

Theme 1: Forage production and pasture management

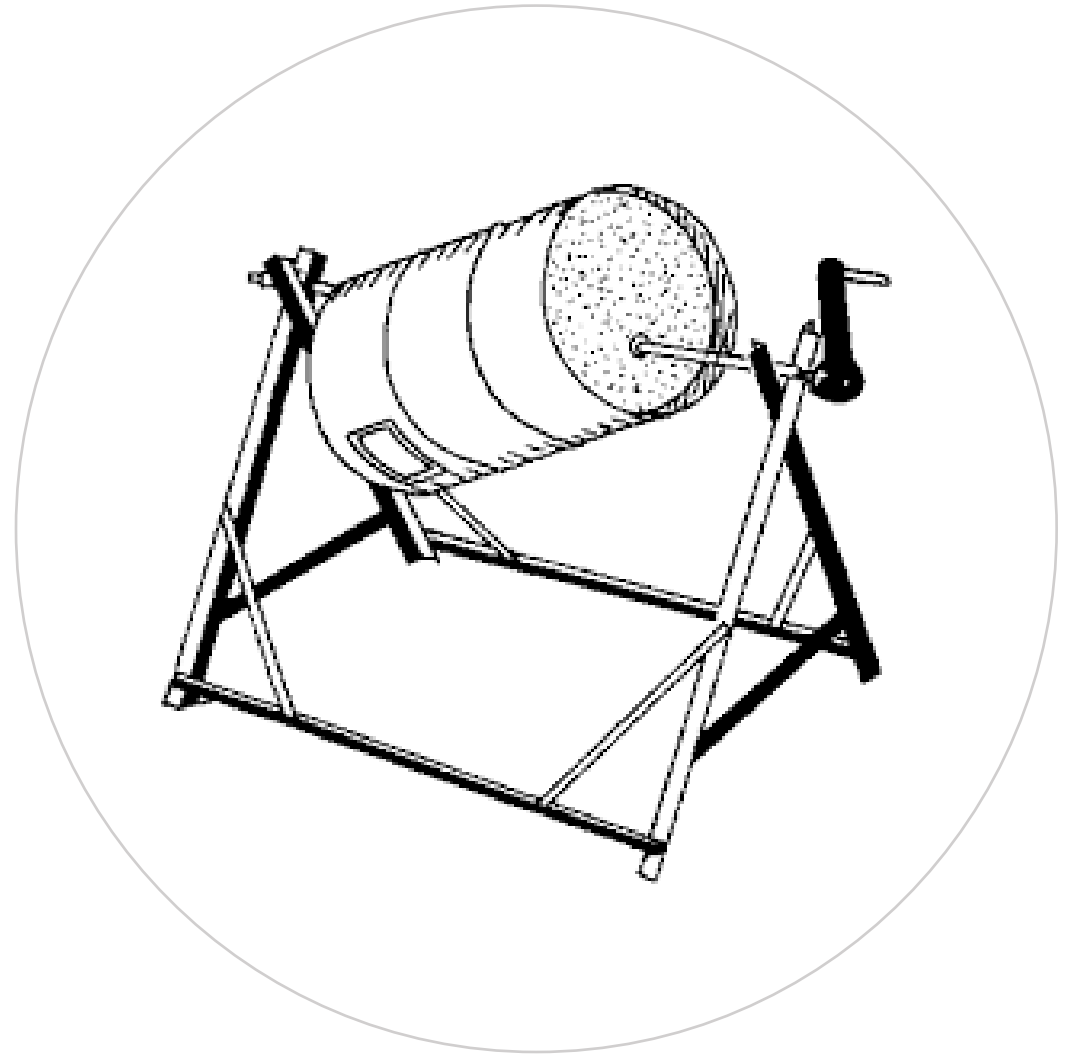
MECHANIZATION OF FEEDING MANAGEMENT (Level 1)

Topic	Training & information Content
1.1	Planning of fodder/feed requirements for the dry season
1.2.1	Integrated soil fertility management I
1.2.2	Integrated soil fertility management II
1.3	Use of natural resources, compost making, farmyard manure, manure storage and use
1.4	Growing maize and sorghum for fodder and estimating time of harvest and yield
1.5	Brachiaria, Panicum, & Napier (cut and carry) grass management
1.6	Growing fodder trees and use of feed
1.7	Estimating of dry matter content, feeding value and yield of various fodder crops
1.8	Guidelines for Tropical pasture management and grazing management
1.9	Scaled mechanization of forage production and pasture management (harvesting practices)
1.10	Operating farm equipment and self-propelled tractors
1.11	Mechanization of feeding management
1.12	Economics of forage and pasture production



