FOCUS ON ZAMBIA

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Cows at Kalundu Farm in Zambia

Zambia goes the udder way

by **Fidelis Zvomuya**

The role of dairy farmers is to ensure that good agricultural, hygienic and animal husbandry practices are employed at farm level with the focus on preventing a problem, such as animal diseases, rather than solving it after it has occurred, says Abdullah Lunet, assistant manager at Kalundu Dairy Farm in Chisamba, Zambia.

"Safety with us starts at farm level. This safety lies in the type of animals that we keep. A cow, be it a local breed, mixed or pure genetic, must be able to sustain itself, produce large volumes of milk, be healthy, maintenance-free and be able to produce offspring on a regular basis," Lunet says.

"Feeding for efficient milk production is key in modern dairy farming," Lunet says "With the increasing trend toward large-scale herds and greater time demands on labour, it is essential that animals remain healthy and easy to manage."

Balanced farming

Kalundu Farm, one of the biggest commercial dairy farms in Zambia, makes sure that its on-farm practices deliver milk that is produced by

1 Abdullah Lunet, assistant manager at Kalundu Dairy Farm
2 Workers in the Kalundu milking parlour
3 Lindsay and Guy Robinson
4 Semex breeding programme manager, Pierre Marx

healthy animals under acceptable conditions and in balance with the local environment.

"From raw material production to the point of consumption, all dairy products should be subject to a combination of control measures. These controls must include good agricultural practices and good manufacturing practice that meet the appropriate level of public health protection," he says.

Good hygienic practices should be applied throughout the production and processing chain, so that milk and milk products are safe and suitable for their intended use, Lunet notes. Good farming practices underpin the marketing of safe, quality assured milk based products.

According to Lunet, for them to maximise long-term profitability and allow good quality milk production, it is Kalundu Farm's policy that they make sure that their cows remain healthy, and are given the right cow comfort that includes watering them before milking for the animals to sustain high levels of production over numerous lactations.

"We put special emphasis on cow health, calf management and general animal comfort. For a cow to be profitable and produce more, it must have strong functional Type traits that will help it to avoid some of the most common health problems," he says.

Combining profitability

Dairy farming must be able to combine profitability with the responsibility of protecting human health, animal health, animal welfare and the environment. The 1 000 hectare Kalundu Farm has a milking herd of 800 cows producing 18 000 litres per day. The milk is supplied to Zammilk which processes the milk. The total farm herd is 2 349 and is a subsidiary of Zambeef.

Also giving advise to farmers, is South Africa's Semex breeding programme manager, Pierre Marx. He says that in order to maximise long-term profitability and allow animals to maintain and fulfil their true genetic potential, a dairy cow needs to have correct conformation to remain healthy and sustain high levels of production over numerous lactations.

Marx, who was addressing farmers, government officials and the private sector at Guy Robinson's farm in Mazabuka, says farmers, whether small-scale or commercial, must ensure that the safety and quality of raw milk will satisfy the highest expectations of the food industry and consumers.

"At Semex we strive to create the ideal cow to suit the needs of modern dairy farming practice. The Canadian Holstein true Type model has been constantly refined over the years in order to develop an animal that is able to sustain herself, produce large volumes of milk from roughage, be healthy, maintenance free and be able to produce offspring on a regular basis," Marx says.

Taking the delegates through some of the animals that Semex has helped produce at Robinson's farm, Marx says an animal should have good feet, and must have the ability to have an udder that will hold large volumes of milk.

"A well-veined mammary system is essential for a modern-day cow to allow the flow of blood to the udder tissue," he says.

Striving for perfection

The Robinson farm, with the assistance of service providers such as Semex, strive to create a perfect breed, creating the ideal cow to suit the needs of modern dairy farming.

Robinson started his dairy farming business in 1996 with only 12 Tuli cows. This milking herd grew to the current 402 cows, producing 29 litres per cow. The herd is milked twice a day. Some of these cows, when well-fed, produce between 32 and 33 litres each. They are all zero grazed.

On top of the dairy, they also produce beef animals and have 159 hectares under commercial maize. The farm has 100 hectares that produces about 5 000 bales of hay and 120 hectares under maize production that is used for silage, producing 60 tons.

Robinson's farm employs 19 workers and he has launched a HIV/Aids programme which he encourages his workers to take part in. He is also the brains behind the formation of the Magoyi Smallholder Dairy Farmers Association.

"I am proud to be associated with such a successful smallholder project and support them in the improvement of their genetics," he says.

Robinson says that, as small-scale farmers, they should make sure that good dairy farming practices are the major contributor towards ensuring milk quality.

"Many dairy companies are introducing on-farm quality assurance programmes aimed at educating their consumers about safety. All dairy farmers, suppliers, milk carries and haulers, dairy product and food manufacturers, distributors and retailers, should be part of an integrated food safety and quality assurance management system," he says.

Robinson, who is also the president of the Zambia Farmers Union, the country's only farmers' union, said that working long hours, working hard and having a dedicated and supportive wife, has seen him being regarded as one of the most successful dairy farmers in Africa.

Robinson says political and market stability in Zambia has complemented his success. The fact that dairy farmers are being paid on time, has made the industry a lucrative one which more and more people are joining. **DMA**

Blue chip milk production

by Fidelis Zvomuya

Zambia's Magoyi Smallholder Dairy Farmers' Association, has become a blue chip in Africa's smallholder dairy farming project.

Magoyi in Mazabuka in the south of Zambia, is the realisation of a productive and profitable rural entity – technically, commercially and organisationally well-managed from a production, transportation, storage and marketing viewpoint.

Sired by the support received from Land O'Lakes, Magoyi is proof of how rural communities can fight hunger and poverty if properly supported.

"It has been a long road to reach the point where we presently are. We started this project using indigenous breeds and our dairy performance by then was hampered by very low milk yields per cow as a result of poor reproductive performance," says Mwemba Hapeela, Magoyi chairperson in an interview with *Dairy Mail Africa*.

