

Zambia Dairy Transformation Programme

JANUARY 2021 NEWSLETTER



Welcome to the latest edition of our monthly newsletter, which summarises activities carried out under the Zambia Dairy Transformation Programme (ZDTP) in January 2021.

Left: Gilbert and Mary Mweemba inspect fodder crops on their farm in Liteta.

Resources to help farmers reduce COVID-19 risks

Last month we referred to guidelines we've developed to support cooperatives and dairy farmers to understand more about COVID-19 and the risks this may pose to their business. The ZDTP team have been sharing these in our operational areas and copies are available for download from our website (<https://www.zambiadairy.com/notes-for-dairy-cooperatives>).

GIZ, in collaboration with the Dairy Association of Zambia (DAZ), has also developed informational posters in Tonga which have been shared with farmers, co-operatives and dairy retail outlets across Southern Province. Copies of these can be accessed by emailing Jyde Hamoonga (jyde.hamoonga@giz.de) of Belindah Chilala (Belindah.chilala@giz.de)

To date GIZ has given out 90 dairy-specific COVID prevention and hygiene protocols in Tonga, 20 milk shop posters and 450 social distancing stickers to partner cooperatives and Savings and Credit Cooperative Societies (SACCOS).

This has been complemented by a radio drive promoting COVID-19 awareness on four community radio stations (from 23rd August to 27th November), that together service or target farmers. A total of 780 slots of infomercials (radio spots) and 12 one-hour, live phone-in programmes were aired focusing on prevention guidelines, signs and symptoms and dairy specific hygiene protocols.

COVID-19 guidelines for dairy processors have also been developed through a collaboration between Prospero Zambia and the Business Council Covid-19 Emergency Taskforce (BCCET).

"BCCET approached Prospero to work together to enable as much private sector activity to occur – responsibly – as possible during the COVID-19 pandemic," says Brian Ross at Prospero.

"BCCET leadership helped focus on sectors of particular importance to the Zambian economy, including dairy, and partnered with Prospero to create helpful SOPs that businesses could use to ensure the safety of staff and customers while maintaining productivity."

The SOPs can be accessed at and are available at <https://prospero.co.zm/publications/>.

Many smallholder farmers that have adopted silage production often make too little to last an entire dry season, even when they know that not conserving enough silage means getting less milk and income. The reasons for this are varied; however, one probable cause is that some farmers struggle to figure out how much maize will yield the right amount of silage. In the article on page 3, our Feed and Fodder Expert, Kalipochi Kawonga, runs through the feed budgeting process, to enable farmers to overcome this challenge.

New fact sheet on hay making available

Hay is a form of roughage for dairy animals, made from dried grass and/or legumes. It can be fed to cattle when pastures are in short supply, e.g. during the dry season. If made and stored correctly, hay can be a good source of nutrients and part of a farmer's annual feeding plan to ensure cattle have good nutrition throughout the year. Check out our latest fact sheet, F08: Making hay, for more information. All facts sheets are available at <https://www.zambiadairy.com/fact-sheets>.



Proper management achieves efficiency at MCC

Fisenge Dairy Cooperative Union is a farmer-led organisation that has been working alongside the ZDTP for several years. In 2018, the cooperative's Board members decided to hire a manager to run their Milk Collection Centre (MCC) business. As busy dairy farmers themselves, they felt they could not be at the MCC enough to grow the business. Patrick Lunda came to the co-operative from the mining industry. Since starting the role, he has received support from the ZDTP in the form of training and advice from locally based Cooperative Business Support Officers and Wesley Chilambe, our Extension Officer for Fisenge. Mr Lunda runs the business on a day-to-day basis and reports to the Board. He says members have now seen



Above: Fisenge Milk Collection Centre Manager Patrick Lunda, left, helps a milk attendant unload milk.

the benefits of separating the cooperative's governance from its operations. He is supported by an accountant, bookkeeper and milk technicians. Mr Lunda has also been helping the cooperative strengthen its business by diversifying its income sources. For example, the cooperative has started hiring out vehicles to people who need to transport materials, as well as selling bicycles to farmers – on credit – and milk cans. “We are also selling feed stock for our farmers. All these things that are happening [are] because of the management that has been established.” ZDTP advisors have been working with staff at the MCC, including Mr Lunda, to improve the quality of milk supplied by farmers and sold to milk processors. “Now I'm able to [tell] if the milk is fresh, if water has been added [or] if the animal that has been milked has got some diseases like mastitis,” Mr Lunda says. He is proud to be able to now prepare documentation such as HACCP plans and Food Control Plans. HACCP is an internationally recognised method of identifying and managing food safety related risk. “I never knew how to prepare food control plans [before], because I never worked in the food industry... I've just been working in the mines. Now I can provide these skills to other people.”

For a video interview with Mr Lunda, please see <https://vimeo.com/516909354>.

How to plan your silage needs - basic principles of feed budgeting

Please note: This article targets farmers that are living off one, two or three cows per household and where silage is the basic dry season feeding source for both maintenance and milk production.