1. You will learn about (learning objectives):

- Importance of feeding mechanization.
- Mechanizing feeding at the farm.
- The different management practices that have been mechanized e.g:
 - Frequency of feeding.
 - Delivery of feeds to cows.
 - Feed processing practices



2. Introduction

- Feed and labour are very essential in dairy farm operations.
- Mechanization of feeding management helps reduce challenges and high costs related to feeds and manpower (labour).
- Machinery enables one to get higher output from various stages.



3. Benefits of feeding mechanization

- i. Lowers operating costs.
- ii. Saves on resources e.g. time
- iii. Increases production output e.g. feed quality.
- iv. Ensures consistency, improved and quality feed management.
- v. Encourages better feed planning strategies.
- vi. Improves productivity and efficiency of feed management.



4. Areas for mechanization in a farm

- Mechanization can be done for:
 - i. Feeding related areas/zones
 - Feed production
 - Animal feeding
 - ii. Milking and milk handling
 - iii. Manure collection



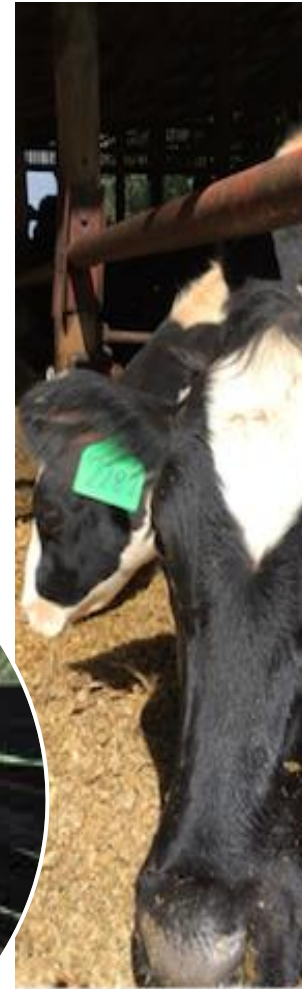
5. Feeding related area: Animal feeding

- Some of the equipment and/or techniques used in a feeding area include:
 - Feeding frequency
 - Feed delivery: feed bunk/trough
 - Management of pastures
 - Feed barriers
 - Watering system (pumps and troughs)
 - Feed processing: Feed mixer
 - Monitoring and evaluation of feeding (transponders)