Hapeela says they are still in the walking stage as they haven't yet met their expectations. However, they acknowledge the support they have received through their working relationship with Land O'Lakes, the Zambian government, Parmalat and Guy Robinson, a commercial farmer in Mazabuka.

Magoyi is one of the most successful smallholder projects that started with about 99 members in 1999, who were by then delivering 350 000 litres. The number has since increased to 258 farmers delivering 541 000 litres in 2006.

Robinson says that after realising that poor animal husbandry was a problem among the smallholder farmers and was leading to inbreeding, he decided to give them his support.

"The passion and potential was there. The farmers were using indigenous Angoni, Tonga, Barotse and the longhorn Sangu breeds, that have not been bred and selected for milk potential," he says.

These animals' milk yields vary in the range of 450 to 900 litres per cow per year.

Upgrading the breeds

It was against this background that he introduced a programme to upgrade these breeds with improved breeds, to contribute to a quicker way of raising the milk yields. This, in turn, will improve the possibility of satisfying demand.

According to Hapeela they, as small-scale farmers, were faced with the constraints of the cost of high-grade cows that were and still are high, as well as the high risk associated with the dairy sector.

"These risks include animal diseases and technical support. But thanks to the coming of Land O'Lakes in 2002, our members were offered the opportunity to improve our breeds, hygiene and milk storage," he says.

Land O'Lakes in Zambia has invested its time and resources towards improving farms, productivity and development. This has resulted in the country's dairy reputation not only being measured by quality, but by on-farm systems, animal health and efficiency in transportation of the milk from farm to processor.

Land O'Lakes implemented a cooperation project with partners such as Heifer International, Golden Valley Agricultural Research Trust, World Wide Sires and the Zambia Dairy Processors Association.

The activities include training small-scale farmers in the principles of dairy farming including animal husbandry, nutrition, forage production, milk handling and marketing. The organisation also provides support for dairy processors to improve their output, efficiency and quality, research and development of products with higher value.

It also provides support by conducting promotional activities designed to increase awareness of the nutritional benefits of milk and other dairy products. It also assists in the establishment of new regional markets.

Vulnerable households

According to the country programme manager, Sibeso Mululuma, Land O'Lakes' primary programme target group is vulnerable households that are willing and have the potential to participate in a dairy development programme.

> *"The passion and potential was there. The farmers were using indigenous Angoni, Tonga, Barotse and the longhorn Sangu breeds, that have not been bred and selected for milk potential"*

Mululuma says that by working with other role players, the organisation has managed to bring together dairy expertise, improve the genetics, establish quality assurance and promote and market dairy products.

"In order to provide a stable market, we are providing demand-driven technical support to dairy processors. This is made possible through capacity-building of the Zambia Dairy Processors Association (ZDPA) and technical assistance to individual members of the association," she says.

Industry driven educational and promotional campaigns are conducted through ZDPA to emphasise the nutritional importance of milk and other dairy products. These campaigns are aimed at increasing the per capita consumption of milk in Zambia, thereby increasing the incomes of smallholder dairy farmers.

Besides that, the organisation is also involved at a social responsibility level by incorporating issues such as HIV/Aids, gender and environment into the programme. **DMA**


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Cold chain quality

by **Nigel Wilkinson, Land O'Lakes**

With the increase in the number of Milk Collection Centers (MCC) being built in Zambia as well as the rising volumes of milk being collected by these centres, it became apparent that the next problematic link in this fragile cold chain was the transportation of milk to processors.

This transportation system of milk was to be in bulk, insulated tanks as a form of moving away from "clumsy, cumbersome" milk cans.

Despite this move, milk cans still have an essential role to play in the milk collection process. However, due to the growth in milk volumes, space needed for transportation also needs to grow. This also goes with other associated factors, such as the time required to fill each can, the number of people required to lift the cans to the truck body, *et cetera*.

Each part of this process plays a critical step in ensuring that the quality of the raw milk is not compromised in any way and allows the product to reach the processor in as close to fresh state as possible.

Mini bulk tanks

Land O'Lakes, through its partner Zambia Dairy Processors Association (ZDPA), introduced 1 000 litre mini bulk tanks that could cater for this undeveloped market at a cost of US$4 800 per tank. Each mini bulk tank is a stand-alone tank, weighing approximately 250 kg, and can be easily lifted onto or removed from a flat bed truck by four persons. They are benefiting 1 000 farmers and seven collection centres.

Alternatively forklift loops have been incorporated into these tanks for the larger companies (using forklifts) to take advantage of.

The uniqueness of these tanks lies in the fact that they are not fixed to one truck and, once the tanks are removed, the vehicle can be utilised for other duties when collection has finished for the morning.

Should a vehicle break down and/or require servicing, the tanks can easily be swapped to another truck with minimal disruption. Each tank is constructed of 316 food grade stainless steel and is puff insulated, enabling the milk to maintain the same temperature as it had in the bulking tank for up to two-and-a-half hours, which is well within reach of most processors.

Turnaround times

The other advantage of the 1 000 litre mini bulks is the ability to segregate the MCCs' tanks and test each individually at the factory prior to the reception of the product.

These tanks are fitted with standard stainless steel valves located at the base of each tank. These fittings are compatible with all processors' unloading systems, which equates to faster unloading and quicker turn-around times.

Also as standard kit with these tanks, comes a spray ball that is adaptable to a processor's clean-in-place (CIP) system. Once unloaded, the tank can be quickly and easily cleaned using the CIP plants available at most processors. This in turn eliminates the need for a person to climb inside and manually clean the inside. It also reduces the time needed for cleaning, compared to the time needed to manually wash 25 milk cans.

Overall we see these tanks as a win-win situation for the industry. Whether they are managed by individual MCCs who have their own trucks, processors who wish to extend their collection routes or private transport contractors, the last hole in the raw milk cold chain has been plugged.

