training programs were organised to teach farmers on aspects of good animal husbandry, pasture improvement and milk hygiene.

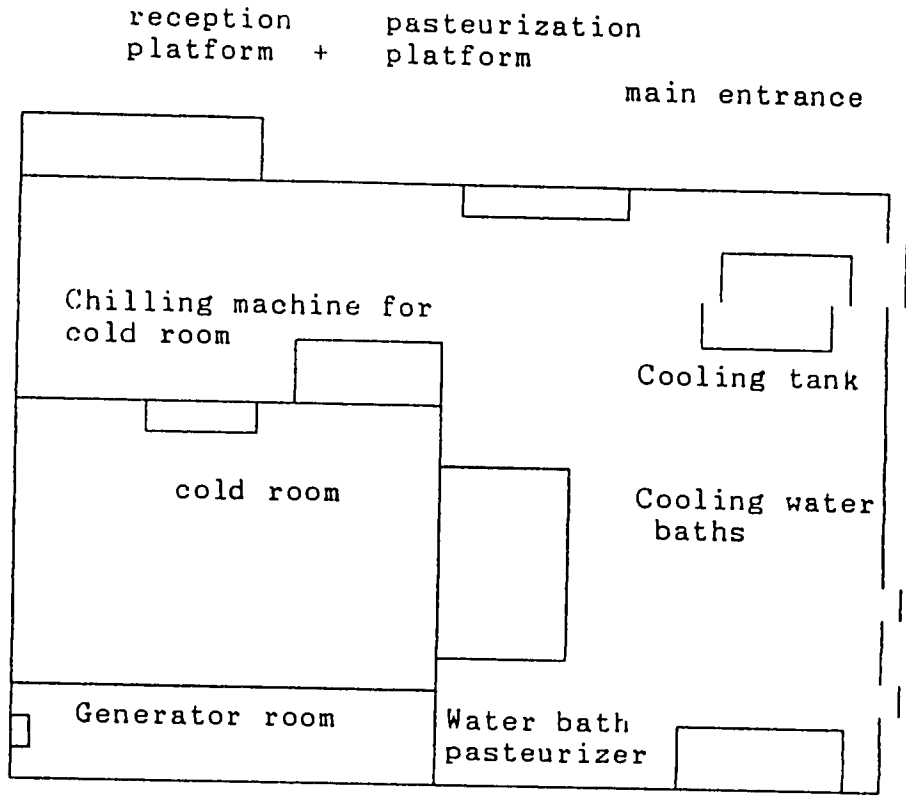
5. Plant operations.

At the time of the survey only one processing line was operational, ie. the pasteurized milk line. Here below is the flow diagram for the pasteurized milk line.



The butter, ghee, yoghurt and cheese lines were not operational.

Diagram of plant and equipment



Physical plant equipment inventory.

Equipment	Qty and condition.
Cooling tank + cooling machine	1 (operational)
Butter churn (Wooden)	1 (out of order)
Butter churn (Plastic) bench top	1 (operational)
Milk separator (manual)	1 (out of order)
Plastic pouch Sealing machine	1 (out of order)
Chilling machine (for cold room)	1 (New - not yet operational)
Electrical generator	1 (New - Not yet operational)
Stainless steel bucket	1
Aluminum cooling pans (20l)	4
Aluminum milk cans (50l)	6
Bakers (analytical glassware)	2
Lactometer	1
Charcoal stoves	2

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6. Financial information.

In the current year, 1994., 234000 litres of milk had been handled by November. The unit cost was UG Sh 350/= per litre, while the unit sales price was UG Sh 450/= per litre.

The average monthly sales were estimated at 1500 litres. Seasonal fluctuations mainly attributed to rainy or dry season were reported. In the rainy season more milk was supplied than in the dry season. However, sales were also affected by frequent souring of the milk in the market place. An average spoilage of 15% of packaged milk was reported to occur in the market due to souring.

Income statement.

The cooperative was formed in 1993 and the income statement for the years 1993-94 is as follows:

	1993	1994
Volume (litres)	196,970	234,000
Sales	14,484	125,150
Profit	-	9,862,000
Loss	191,511	-

7. Marketing information

At the time of the survey the company had run out of packaging material, hence the milk was being sold from the plant. The milk was being sold in ordinary transparent polyethylene bags, or directly dispensed into consumers' containers. The chilled milked was being dispensed directly from the cooling tank.

When packages are available, milk is sold to Kamuli and Jinja townships. It is transported to the market in an open truck (pick up).

The company's marketing strategy is to open up marketing depots in Jinja, Kakira, Bugembe, Walukwe estate and Masese.

The current market position and share of the market for pasteurised milk, is estimated at 80%. This is in reference to the to the regions where the company's products reach.

Milk prices vary with the season of the year. It is sold at UG Sh 350/= and 500/= in the wet and dry seasons, respectively.