Left to right: Mufulira farmer Stan Ngosa with his maize; Fisenge farmer Berringtone Musonda with his maize; Liteta farmer Kennedy Botha with his maize; all photographs taken in 2018.

By Kalipochi Kawonga

In planning your silage needs, the fundamental question to ask is how much silage/crop do you need to grow? The planning process involves two steps:

1. Calculating the quantity of silage needed, i.e. how much silage your cow/s will eat over an entire feeding period; and
2. Calculating the area required to plant and grow the maize crop that will yield that particular quantity of silage.
3. For further information to help you do this, see our feed planning [fact sheets F06 and F06A](#) where we provide a handy annual feeding calendar.

Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Natural pasture		Supplement natural pastures with green crops such as napier, maize or sorghum. Or silage if available.					Silage (or hay) produced during the wet season.				
60 days		150 days					150 days				

Step 1. Calculating the quantity of silage you need

To quantify this amount, we first need to know the daily silage intake. Assuming that we are planning to feed a 400kg lactating cow for an entire five months, i.e. 150 days (during the dry season), that's 25kg of silage a day.*

So, for a feeding period of 150 days (July to November), the total silage required is calculated as follows:

- $\text{Daily intake} \times \text{feeding period} = 25\text{kg per day} \times 150 \text{ days}$
- $\text{Amount of silage required} = 3,750\text{kg}$

**Farmers can adjust this figure upwards or downwards by 2kg of silage for every 50kg (e.g. a 350kg animal will require around 23kg per day).*

Step 2. Calculating the area required to plant maize

Under this step, the objective is to find the area of maize that is needed to produce the amount of silage as calculated in step one (i.e. 3,750kg). In addition, we also need to know the average yield of whole maize plant cut at milk stage. The area to grow is determined by dividing the amount of silage required by the yield of maize or sorghum. In the Central and Copperbelt Provinces, maize and sorghum yields, for well performing crops are around 15,000 kg/ha and 12,000 kg/ha, respectively. So, using our example, the area to plant is calculated as:

- $\text{Amount of silage required} / \text{maize herbage yield} = \text{Area}$
- $3,750/15,000 = 0.25\text{ha (1 lima)}$

Take home message

By following this two-step planning process, you can see that at least 0.25 ha or one Lima (50m x 50m) is needed to produce enough feed to last the whole dry season for one cow. Logically, a farmer that has more than one cow, or who does not have sufficient other sources of supplementary roughage for feeding between February to June ought to increase the plot size. Once you have allocated adequate area for your maize or sorghum, the next challenge is to manage the crop well to maximise your eventual silage yield and once produced, to store your silage safely to avoid spoilage. For further information on silage production and management, refer to the ZDTP fact sheets [F01: Making silage](#) and [F01C: Managing a silage pit](#).

An introduction to basic dairy technology for processing milk

Excerpts from our latest fact sheet providing advice to dairy cooperatives or farmers who may be interested in going into processing are provided below.

Why should we process milk?

Raw milk can contain bacteria that are harmful to human health. The number of these bacteria increase over time if milk is not chilled at about 4°C. Without cooling, milk will naturally get sour over time and unfit for further processing. Correct processing/heating of milk removes harmful bacteria and means that milk is safe for human consumption and keeps good quality for days or weeks (depends on the process used).

How can we ensure processed milk is of good quality?

To ensure the best quality of processed milk, we need to ensure the quality of raw milk from the time it leaves the cow to the time of processing. Therefore, it is important that farmers and storage facilities (e.g. MCCs) cool milk and follow good hygiene, transport, storage and cleaning procedures.

Procedures associated with milk processing:

Pasteurising

Milk pasteurising is the process of heating milk (or milk product) to a predetermined temperature for a specified period to ensure all microbes are killed.

Sterilising long life or UHT milk

UHT sterilisation implies very rapid heating of the product (milk) to a temperature of 135°C for 3 seconds and rapid cooling to packing temperature of around room temperature.

Homogenising

Homogenisation is a physical process of breaking down milk fat globules into tiny droplets to discourage cream separation; these tiny droplets of fat do not rise in a milk container/bottle/package but stay suspended within it.

Standardising

Standardising means regulating the composition of milk solids (fat) to meet legal standards or customer demand, e.g. fat free, low fat (2.0%), full fat (3.2%). This is done by using cream separators, and/or blending milk of lower fat with cream.

For more information about these processes, and rules around the distribution and sale of milk to the public in Zambia, please refer to <https://www.zambiadairy.com/notes-for-dairy-cooperatives>.

The ZDTP is focused on supporting dairy farmers to improve their productivity, milk quality and linkages to urban markets. The views expressed in this publication are those of the implementers of the programme and do not necessarily reflect those of the New Zealand Government. For further information, please contact ZDTP Country Manager Tania Thomson on tania@primeconsultants.net or +260 96 456 4206.

Components of cow's milk



By volume, milk is mainly composed of water with other major constituents being protein, fat and sugar (lactose as a form of carbohydrate)

Percentages by mass:

- Water 87%
- Protein 3.5%
- Fat 3.9%
- Lactose (carbohydrate) 4.7%
- Ash (minerals, calcium and magnesium) 0.9%