

# “MILK; NUTRITIOUS FOOD AND BUSINESS OPPORTUNITY” FINAL REPORT



**MINISTRY OF  
FOREIGN AFFAIRS  
OF DENMARK**

**Danida  
Alumni  
Network**



*A part of Danida Fellowship Centre*



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## **1. Introduction**

### ***1.1 Description of activity***

Milk is a nutritious food and product with business opportunity in Tanzania. Milk is a reliable source of income when sold with desired quality parameters. The activity about milk; nutritious food and business opportunity focuses on alerting community in Rungwe district, Tukuyu on importance of milk as full nutritious health food and business opportunity. The activity was a one-day seminar on how the Rungwe community will learn the importance of dairy commercial farming particularly formal channeling milk to a formal system of testing milk quality parameters and engage in dairy commercial as a sustainable source of reliable income to improve economic welfare.

### ***1.2 Motivation and Objective of the activity***

The dairy sector has been important in improving income and household welfare in Tanzania. Rungwe is the most popular Tanzanian region in dairy farming. However, most cattle farmers in Rungwe are not involved in dairy commercial farming; their involvement requires creation of awareness on the issue and thus, enhances a sustainable dairy sector.

The activity intended at creating awareness to community around Rungwe district, Tukuyu dealing with cattle farming on the importance of quality milk and that milk passing through formal market has more reliable source of cash compared selling milk under middlemen hawkers who purchases milk at low price compared to formal market e.g., milk processors like Asas Dairies Limited.

## **2. Main body of the report**

### ***2.1 Methodology***

The training planned to have 50 participants include representative of local dairy farmers (who will acquire knowledge and skills on dairy commercial farming, and later on train the fellow farmers), representative ward extension officers (who will be future trainers of farmers) and milk chilling center attendants. However, we had all planned total number of physical participants (50) plus seven participants (two from Heifer and one from Asas Dairies Limited, and four alumni who participated virtually. Those participated virtually is through zoom meeting using the link <https://us05web.zoom.us/j/81353713898?pwd=Q0dHeUQvNWpEL3d3LzJIUEpaSFVCdz09> (with Meeting ID: 813 5371 3898, Passcode: 3MVDZA). The training approach used is called training of trainers (TOT) approach i.e., the participants particularly farmers and wards extension officers are expected to train the non-trained farmers. The methods used in TOT

included lectures, group discussions, and all participants discussions with questions and answers.

## **2.2 Milk, Milk Quality and Effects**

Participants have learned various aspects concerning milk, milk quality and its effects as explained in this section.

### ***The meaning of milk***

The milk by definition is a liquid substance, white in colour, suitable for processing, when boiled doesn't change its appearance and suitable for human consumption. The participants also were informed of important content in milk including water (87.2%), oil (4%), protein (3.5%), sugar (4.9%), minerals/Vitamins (0.8%) and TS (12.7%). The participants have learn milk have several advantages in human nutrition based on its contents as follows;

- Oil - maintain the temperature in the body ( AFA)
- Protein - help in body growth
- Sugar - increase energy in the human body
- Minerals- strengthening teeth and bones
- Vitamin - for body protection against diseases
- General milk - promote growth to children, made them strong with best intelligent quality (IQ).

### ***Meaning of quality milk***

Quality milk is the milk which meet standards set by the institution concerned with quality standards like Tanzania Bureau of Standards (TBS) AND Companies' standards. Quality milk also referred to milk with several feature presented in Table 1 below. The Table 1 also presents the effects of having quality milk.