8. Environmental issues

At the current production capacity, very little waste material is produced from the factory. Washing water from the plant was seen flowing on the surface outside. However, we were shown a soak pit to which all the water should be collected. The soak pit arrangement is will not be adequate at higher production levels.

A constant supply of clean running water is important to maintain proper plant hygiene and cleanliness of the toilets used by staff.

9. Company strengths and weaknesses

Strengths:

a) Receives milk from members of the cooperative. This makes it possible to have an assured source of milk while providing a steady market for farmers' milk.

b) Commends the largest market share of fluid milk in Jinja.

c) Has reasonably good infrastructures.

c) Has own vehicle.

Weaknesses

a) Frequent power failures (the generator is not yet operational).

b) Pasteurisation method used (by charcoal) is very expensive.

c) The cooling of milk is expensive and may constitute a source post pasteurisation contamination.

d) Quality of raw milk received and pasteurised milk produced is poor.

e) Other competitors in the market such as local farmers, UDC and KCC.

f) Packaging machine and material.

g) Most equipments are out of order.

h) Seasonal fluctuation and poor quality of the water.

i) Lack of enough and adequately trained manpower.

Action Plan

Most respondents felt that the information for the action plan had already been given in the previous sections of the questionnaires. The implementing person was always the Chairperson/Managing Director or an Intermediate Senior Person in the company. The time of the implementation could not be given because in all cases it depended on financing which was a common problem.

KASHARI MUTONTO

A. Company contact Information

Company Name: Kashari Mutonto Cooperative Society

Address: P.O. Box 1392, Mbarara

Phone: 21015, Mbarara

Name of Primary Contact/Title: Mr. Rugunda - Chairman

B. Company information:

No milk product is currently being produced by the company. The cooperatives' plant only collects and cools the farmers' until delivered to the market (Mbarara Milk collecting Centre).

The Kashari Mutonto farmers, cooperative was formed in October, 1993. By the time the survey, 26th November, 1994, it had handled 1,167,942 litres of milk.

It is difficult to estimate the size of the market commanded by the Cooperative because there are several similar Milk Collecting Centres in the region. The size of the market each one of them commands depends on many factors, such as distance from the main road, the condition of the feeder road on which the MCC is located, and so forth.

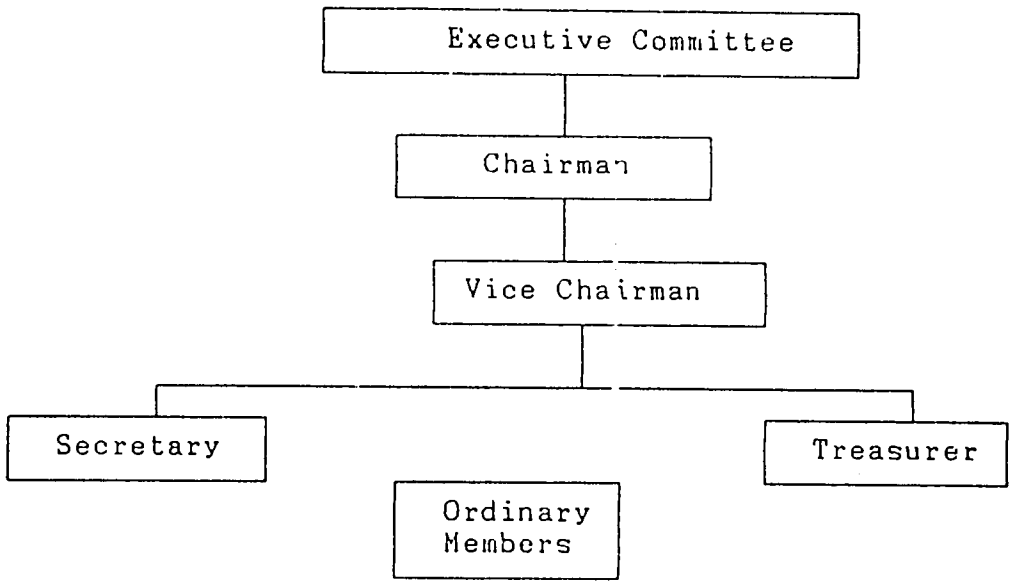
The total sales for this period, the cooperative made sales worth UG Sh. 233,588,400/=.

Other comments

The Building that houses the plant was built by one of the farmers and donated it to the cooperative. However, the equipments, such as the electrical generator and cooling machine belonged to UDC.

C. Additional information.

1. Business and organisational structure.



3. Member/management/Employee status

At the time of the survey the plant was still directly under the management of UDC. An employee of UDC, a Milk Assistant, managed the plant and directed all the operations.

The Cooperative executives organised farmers and assisted the milk assistant to supervised the delivery of the milk. We were informed that milk hygiene was given top priority. However, we noted a number of aspects concerning milk hygiene that need attention.