With these tanks in use, processors can be guaranteed less chance of raw milk received from small-scale farmers being compromised by either high temperatures or poor hygiene practices. With tighter control on both time and cleaning practices, the quality of the raw milk can only improve. **DMA**

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The increase in Jersey numbers may be ascribed primarily to the following:

- Jerseys calf up to six months earlier
- Jerseys calf with ease and regularly
- Jerseys are far more heat tolerant
- Jerseys are adaptable, manageable and tame
- Jerseys yield more solids per hectare or per ton of feeding
- Jersey milk produces up to 30% more in cheese-yield.

Cows-in-milk

The management of cows-in-milk may be subdivided into four phases, namely 0 to 30 days, 30 to 100 days, 100 to 200 days, and 200 to 300 days. Feeding and management differ in each of these phases.

There is a large variety of feeding systems that vary from pasture-based systems to a total mixed ration (TMR).

Pasture systems

In South Africa, high rainfall areas with good supplies of irrigation water are suited to the cultivation of established pastures. The availability of pastures determines whether cows may be allowed to graze for part of or the entire day. If cows have 24-hour access to pastures, their feeding need only be supplemented by concentrate.

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If the pastures are of high quality, one may add 300 g of quality concentrate per litre of milk. Depending on the quality of the pastures, this supplement may be increased to 450 g per litre of milk. If cows have only partial access to pastures, their feeding may be supplemented by hay or silage and concentrate between 300 g and 450 g per litre of milk.

Total mixed rations

Cows on a TMR do not have access to pastures at all. The ration consists of roughage such as lucerne, eregrostis, wheat straw and silage. The ratios, in which roughage and concentrate are fed, vary from 405 concentrate and 60% roughage for cows on low production, and 60% concentrate and 405 roughage for cows on high production.

Jersey cows take in between 16 kg and 22 kg of dry material in a TMR-system. A TMR may be either self-mixed with the assistance of a mixer or a premixed TMR that may be purchased.

Dry cows

Transitional feeding and management (three weeks prior to calving to three weeks after calving) are undoubtedly the most important opportunities that the dairy farmer has to significantly improve the efficiency of his entire dairy herd's performance. However, these aspects are certainly also elements of dairy cow farming which are neglected to a very large extent.

A highly productive milk cow that has to complete a total lactation successfully, can be compared with a soccer player who competes the Africa Cup of Nations successfully, without suffering injuries and always displaying top form. This is an incredible feat achieved only by a minority of the players in the competition.

However, the most important factor is that Africa Cup of Nations players are super fit when the series commences. Most of our milk cows start with their new lactations either entirely unfit or half-fit. There is no doubt that top fit cows simply perform far better than unfit or half-fit cows.

Currently more research is being done and written up on the feeding and management of transitional cows than on any other aspect of milk cow feeding and management. Researchers and counsellors worldwide agree that this aspect is much neglected and that concerted action taken to correct this gap, may result in massive improvements in the efficiency of an entire dairy cattle herd.

To ensure that your dairy cows are in a state of peak fitness and ready for a 300-day lactation when they calf, you must achieve the following objectives:

1. Cows have to be dried off on a condition score of 3,5 as well as calf on the same condition score
2. The rumen has to recover during the first 44 days of the dry period, while the animal is put on roughage diet
3. During the last 21 days before calving, the rumen has to be adjusted very well, particularly with the grain type that is going to be fed during lactation
4. During the last 21 days before calving, dry cows have to be allowed to engage in *ad lib* grazing and the intake of dry material must be optimised in an absolute sense
5. Cows have to calf when they are in an optimum calcium status
6. The natural immune system to the dry cow must be optimal when the animal calves.

Jersey facts

• Age at first calving	27 months
• Average intercalving period	412 days
• Average production	5 491 kg
• Average butterfat percentage	4,71%
• Average protein percentage	3,7%
• Total number of cows under performance testing	33 785
• Members	396
• Total number of registered animals	90 460.

(Information obtained from Jersey SA) **DMA**

Land O'Lakes Zambia

Since 2002, Land O'Lakes has been providing technical assistance to smallholder dairy farmers, producer groups and processors to promote the growth of a competitive dairy sector and to expand local demand for dairy products and to reduce food insecurity of vulnerable farmers by increasing incomes at rural household levels.

The programme's goal is to reduce food insecurity among the vulnerable population through increased income. The programme specifically seeks to:

- Improve the genetic quality of dairy cattle owned by smallholder farmers, thereby increasing their milk output
- Increase the quantity of raw milk supplied by smallholder producers to milk processors, thereby increasing incomes of these producers
- Increase dairy plant utilisation capacity, assist in new product development, and implement safety and quality management systems, thereby affording small farmers a secure market for their raw milk
- Increase consumption of locally produced dairy products through educational and promotional campaigns.

Cow-to-consumer model

Working with various partners, Land O'Lakes has brought together expertise in:

- Cooperative and business development
- Dairy production
- Feed management
- Improved genetics and breeding
- Quality assurance
- Industry organisation
- Promotions and marketing.

Target groups

Dairy production – The primary programme target group is the vulnerable households that are willing and have the potential to participate in a dairy development programme. Land O'Lakes seeks to introduce or support dairy production to vulnerable rural households over the period between 2004 to 2008.

Dairy processing – In order to provide a stable market for its primary beneficiaries, Land O'Lakes provides demand driven technical support to dairy processors. This is through capacity building of the Zambia Dairy Processors Association (ZDPA) and technical assistance to individual members of the association.

Dairy marketing and consumption – Apart from improving the supply of milk, Land O'Lakes also seeks to advance the demand

for locally produced dairy products in Zambia. This ensures that smallholder dairy farmers can have stable incomes from dairy production.

The activities contributing to the achievement of Land O'Lakes' objectives are carried out through three technical areas namely dairy livestock development, dairy industry development, and promotion and educational campaigns.

Warehouse receipt system

Land O'Lakes also gives support to the "warehouse receipt system" administered by the Zambia Agricultural Commodity Agency (Zaca). The system enables farmers, traders and processors to deposit stocks of non-perishable agricultural commodities with certified privately run commercial warehouses.

Land O'Lakes believes that it can only achieve its goal if the cross-cutting issues of HIV/Aids, gender and environment are incorporated into the programme.