**Table 1: Features and effects of quality milk**

<b><i>Feature of quality milk</i></b>	<b><i>Effects of quality milk</i></b>
Acidity level average of PH scale of 6.7 or 0.15%- 0.20%, having weight of (lactometer) 26 - 32 ° L, non-contaminated with anything, not added with water, not smelling with its white colour, free from antibiotic or chemicals, not obtained from cattle with TB or other diseases	<ul style="list-style-type: none"> <li>• <i>They stay for long time without easily decay</i></li> <li>• <i>Assure a farmer with easiness in access to market.</i></li> <li>• <i>Produces quality and safe dairy products,</i></li> <li>• <i>Assure the livestock household with reliable source of income</i></li> <li>• <i>Reduce importation of milk in the country.</i></li> </ul>

and having harmless bacteria for human consumption.	<ul style="list-style-type: none"><li>• <i>Improve the health of quality milk consumers include cattle keepers.</i></li></ul>
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### ***The status of milk quality in Tanzania***

The Tanzania dairy board through its representative informed the participants that the cattle keepers are still producing milk with low quality for human consumption and for selling to the processors (e.g., Asas Dairies Limited) and to the local market. According to Tanzania dairy board report of 2020 the low quality milk in Tanzania is due several reasons include about 20% the milk is added with water by unfaithful milk producers, the milk producers are using poor equipments in milking and storing milk in dirty plastics, the milk is not stored in refrigerator with cold level required to prevent them from spoil in 2-3 hours before reaching the consumers, most of the cattle keepers and processors are lacking education on milk quality testing and milk found to have unwanted substances and harmful bacteria.

In milk there are three types of bacteria,

1. Lactic acid bacteria: are bacteria who use milk sugar called lactose to change milk in acidity condition called lactic which usually results into frozen milk and traditional milk.
2. Spoilage bacteria: are bacteria including coliform, butric acid and putrefaction. They usually cause swelling of milk packets, milk to contain unwanted gas, sliding milk and bad milk taste.
3. Pathogenic bacteria: are harmful bacteria to user of milk. These are bacteria which cause diseases to humans include mycobacterium tuberculosis, brucellas arbortus and taphylopcocci.

However, these bacteria can be controlled and killed in milk by 90% at a room temperature of 72°C in 15 seconds. The bacteria that harm and cause diseases to human can die at room temperature of 65°C in 30 minutes.

### ***Challenges which affects the quality of milk***

1. Use of poor storage of milk e.g., plastic buckets
2. Poor grazing place
3. Adding water in milk
4. Poor feeding of cattle
5. Diseases harmful to cattle

### ***Ways to maintain milk quality by the producers***

1. The milk producers should be cleans himself/herself and their surroundings of keeping cattle.

2. Milk storages should be well storage in at a required room temperature.
3. Store milk away from smelling things such as fertilizer, burns, onions and smelling foods.
4. Avoid keeping milk in staining storages
5. Do not place milk under the sun.
6. Boil milk if they are for household uses.
7. Store milk in refrigerator at a room temperature of 5° C or ice bank. In absence of electricity use store milk in charcoal cooler or in equipment with very cold water.

### **2.3 Quality Milk and Business Opportunity**

The milk produced in Tanzania has been reported to have been used in in production of different dairy products. These dairy products are used in business by different actors in milk value chain. This means milk has been a business opportunity among various actors in milk value chain including cattle keepers, milk processors and milk traders.



The participants have learned on several milk products and the way to prepare some of them for the selling in the local market. The milk products include fresh milk, Yogurt, soft cheese, milk cream, butter and samli. These milk products are business products which cattle keepers can have potential gains in the local market through adoption of improved technologies in production of quality milk. The participants were made aware on how to prepare two milk products such as yogurt and cottage cheese from sour milk.

**Yogurt** is important food for human health. The people who cannot use fresh milk (lactose intolerance) can consume yogurt without any problems. Steps in preparing yogurt include:

1. Filtrate milk using clean, safe and white piece of cloth.
2. Boil milk for five minutes while stir them to prevent burning.
3. Cool them quickly by put the pan with hot milk inside the pan with cold water while stir milk until they reach a temperature of 20-25 °C,
4. Pour the milk in dry and wide cans.