4. Milk collection system

Milk is received at the MCC from members. Although milk from non-members is also received, all farmers who deliver milk at the MCC are advised to register themselves as members. In fact non-members are discouraged to deliver their milk to the Cooperative's MCC.

All farmers deliver their milk in aluminium cans. Most of them use bicycles for transport. A few of them delivered it on foot while the biggest farmer, Mr. Rugunda, delivers his on a tractor.

The quantity if milk supplied by farmers ranges from 400 litres/day for the biggest farmer, to 30 litres/day for the average farmer and 2 litres/day for the smallest farmer.

Farmers are located within a range of 0.5 - 5 km away from

The number of farmers registered with the cooperative at the time of the survey were 109.

The collecting tank at the Cooperatives' plant has a capacity of 3,250 litres. In the flush season (rainy) it is filled within a day while in the dry season it is filled in two days.

Operations of the collecting centre.

The operations at the collecting centre are as follows:

(a) Testing of milk

The acceptance tests for milk comprise the lactometer and Resazurin tests. The minimum lactometer reading accepted was reported as 29 lactometer degrees. The low lactometer reading, however, was reported not always to be attributed to adulteration but was also attributed to milk from Friesian cows or their crosses. In fact the latter was reported to be the most important factor contributing to low lactometer readings.

b) Filter
c) Weighing
d) Cooling

4. **Member programmes.**

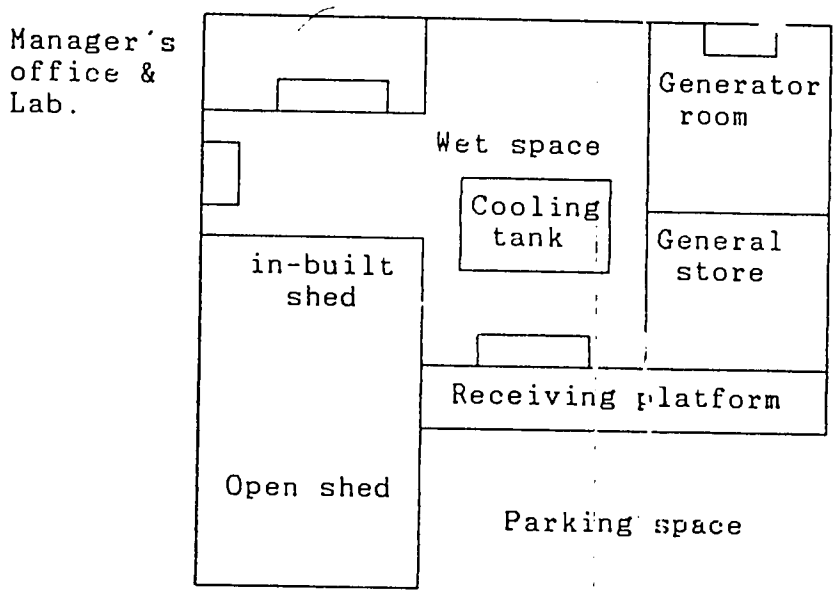
The cooperative is planning to implement the following member programs:

a) Avail veterinary drugs for sale to farmers
b) Avail artificial insemination (AI) facilities to farmers.
c) Introduce pilot pastures with various types of grass for demonstrational training to members.
d) Organise and hold seminars for farmers. Some seminars had already been held.

Members also contribute money to facilitate the delivery of milk from their plant to the Mbarara plant when UDC fails to send a vehicle in time.

5. Plant operations

Plant and Equipment layout



Physical plant and equipment inventory

- Cooling unit
- Generator set (+ compressor)
- Milk testing apparatus (lactometer, thermometers, measuring cylinders and test tubes rack).

6. Financial information.

Farmers sell their milk to the UDC at Cooperative's MCC at UG.Sh. 200/= per litre while the MCC sells it at UG.Sh. 270/= per litre.

The average monthly sales of milk by farmers is 97,329 litres.

7. Environmental issues

Waste material from the plant is collected in a soak pit. The close location of the soak pit to the plant is likely to pose a problem when handling capacity of the plant increases in the future. The fact that the water table in the area is quite high also makes the soak pit arrangement less attractive. Other drainage arrangements are possible since the plant is located on a large expanse of land.

8. Strengths and Weaknesses of the Cooperative Society

Strengths

a) Farmers make own contribution towards the society. At the time of the survey they had saved UGSh. 2.3 millions.
b) Own building and land.
c) Own animals.

Weaknesses

a) The society has no control of the milk market.
b) Lack transport.
c) Lack good breeding animals to supply big quantities of milk.
d) Farmers get very low price for their milk compared to their production costs.
e) Have no electricity supply. They depend on the electrical generator for power.

f) Have no permanent source of good quality water.

The cooperative society has the following plans

1. To become independent of the UDC.
2. Improve the management and marketing milk.
3. Improve the type and quality of milk animals
4. Improve pastures
5. Provide drugs and veterinary services to members.
6. Train farmers in using simple diagnostic methods to identify and treat animals.
7. Start processing milk products.