- **HIV/Aids –** Land O'Lakes endeavours to make its food security programme activities responsive to the HIV/Aids environment, by addressing negative synergies that link HIV/Aids and food insecurity.
- **Gender –** Special attention is given to the inclusion of women in the programme. This includes targeting women's groups to participate in the programme and 30% minimum representation and active participation of women in all farmer associations working with Land O'Lakes.
- **Environment –** Environmental sustainability is taken into account in all programme interventions.

Key results

- Improved food security among smallholder farmers
- Increased smallholder incomes from dairy production
- Increased average smallholder milk production and yield of cattle
- Distribution of improved in calf heifer to smallholder farmers
- Provision of intensive dairy production and management training to smallholder farmers
- Increase in the number of smallholder farmers delivering milk to milk collection centres
- Increased volume of milk used by targeted processors to produce dairy products
- Introduction of artificial insemination among smallholder farmers
- Dairy product development and improvement
- Increased consumption of local dairy products
- Increased smallholder farmers' participation in the warehouse receipt programme.

Implementing partners

- Conservation Farming Unit
- Consortium for Southern Africa Food Emergency (CSAFE)
- Golden Valley Agricultural Research Trust
- Heifer International
- World Wide Sires
- Ministry of Agriculture and Cooperatives
- Zambia Agricultural Commodity Agency
- Zambia Dairy Processors Association.

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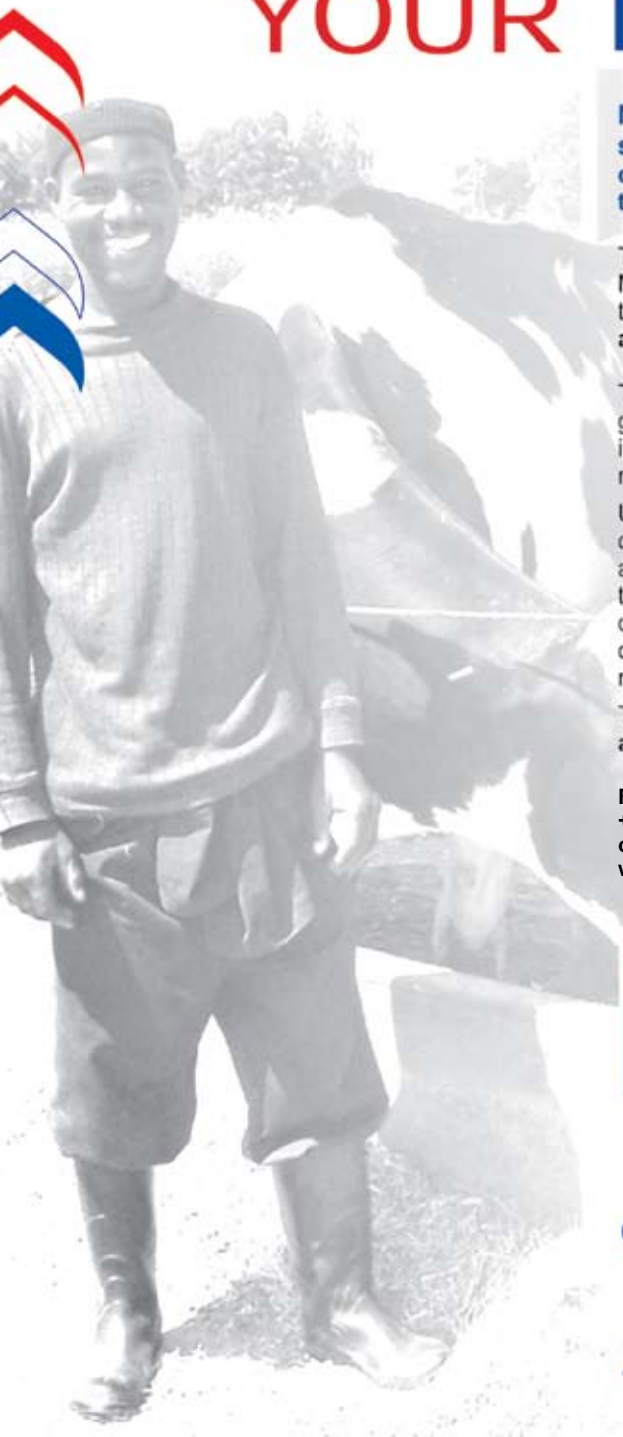

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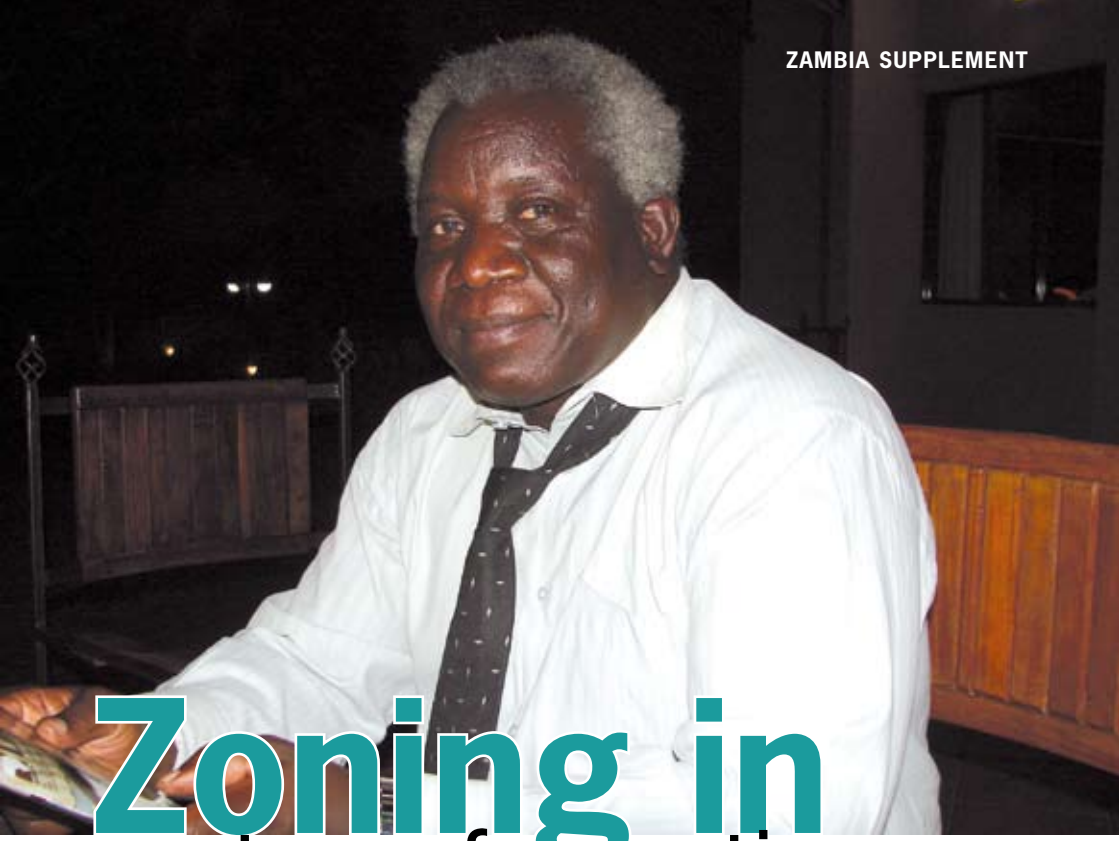