5. Add kimea one table spoon every one litre of milk and then stir them in order to have nice mixture.
6. Put them without shaking them at room temperature of 20-25 °C for 14-16 hours
7. The second day, you will have the frozen yogurt.
8. Take a little of the yogurt in clean utensil and seal them to be used as kimea in preparing the other yogurt in case you do this every day.
9. Stir the yoghurt and pour them in clean sachets.
10. Milk processing and packing in sachets is done in order to:
  - a. To improve the yogurt quality and to prevent spoilage.
  - b. It is easy selling in the market.
  - c. For them to last longer.

***Cottage cheese from sour milk:*** it is important food for human health.

1. Put water in a big pan
2. In another pan put Yogurt.
3. Put the pan with yougurt inside the pan with water.
4. Boil water until the reach a temperature of 60 °C.
5. Reduce to 1/3 of all milk.
6. Add salt in milk of about 1.5 -2%.
7. Pour the salted milk in clean and warm piece of cloth.
8. Hang it to remove the remains of water. The cheese amain in the piece of cloth and milk will be filtrated to another pan.
9. The cheese will be ready for use in a second day.
- 10.** Store cheese in refrigerator for not more than 7 days.

#### ***2.4 Milk testing Practical***

This part was led by representative from Asas Dairies Limited (Mr. Joshua and Mr. Nickson). Several measures of milk testing for quality and standards have been identified these include:



1. Measure using sense organs - organoleptic (nose, eyes and skin)
2. Lactometer
3. Acidity measure
4. Resazurin measure
5. Alcohol measure
6. Iodine measure
7. Boiling

Measures 1, 2, 3, 4 and 5 were demonstrated in the activity particularly in testing of milk to see its quality.

### ***2.5 Danida-Alumni experience on Dairy sector***

Fadhili as alumni from Masters class at Denmark and experienced in dairy from ASAS Dairies limited and Kalali Women Dairy Cooperative Society of Machame Moshi - Tanzania, gave full experience with dairy in Tanzania. How farmers trade using both milk hawkers, home consumptions and trading on local such as neighbors' and few trade on proper value chain to processors where they contribute to three percent of milk consumed from processed products.

Such as trading on processors ensures farmers do get reliable income, protect health of milk consumers and ensures that the government earns by collecting tax from the processors.

### ***2.6. Important issues emanated from discussions by all participants***

All participants' discussion was led by Fadhili Mbilinyi and Felister Y. Tibamanya. The important issues captured from the all participants discussion included mainly suggestions to the government and private investors i.e., processors in dairy sectors.

### **2.6.1 Suggestions to the government**

The farmer's needs to be involved in creation of regulations and provided with information alerting the dairy community on potential market, diseases eruptions and other threats. For example, the dairy cooperative leaders asked the possibility of creating regulations to restrict selling of milk under informal market where people do carry milk under jelly plastic cans which increases the risk of milk spoiling. Large quantity of milk sold under informal market, have not been tested for quality and they poses higher risk to infect consumers who purchases un-tested milk.

The government through the Tanzania Dairy Board (TDB) needs to have one office at Rungwe -Mbeya because is leading production of milk in Tanzania and for enhancing sustainable dairy farming.

The dairy farmers appreciated Danida for being development partners in Tanzania and other countries for many years and especially for supporting knowledge sharing in this activity.

Cattle keepers should be offered with inputs credit in their associations to promote their use of good quality milk storage facilities.

Creation of by-laws to strict enforces the building of quality grazing place and quality milk through livestock keepers' associations. Village committees for milk quality assurance need to be created.

### **2.6.2 Milk Processors**

At Rungwe, most of veterinary officers have experienced more milk being sold under informal market but existence of ASAS Dairies limited has shown more farmers to be interested in selling milk to formal channel.

More processors needed to increase competition but they have to make sure they have the capacity to collect milk and pay farmers their payments timely.

Some farmers were interested to hear that this event was funded by DANIDA and would like to see processors and cooperatives do engage in training farmers on importance of quality milk and selling of milk to formal channel of processors.