NYAKAHITA WOMEN,S GROUP

A. Company Contract Information

Address:	P.O. Box 23 Lyantonde
Name of Primary Contact/Title:	Mrs. Esther Byentalo - Chairperson
Name of Secondary Contact:	Mrs. Pheabe Nsheka

B. **Company Information**

Description of product

The only product being produced by the company is ghee. The company is located at Nyakahita in Nyabushozi district.

Annual volume sold (kgs)

The annual volume had not been established but from the production figures given, we estimated it to about 2,200kgs.

Size of the market in Uganda

Although it could not be established with certinity, the Chairperson of the cooperative believed that they probably command 50% of the market in Kampala.

Annual sales in (UG Shs)

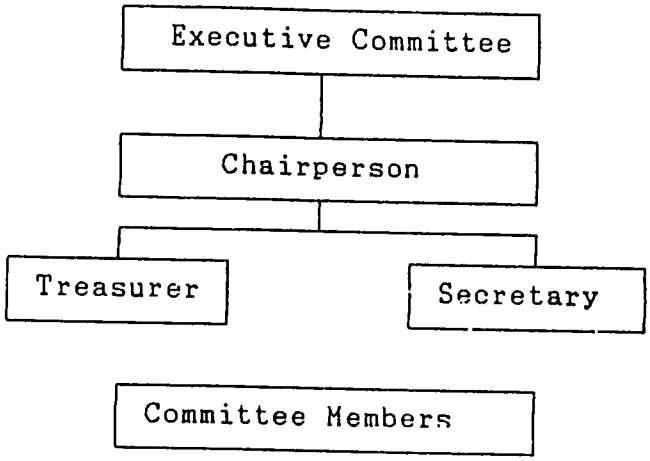
Annual sales were estimated at UGSh. 8,800,000=. The estimate was based on the monthly production of 200kgs of ghee at a selling price of UG Shs 2,000= per 0.5kg for 11 months a year.

Primary competitors

The Cooperatives competitors comprise other producers in Mbarara, the UDC and the KCC of Kenya.

C **Additional Information**

1 Business and organisational structure



2. Member/Management Employee Status and Relations

The cooperative has no paid employees. Members, at all levels, work in turns. No special allowances are paid to any member. At the time of the survey members had not started sharing profits. All the income made was being ploughed back to develop the business. A building which houses the cooperative was progressively being completed using proceeds from the business.

3. Supply of raw materials

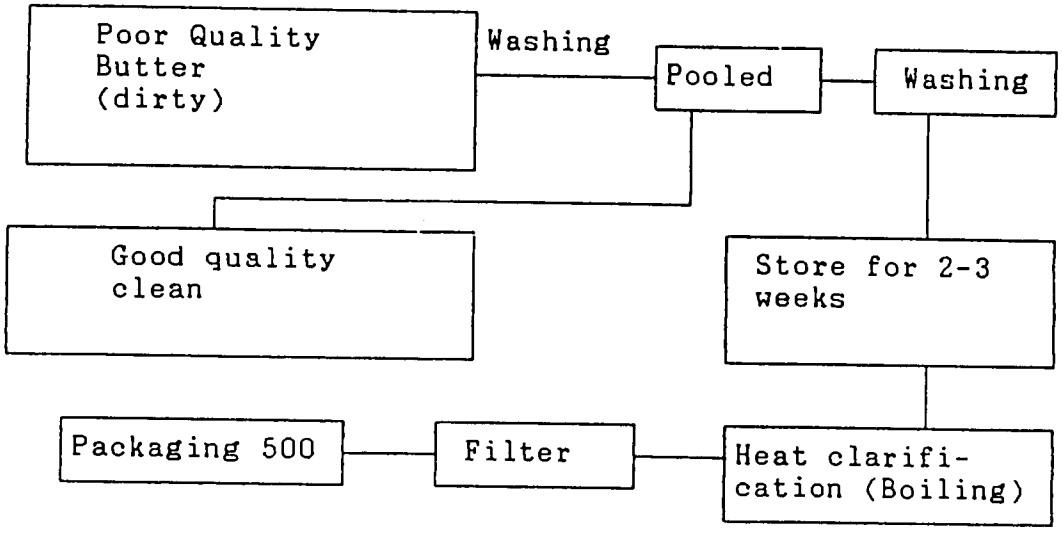
Butter is the raw material that is received at the cooperative for processing into ghee. It is supplied by members. Some butter is also bought from other producers. The butter is either brought to the cooperative's premises by individual sellers or members go out to the surrounding homesteads, as far as 5-10 miles away to buy it.

The amounts bought for processing depends on supply and availability of funds.