Zoning in on transformation

by **Fidelis Zvomuya**

The Zambian government has come up with a dairy development policy that aims at transforming the country's dairy subsector towards new levels of productivity and profitability through the setting up of milk districts or milk zones.

According to David Daka, these districts together with milk collection centres, would be linked to milk processors through improved organisation and favourable production costs. This will be achieved by the removal of value added tax on imported milk cans, and other dairy tools and equipment.

Daka says the policy is aimed at the privatisation of the industry, empowerment, employment creation, income distribution, institutional efficiency and decentralisation of the dairy industry.

"The policy will support the development of formal and informal milk markets, ensuring that milk comes from healthy cows. This will also ensure that milk has been hygienically produced and handled," he says.

The National Dairy Policy is developed from, is consistent with and is part of the Fifth National Development Plan (FNDP). It is meant to use the dairy subsector for poverty reduction and improvement of people's quality of life through the consumption of safe and wholesome milk.

"We are to use this policy for the collection, analysis and dissemination of information and statistics on the structure of the dairy industry in Zambia.

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"This will see us setting up a database on the dairy industry which we can use for development planning purposes. We will be monitoring imports, and provide advice and technical support to milk collection centres. This will see smallholders kickstarting farming activities," Daka says.

Setting up the research and technology services under the policy, will see the promotion of dairy production research that will focus on problems that hinder the increased productivity of small-scale farmers.

The current milk yields and profitability of dairy farming in Zambia is being constrained by inadequate nutrition, both in terms of quality and quantity.

Animals do not have access to adequate high quality fodder and purchased feeds are usually of variable quality. Intensive farming systems such as zero grazing where feed costs account for over 40% of dairy production costs, as well as poor quality purchased feeds exacerbate the already low level of profitability.

"As government, it is our duty to make sure that our farmers have access to pure dairy breeds. So we are also making sure that smallholder farmers have access to value-proven semen, either through the use of bulls or artificial insemination. This requires more extension services to the farmers," he says.

The sectoral strategies of the policy includes liberalisation of markets, facilitation of private sector development, capacity-building of agencies handling agricultural products, and ensuring that the products meet standards and sanitary and phytosanitary requirements. It also entails promoting and securing access of agricultural products to markets as well as the diversification of production.

Zambia Dairy Processors Association (ZDPA) chairperson, Sandress Nyirenda, says the government has done a lot in making sure that the dairy sector is where it is at the moment.

Nyirenda says government is his organisation's biggest partner besides Land 'O Lakes when it comes to the promotion of the dairy products to meet the country's demand and also in the promotion of per capita consumption.

"For us as processors, to produce good quality products, we need good quality milk and this is what government is doing through its farmer support. In terms of this support, farmers are trained and empowered by way of knowledge provision and technical extension support," he says.

He says the policies put in place by government and leading to the privatisation of the industry, was a welcome development. Daka says the weaknesses of the past were associated with price control, supply-driven and unsustainable dairy projects, ineffective parastatal farms and lack of involvement in the planning process by the beneficiaries.

"New initiatives which recognise the weakness of the past, are required to rebuild the dairy subsector to exploit its real potential in poverty reduction, employment creation, improvement of the quality of life – not only for the rural population, but also for urban residents and to mitigate the impact of HIV/Aids.

"The policy is built on an efficient and effective dairy sector, embracing commercialisation of agriculture within the framework of judicious utilisation of available natural resources and producer ownership of agricultural programmes," Daka says.

Zambia, with its newfound economic turnaround, has seen the demand of dairy products (especially that of liquid milk) exceeding supply. Milk consumption in the country is on a sharp increase due to the increase in the middle class as well as the favourable economic growth.

In accordance with government's pro-poor small-scale farmer focus, the policy is also in line with the Millennium Development Goals (MDGs). The National Dairy Policy is driven by eleven policy concerns that are interwoven in an overarching framework. Each policy concern depends on and re-enforces the other.