## **2.7 The activity Grant**

The grant for the activity about 8520 DKK was disbursed by Danida Fellowship Centre (DFC) on 25<sup>th</sup> August 2021 in CRDB account 01J20407444400 with the name Fadhili Isaac Mbilinyi. We are appreciate so much for this to ministry of foreign affairs of Denmark, Danish royal embassy in Tanzania and Danida Fellowship Centre in Denmark. The grant was used as required in the breakdown of the budget of the activity (See the attached budget and receipts for the retirement).

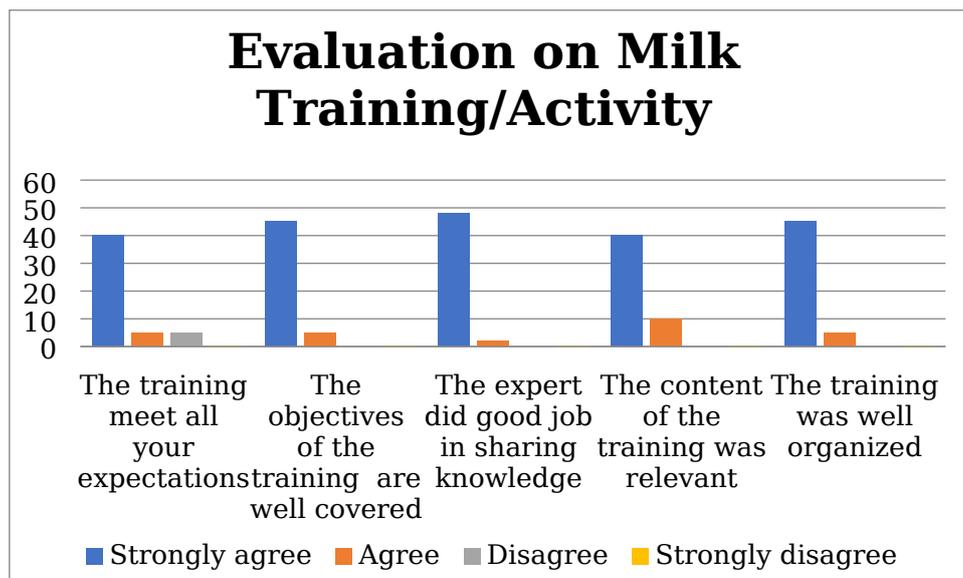
## 2.8 Partners in the activity

The activity was done in partnership with Heifer in Tanzania and Asas Dairies Limited who contributed milk two experts and some learning materials. We acknowledge them for their support.



## 2.9 Training Evaluation targeted participants

The Danida alumni at the end of the training collected feedback on the training to participants concerning their expected outcomes and objectives of the activity, and its relevance, experts' knowledge and effectiveness, facilities provided and overall thoughts of the participants. The Table below summarizes their feedbacks:



## 3. Conclusion

It is important to be aware that milk quality need to be assured and maintained by every actor in milk value chain starting from cattle keepers, milk processors up to the final consumers.

The activity like this of creating awareness on milk quality and its benefits should be a continuous as more stakeholders (e.g., livestock keepers, milk processors and Tanzania Dairy Board (TDB) authority need to be involved as they are the important actors to control the chain of milk especially milk

sold in the local market. Farmers need to be motivated to be under cooperatives so they can join power to negotiate in price, negotiate in finding market opportunities and other players in the value chain.

Furthermore, more TOT are further needed in create awareness to more livestock keepers in order to increase the volume of milk sold under formal channel and thus, help in reducing milk sold under informal market which mostly are not checked properly on its quality and reduce poor quantity of the milk sold after being rejected at formal processors' channel. Thus, sustainable market and business opportunities of quality dairy/milk and its products requires sustainable dairy sector among the actors in milk supply value chains (e.g., dairy contract farming).

*Video link on the event:*

<https://we.tl/t-8KV72Ed7Oy>