4. Operations of the cooperative

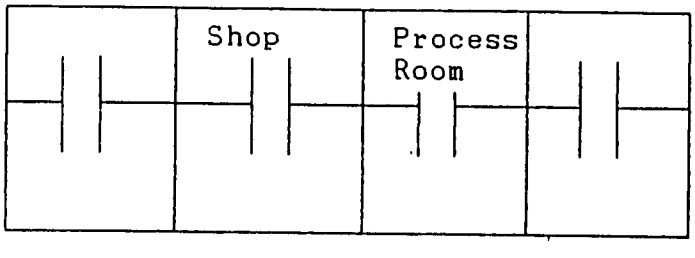
Butter received at the Cooperative is examined for the proper quality. All the members are quite knowledgeable in butter quality. Butter of poor but acceptable quality is washed to remove impurities and odorous materials before being pooled in plastic buckets of about 50-60 litres each.

The production operation is as shown in the flow diagram below:



The packaging process is done while the ghee is still hot to minimise microbial contamination.

Ground plan of the Cooperative's building where the processing is done.



All rooms are occupied or rented basis to generate more income for the cooperative. One of the rooms is used as a shop while the others are for residence although they are not yet completed.

Inventory of physical equipment

No major equipment are owned by the cooperative. There are only simple items which include:

- Cooking pans (about 20 litres) (x3)
- Buckets (plastic), strainers, etc

Product testing

Product testing depends on sensory evaluation, although it is not organised as a routine Apparently members depended on long time experience to test quality of the ghee. However, under uncontrolled conditions the maturity of the butter will vary. Hence ghee of different strengths and flavour must be produced. This is an area where training might be necessary to assist processors to standardise the quality of the ghee.

5. **Financial Information**

Whereas effort is made to keep records of the production inputs and operations, no systematic costing has been done. Therefore it was difficult to get enough financial information about the Company.

Using the following information one can only get a rough picture of the production costs and profits on sales.

a. Cost of raw material (butter) UG shs. 2,200= per kg.

b. Selling price of product (ghee) UG shs. 2,000= per 0.5kg.

Monthly sales of products

An estimated average of 400 packages of 500gm each are sold per month. This is equivalent to 200kg of ghee per month.

Income Statement

It is difficult to work out the Income Statement of the Company because most of the production costs are not costed. For example, there was no cost on items like labour, energy and marketing.

6. **Marketing information**

The major market for the ghee produced by the cooperative, at the time of the survey was Kampala where it was sold mainly in super markets. Payment, in most cases was not by cash. After delivery, one of the member would go back after sometime to collect cash probably after her supply had been sold.

The marketing strategy envisaged is to improve packaging and labelling (product presentation). It is also believed that supplying the ghee in a solidified form, increases consumer appeal. This, of course depends on the temperature of the environment. If the retailer so wished, the ghee can be cooled to solidify while on the shelf.

Product price information

We believe that the pricing of the ghee is arbitrarily done because not all production costs are put into consideration. The cooperative will certainly need assistance in this respect.

Distribution system

The common method of distributing the product is to take it to Kampala using public transport such as commuter minibuses. While in Kampala it is distributed by the same means.

7. Environmental Issues

The process of converting the butter to ghee at such small level of production did not seem to make any major effect on the environment. The most outstanding effect could be perhaps be deforestation, since firewood or charcoal are the only source of energy for processing butter.

8. Company strength and weakness

Weaknesses

1. Lack capitalization

2. Own no animals to produce milk for making, butter, the raw material for ghee. In this region cattle and the milk that comes there from belong to men as a tradition. Women mill only make butter from the milk that is given to them by the men.

Strength

Our general evaluation of this group is that they have a positive attitude towards self-help business which is a good sign for development.

M/S LIBERTY DAIRIES BUSINESS SERVICES LTD

A. Company Contract Information

Company name: Liberty Diaries Services Ltd.
Address: P.O. Box 4795 Kampala.

Telephone: 267605 Kampala.

Fax: 254423 Kampala.

Name of primary contact: Mr. Richard Bakojja.

Name of secondary contact: Beatrice Bakojja.

B. Company Information

Description of products:

The products being produced at the time of the survey were fluid milk and cheese. The company had future plans of producing yoghurt, cream, butter, chocolate milks and processed cheese.

Location:

The plant is located at Rock Acres, Bugiri. It has an installed capacity to handle 1,000 litres of milk per day. At the time of the survey it was operating at a capacity of 35-40%.

Annual Volume of Product Sold (Kgs)

The annual volume of cheese produced in the year 1993 was 28,000kgs. This volume was not expected to increase very much in the next few years because the company planned to diversify production instead.

Annual Sales

Annual sales of cheese for the year 1993 was US dollars 190,400.00. The dollar exchange rate at that time was about UG Shs 1,200= to 1.0 US dollar.

Size of the Market (%)

Liberty diaries Services was reported to command 25% of the Ugandan market for cheese.