With regard to dairy development, the policy aims to ensure orderly and sustained development of the subsector through the establishment of a dairy development board that will harmonise industry and promote dairy farming, especially among smallholder farmers. **DMA**

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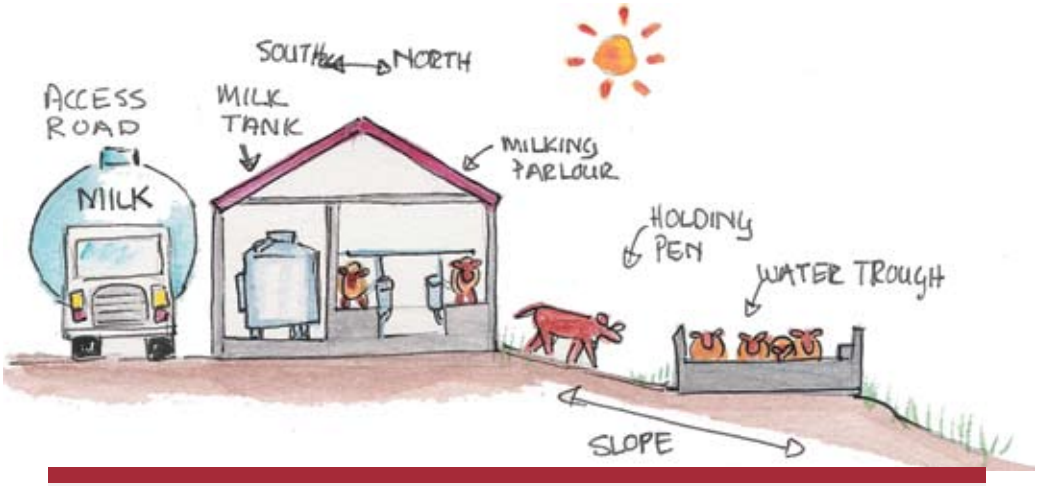


1 **Site plan**
Access road for vehicles to the milking area.
Slope for water to flow away from the milking area and holding pens.

2 **Milk-cooling tank**
Away from direct sun (southern side of the building).

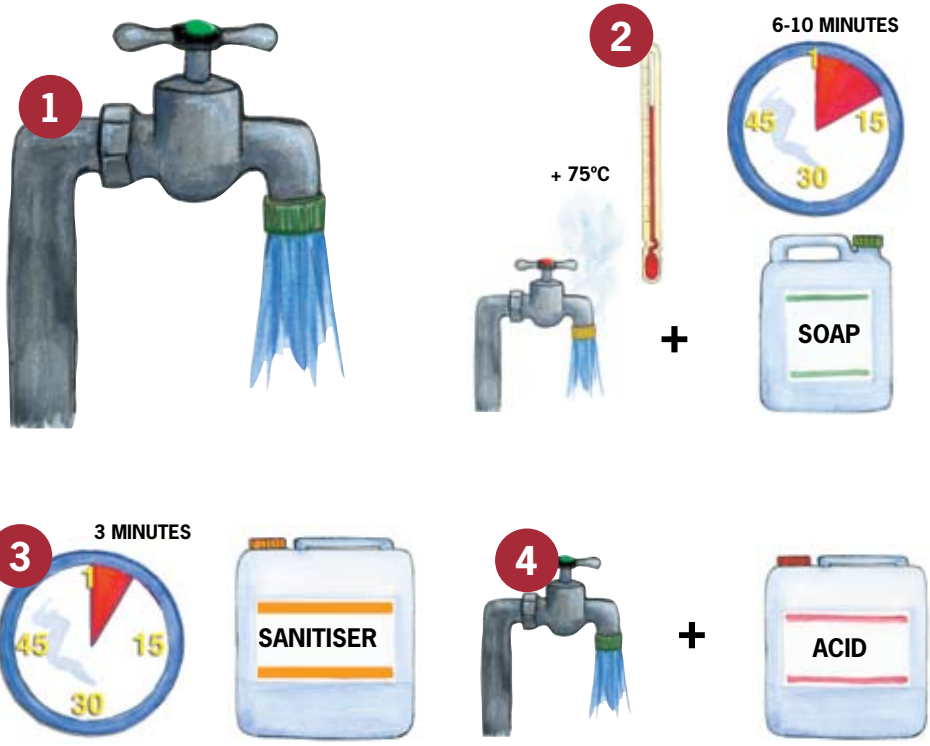
3 **Feed troughs**
About 75 cm space per cow is needed.

4 **Water troughs**
Ensure clean, drinkable water throughout the day.
Clean once every 2-3 weeks.
Avoid muddy areas.

5 **Manure handling**
Remove manure every day.
Use as fertiliser for crops such as maize.
Avoid heaping up manure, as it attracts flies and other insects.
Do not let any manure run into a water stream.

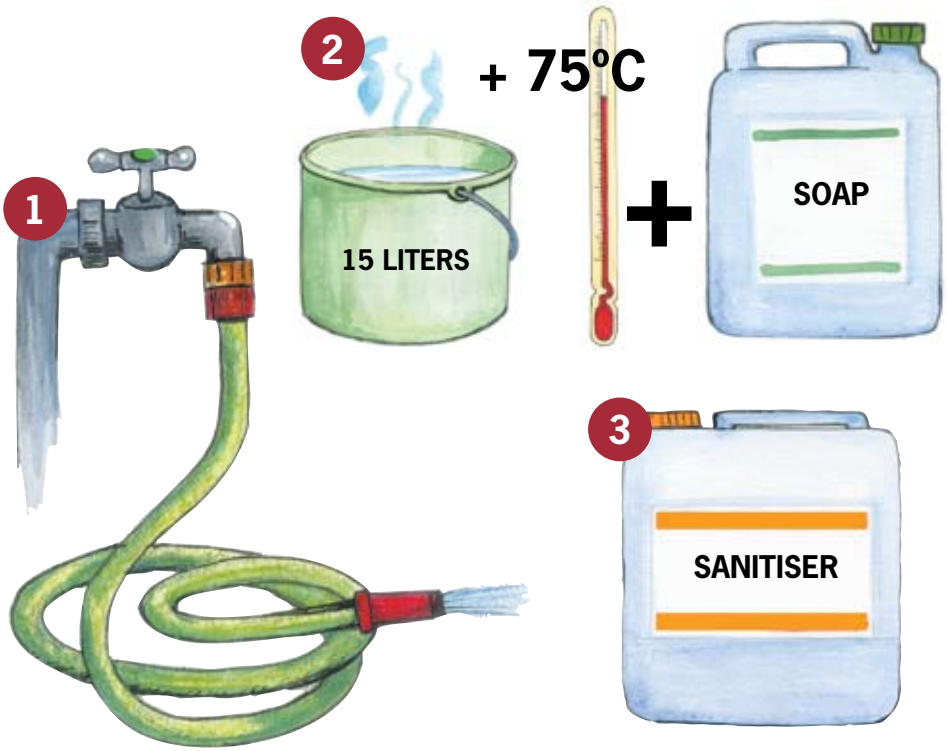
6 **Calculate your building costs**

Washing programme: Milk machine



1. Rinse with cold water.
2. Wash with warm water and soap.
   (Acid step: 1-2 times a week)
3. Rinse with sanitiser (±3 minutes).
4. Drain all water for washing from the equipment.
   IMPORTANT: Never rinse the milk machine again with clean water after it was sanitised.
5. Acid step. Use cold water and acid.

Washing programme: Milk tank



1. Rinse the last milk out of the tank with cold running water (hose-pipe).
2. Mix 15 litres of warm water (75ºC) and foaming soap in a clean plastic bucket. Place the bucket in the tank and clean with a brush from top to bottom.
3. Spray sanitiser or use a tank brush to apply the sanitiser.
4. Drain the water after sanitising.
5. Acid step. Wash with a strong acid once a week to remove lime scale.

How to produce quality milk

1 **Milking conditions must be hygienic.**

2 **Prevent milk from getting sour by cooling it on the farm.**

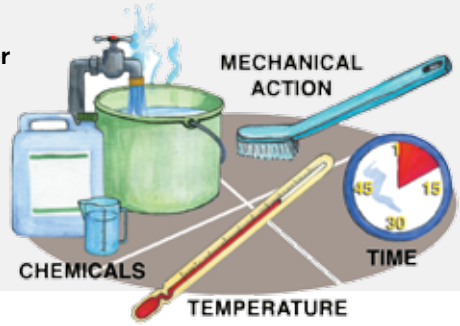
- Cool the milk down to 4°C as soon as possible
- Use a bulk milk cooler.

3 **Extend storage time.**

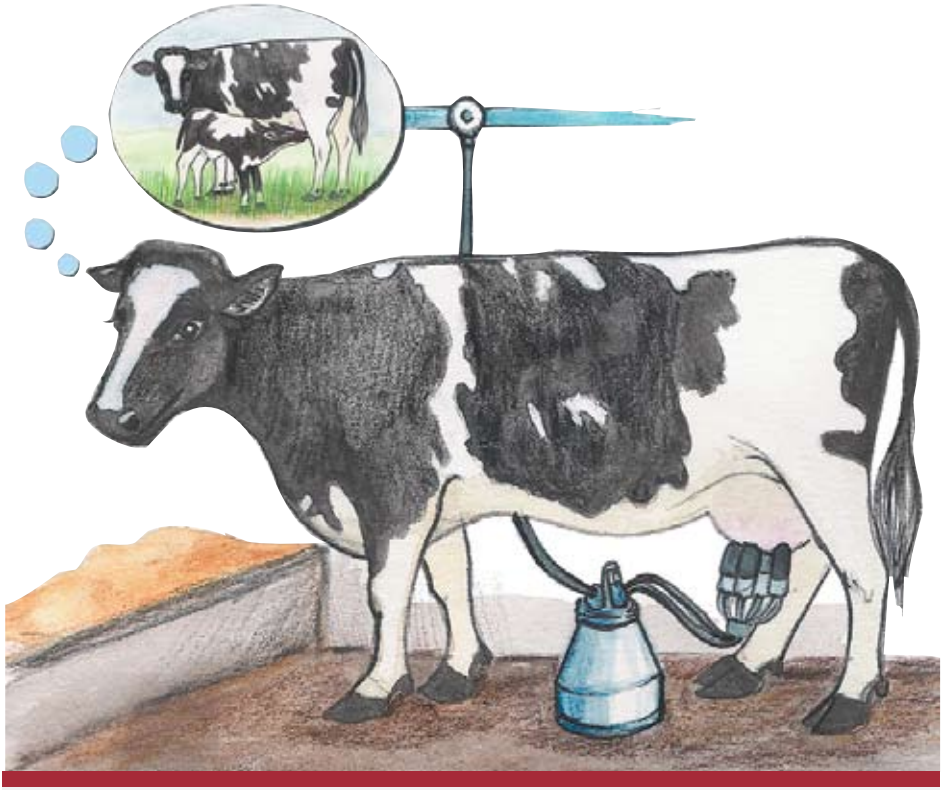
- Keep temperature at 3-4°C to prevent bacteria from growing.

4 **Clean the milking equipment after every milk turn is complete.**

- Scrub well with a brush
- Right concentration of soap and disinfectant
- Right temperature.



Milk out your cow properly



1. The rubber liners of the cluster must fit tightly around each teat.

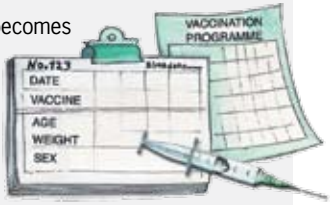
2. The pulsator simulates the suckling of the calf and massages the teats. The cow lets down the milk to be sucked out by the vacuum.

3. A vacuum pump sucks air out of the system. Check that the vacuum level does not rise too high, because the teats of the cow might get damaged!

4. The cooling tank cools down the milk to 4°C within three hours after milking to prevent it from becoming sour.

Biosecurity:
Prevent the spread of disease

1. Diseases can destroy your farming business when livestock becomes too sick to produce.



2. **Prevention:**
Vaccination and nutrition: Follow a vaccination programme. Provide clean healthy food.

3. **Cleaning and sanitation:** Clean water and feed troughs regularly. Clean and disinfect vehicles after transporting stock. Provide disinfecting facilities for workers and visitors (clean water, soap and foot dip). Visitors' vehicles should be parked outside.

4. **Diagnostics and quarantine:** Keep all newly brought-in animals seperately and look for signs of illness. Test milk.