Primary Competitors

a. Uganda Diary Cooperative
b. Toro cooperative
c. Kenya Cheese
d. Zaire produced cheese

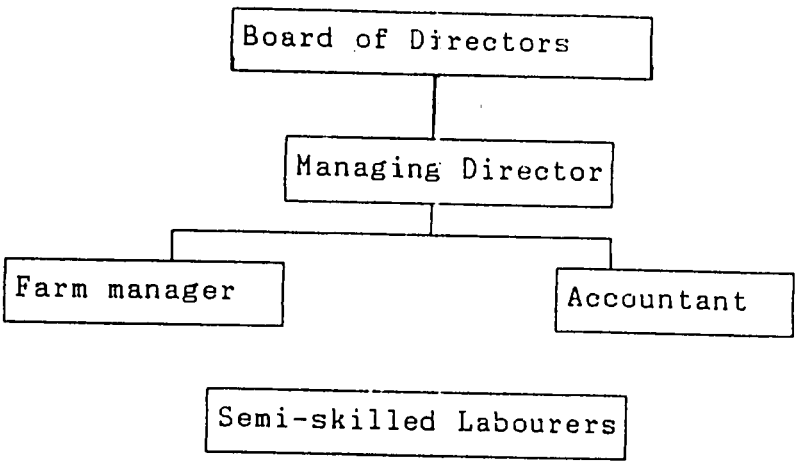
Other Comments

The market for cheese is still big, what is needed is proper marketing strategies.

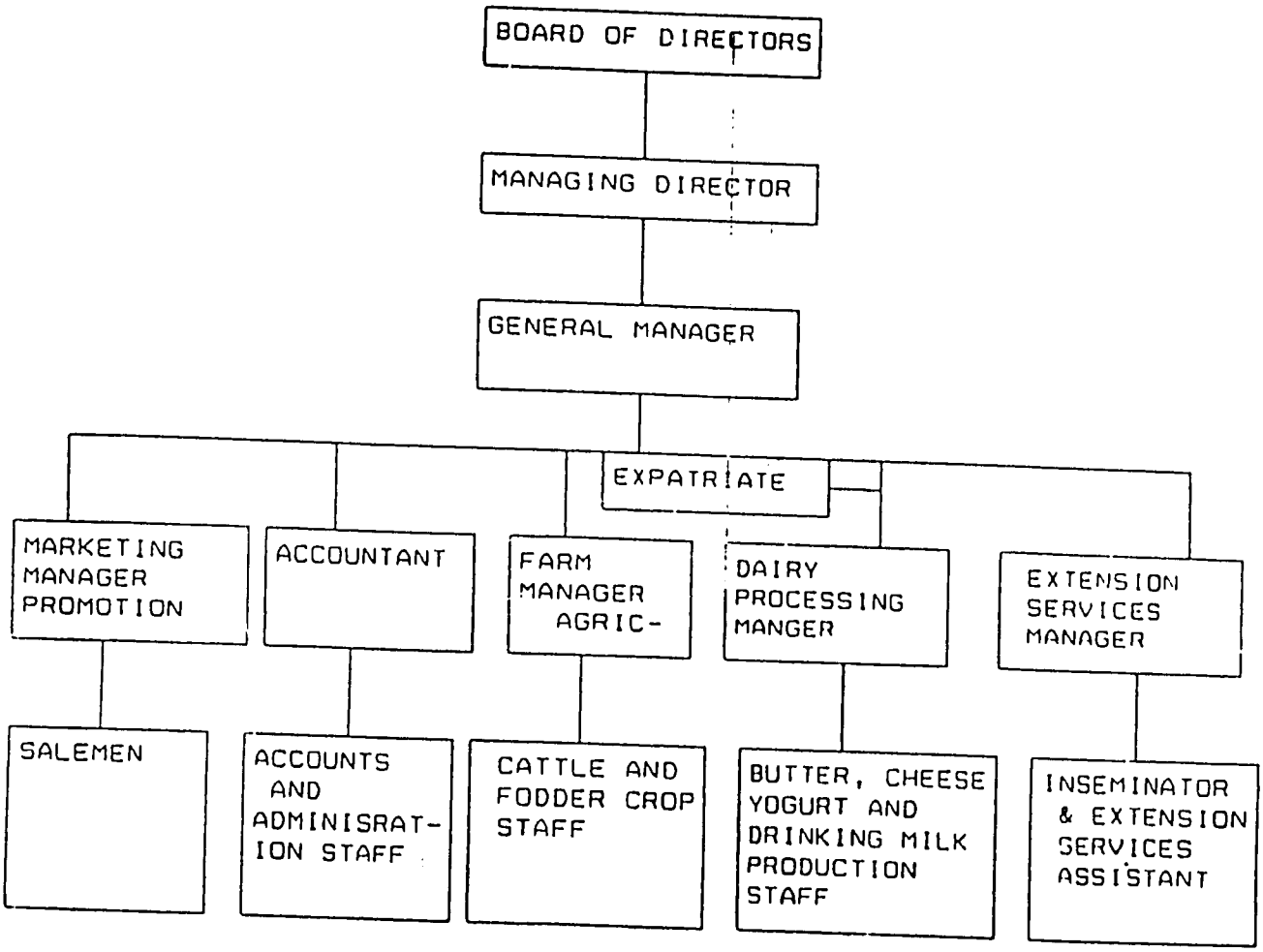
C. Additional Information

1. Business and Organisational Structure

The organisational structure at the time of the survey was as shown below:



The planned organisational structure at the next phase of development is as follows:


BOARD OF DIRECTORS
MANAGING DIRECTOR
GENERAL MANAGER
EXPATRIATE
MARKETING MANAGER PROMOTION
ACCOUNTANT
FARM MANAGER AGRIC-
DAIRY PROCESSING MANGER
EXTENSION SERVICES MANAGER
SALEMEN
ACCOUNTS AND ADMINISRAT-ION STAFF
CATTLE AND FODDER CROP STAFF
BUTTER, CHEESE YOGURT AND DRINKING MILK PRODUCTION STAFF
INSEMINATOR & EXTENSION SERVICES ASSISTANT

2. Member/Management/Employee Status and Relations

The company is basically a family business. The Board of Directors comprise Mr. Richard Bakojja and his wife Beatrice Bakojja. Twenty-six people, including skilled, semi-skilles and casual labourers are employed. Skilled employees are seven and comprise the Accountant. Cheese Processor, Veterinary Doctor and 3 Extension Officers. The semi-skilled employees comprise the Animal Husbandry Staff, the fodder and Feeding staff. The rest are casual labourers.

3. Milk Collection System

The milk processed at the plant is collected from the company's own farm and from participating farmers. The latter deliver their milk to the farm themselves.

4. Milk Supply

The quantity of milk received at the farm for processing amounts to 300-350 litres per day. Seven participating farmers supply milk to the plant. They are located within a radius of 7 kilometers. By the time of the study management hoped to enlist more farmers by January, 1995.

5. Collection Methods and Transportation

Farmers deliver small amounts of milk up to 10 litres, in jerrycans and bigger amounts in milk cans. It would be useful to emphasize aluminium cans for all deliveries in order to maintain quality of the raw milk and products. Only morning milk was received, perhaps, for quality maintenance purposes.

6. Plant Operations

Reception

At reception milk is tested for quality using the lactometer to detect adulteration by water, and litmus paper to detect the microbiological quality of the milk.

Filtration

After reception milk is strained and then transferred to the cooling tank.

Product quality Tests

Apart from the above mentioned tests which are performed on the raw milk upon reception, no other objective tests are conducted on either raw milk or its product. However, cheese is tested for quality using organoleptic tests. Inspite of the fact that the Company seems to adhere Good Manufacturing Practice (GMP), it is advisable that more quality assurance tests and an appropriate sampling plan be instituted.

Payment Method

Most farmers supply milk on a credit scheme. The company gave them free heifers in return they supply milk to the company until the equivalent cost of the heifer is paid. The company additionally supply the farmers with veterinary services and training.

Member Programmes

The type of services provided by the company to the farmers are as follows:

a) Supply a heifer to each farmer on a credit scheme.

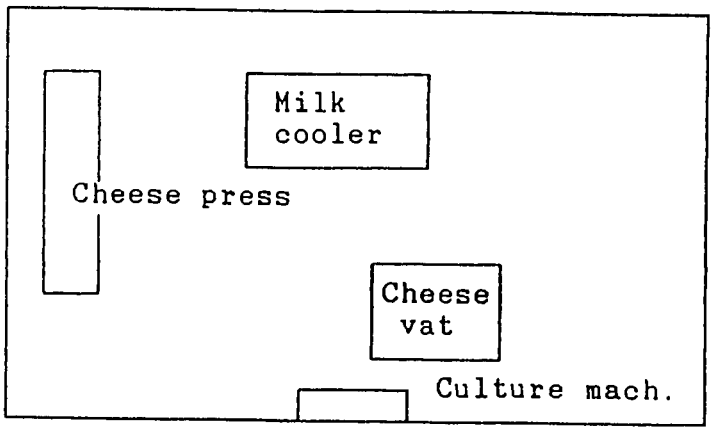
b) Conduct training on animal husbandry and aspects of milk hygiene.

c) Provide extension services, such as uses of AI, animal feeding veterinary care.