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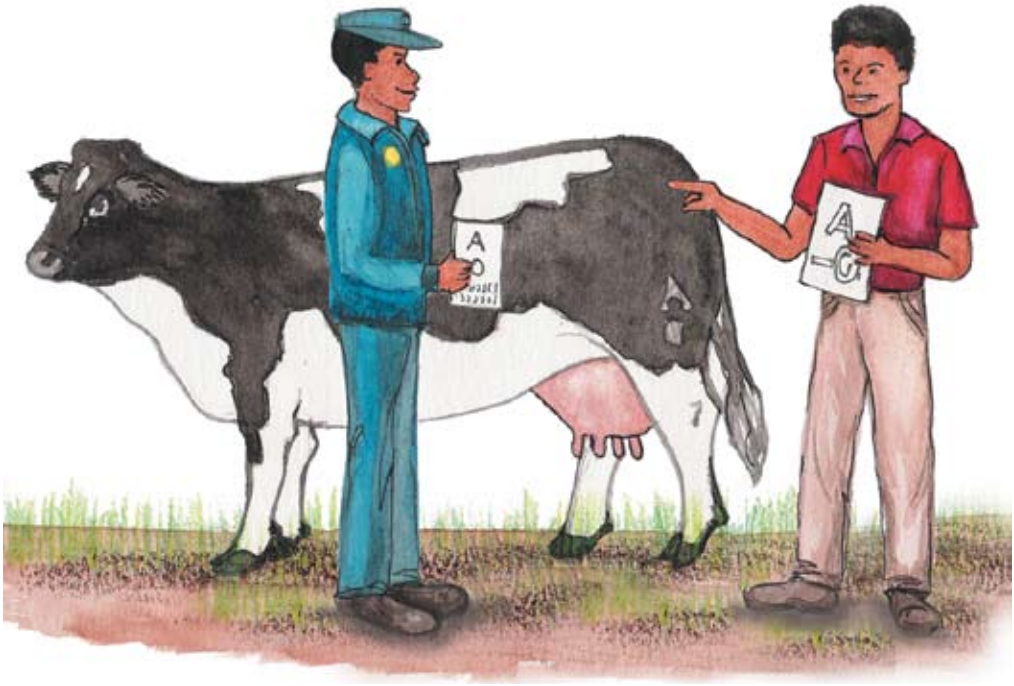
Register your identification mark



1 **How?**

- Fill out an application form and pay a fee.
- Your mark will be put on an official list.
- Buy branding tools.
- Use the same mark for your small and large stock.

2 **Methods**

- Hot-iron branding, freeze branding, tattooing.

3 **Why do you need a legal identification mark?**

- All livestock must have identification marks.
- When livestock is lost or stolen, it helps the police to identify who the owner is.

Ministry of Agriculture and Cooperatives

The Agricultural Development Support Project (ADSP) is a project under the Ministry of Agriculture and Cooperatives (MACO). The project, which will be implemented over a five-year period, is wholly financed by an international development association (World Bank) sector investment grant to the amount of US$37,2 million.

Objectives

The development objective of the ADSP is to support increased commercialisation of smallholder agriculture through improved productivity, quality and efficiency of value chains where smallholder farmers participate. The project's central aim is to improve smallholder farmers access to markets and the competitiveness of their agricultural commodities.

Project design

The ADSP has been designed in order to address constraints that negatively impact on the commercialisation of activities of smallholder farmers in Zambia. As such, the project takes a value chain approach to address both production and marketing sides of smallholder agriculture system in Zambia.

Thus, support under the project will not only be targeted at smallholder farmers but other players are the smallholder agricultural chain systems. Such players include agro-processors, input suppliers, out-grower operators, nucleus, and commercial farms working with smallholders.

Project components

In order to achieve its objectives, the project is configured around three components namely:

(i) Support to farmers and agribusiness enterprises – SFAE
(ii) Institutional development – ID and
(iii) Project management and coordination – PMC. The SFAE is the major component of the project and has three sub-components:
  (a) Supply chain credit facility – SCCF
  (b) Matching grant and innovation facility – MIIF
  (c) Rural road improvement facility– RRIF.

Through the SCCF (a line of credit), the project will finance the provision of short, medium and long term loans, on demand driven basis, to support investments that will improve the supply chains of existing and emerging contract farming systems.

Under the MIIF (a matching grant facility), the project will provide financial resources on a matching grant basis, for the development of innovative business linkages between smallholders and other actors in the agricultural value chains.

The RRIF will provide resources for the rehabilitation and maintenance of a network of selected feeder and district roads of economic

Agricultural Development Support Project

importance in high agricultural potential areas/ districts.

Under the Institutional development the project will provide resources to selected departments of the MACO with the view to improving their capacity to provide core public services required to enhance smallholder farmers access to markets as well as improve their productivity and quality to their commodities

The ADSP will provide the resources through the project management and coordination component, to finance the establishment and operation of the NCO, and project evaluations, assessments and audits.

The ADSP and the dairy sector

The dairy industry in Zambia is growing fast and is becoming a very vital sector to a number of smallholder dairy producers. The value chain approach employed by the ADSP fits very well into the arrangements that currently subsist between smallholder producers and the other actors in the sector, particularly dairy processors.

A number of dairy processors depend on smallholder dairy farmers for their main raw material – milk. Since its inception, the ADSP has had engagements with a number of players in the dairy sector, including the apex association of dairy processors – the Zambia Dairy Processors Association (ZDPA).

The ADSP can play a very vital role in the development of the dairy sector in Zambia. The project, through the supply chain credit facility, can provide financing for establishment or up-grading of dairy processing facilities, including acquisition of processing and other associated equipment.

Through the matching grant facility (under the MIIF), the project can contribute to the establishment of a network of milk collection centres through support to organised producer associations and groups. Support under the MIIF could also be in form of financing innovative practices that enhance linkages between smallholder dairy farmers and other players in the dairy supply chains through the corporate extension and technology development window of the matching grant facility.

In sum, there is large scope for the ADSP to contribute to the development of the dairy industry in Zambia through support to the improvement of the dairy supply chain.

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