7. Plant Operations

Plant and Equipment layout:

Cheese Room

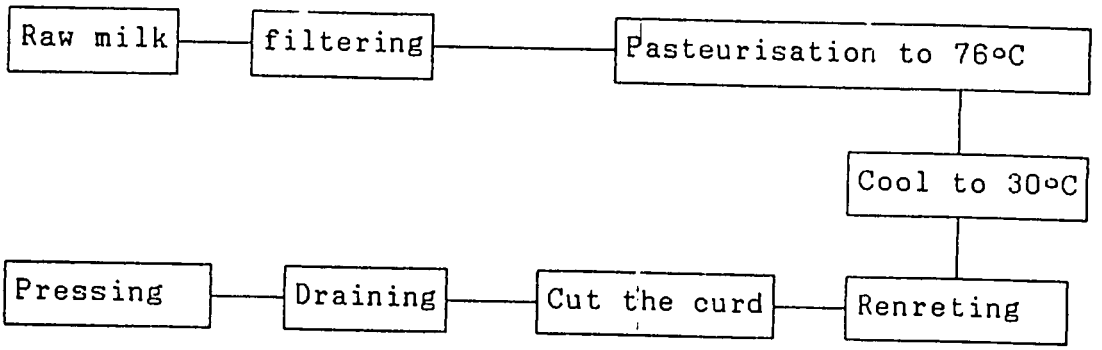


Note The room is not exactly rectangular. The building seems to have been originally designed for a different purpose. It has, however, been adequately modified to suit a milk processing plant.

Inventory of condition of physical plant and equipment:

i) Ice machine
ii) Milk cool (capacity - 1,000 litres)
iii) Cheese vat (capacity - 1,000 litres)
iv) Water pumps (3 pcs)
v) Standby electricity generator (100 KVA)
vi) Culture machine
vii) Deep freezers (3 pcs)
viii) An assortment of laboratory apparatus.

Simple presentation of the flow diagram for the cheese processing line:



8. Financial Information

The volume, production and unit sales costs of major dairy products are as follows:

Total volume of cheese per month:		1,000 - 1500kgs.
Unit cost (UG Shs) per kg:		5,800=
Unit sales price (kgs):	Gouda cheeses:	8,000=
	Herbal cheeses:	10,000 - 12,000=

Monthly sales of products

Sales were reported to be roughly affected in the year as follows:

September - December:	Good business
January - March:	Bad business
March - August:	Average business

Income Statement

9. Marketing Information

Current Marketing Methods

The company currently markets its cheese mainly through super markets/groceries and food service institutions such as hotels. At the time of the survey schools were being tried as a means of product promotion. Ugandans, apart from those who have been exposed to western types of food are not naturally accustomed to cheese. The Company sees introduction of cheese in schools as a means of promoting local consumption. At the time of the survey external markets in neighbouring countries such as Rwanda, Kenya and Burundi were also being exploited.

Marketing Strategies

As future marketing strategies the company is planning to implement the following:

a) Door to door retail selling of products using two and three wheel vehicles.
b) Approaching more schools to buy cheese as a means of product promotion and market penetration.
c. Exporting to other countries.
d. Open up a cheese store in the city.
e. Diversify varieties of cheese produced.

Packaging

Packaging is also visualised as a major marketing strategy. The company has, therefore plans to improve packaging methods and labelling of its range of products. For example, plans are underway to introduce vacuum packaging for cheese.

In its development programs the company is also considering to start packaging fluid milk, cream, chocolates and yoghurt.

Product Pricing information

The pricing system would depend on the market forces and cost of raw material. The company is currently costing raw milk at UGSh. Shs 340= per litre.

10. Environmental Issues

We were informed that waste minimisation and whey utilisation is achieved by applying whey manure for crops. Whereas this strategy may be working well for now, it needs to be viewed more critically. The whey could upset the acid: alkaline ratio of the soil hence affecting its productivity. There is also a danger of promoting the growth bacteriophage, a bacterial virus which could affect activity starter cultures.

11. Company Strength and Weaknesses

Strengths:

1. Produce good quality cheese from good quality milk. The milk is obtained from own farm and project farmers; so its quality can easily be monitored.

2. Has an established brand name.
3. Close to the major market (Kampala).

Weaknesses:

1. Low production capacity.
2. Packaging and labelling is not only costly but also need improvement.

ATTACHMENT C

PICTURES FROM BASELINE SURVEY TEAM ASSIGNMENT

Mrs. Nightingale Nakaboye Lupampa, Chairperson of Iganga Women's Cooperative Society, and Muhamed Sserunjogi, Makerere University, discuss condition of bulk tank and milk quality.

Dr. Valery Shean and Richard Bakojja give a demonstration of tick removal and care of associated sores at the Iganga Women's Cooperative Society dairy farm in Bubogo Village. The farm has lost three animals to tick-borne diseases.

Richard Bakojja assists a farmer member of Kamuli Dairy Farmers Cooperative Society in the design and construction of a zero-grazing cow barn. This farm is under conversion to zero-grazing and is currently producing its own fodder and forage crops.

(from left to right) Dr. Lori Walker, Mr. Francis Keirungi, Dr. Valery Shean, the Keirungi farm herdswoman, and Ssebina Benon (seated) assess current production levels and recordkeeping systems for the Keirungi farm, a member of Kashari/ Mutonto Cooperative Society near Mbarara.

Ssebina Benon demonstrates sanitary milking techniques to the staff of the Keirungi farm.