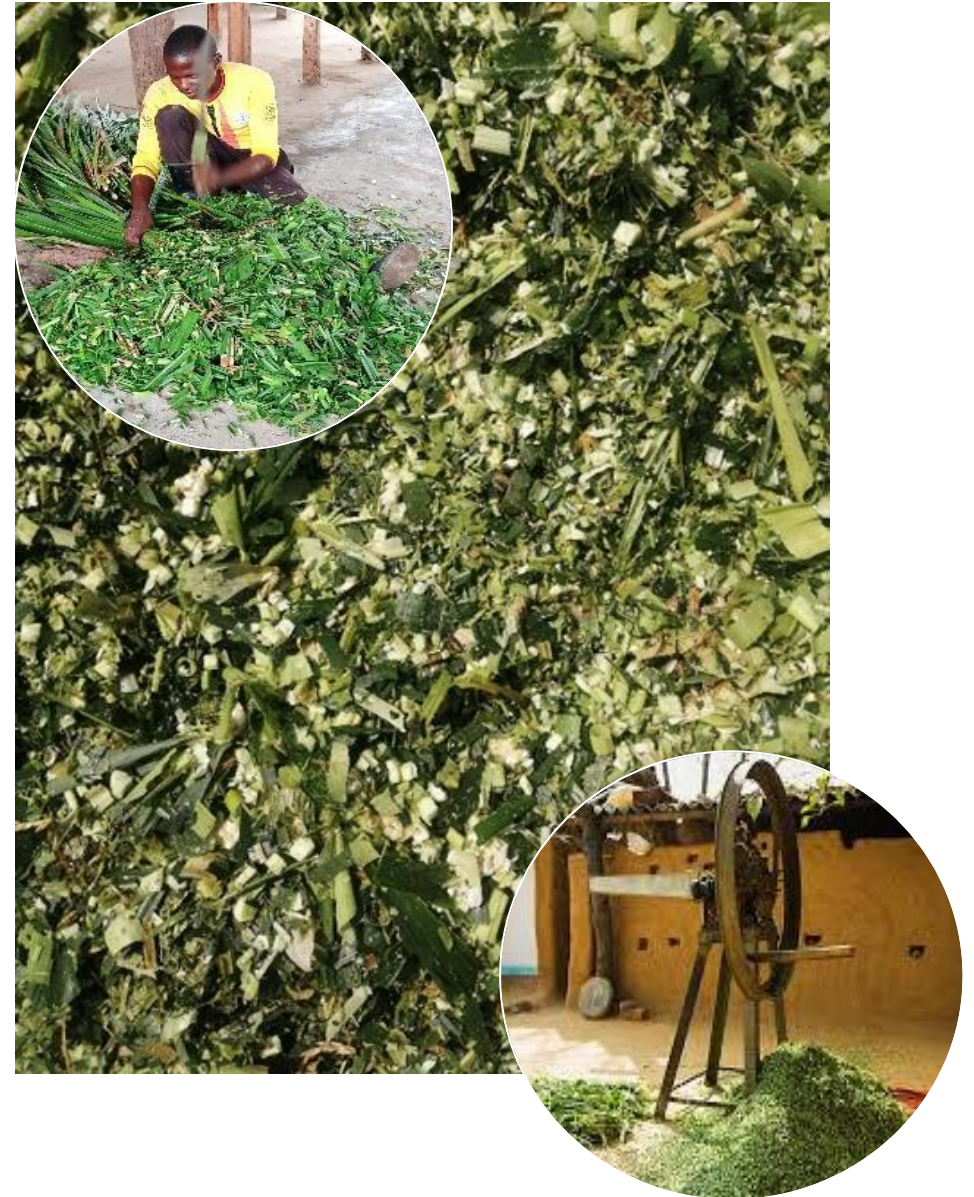
6. Feeding frequency

- Feed placement and handling can take place averagely three (3) times a day.
- Increasing feeding frequency (2×) is found to increase the time animal spends feeding in a day.
- Feeding once a day often results in sorting of feed and unequal access to feed by cows.



7. Feed delivery: Feed chop size

- Chopped forages (averagely 0.8-1.2cm) improves feed intake by cows.
- Farmers can chop forages using a panga, chaff cutter or chopper that is manually or mechanically driven by a tractor in the field. (Roller) mills also crush grains.



8. Feed delivery: Feed bunk/trough

- Feed delivery using feed bunk/trough aids better feeding through better feed access.
- Bunks may be made of wood, iron or cement.



8.1 Feed management within the feed bunk/trough

- Ensure the feed bunk is clean.

Clean feed bunk equals clean feed!



- Clear the feed bunk after feeding.
- Inspect the feed bunk incase of loose nails, holes in the bunk causing feed losses.



9. Management of pastures

- The use of fences like barbed wire or electric fences helps a lot in segmenting pasture fields.
- Paddocks make it easy to practice rotational grazing. This helps to better manage the growth and utilization of pastures.
- Cutting grass to a uniform level helps improve overall growth.



Further reference: Modules on Feeding systems and Guidelines for tropical pasture management.

10. Feed barriers/fences/neck rail

- These are mostly used by farmers practicing intensive feeding systems (zero grazing).
- Movable barriers are placed in line in a parallel way, cows pass their heads to access feeds.
- Feeds are mechanically pushed using a shovel/brush nearer to the cows after a while.



11. Watering system

- Water is an essential need for cows.
- Mechanisation of the watering system can be done from the initial delivery of water to the mode they access the water.
- Systems of key importance in feeding (water) management are for example:
 - i. Water delivery (pump)
 - ii. Water access (water troughs)

Further reference: Module on Water sources, distribution, storage and requirements.



12. Feed mixing

- Cows are naturally selective feeders, mainly affected by smell and the feel of feeds (soft or rough forage).
- Mixing of forage with processed feed ensures homogenous mixed rations.
- Mixing involves use of hand mixing, shovel, wheelbarrows and feed mixers (manual drum mixers or mechanized feed mixers).



13. Feed mixing by hand

- Hand mixing is commonly practiced by smallholder farmers.
- Premixing is done by hand in large containers or wheelbarrows.
- Hand mixing is also practiced when left overs are to be mixed with new feed.



14. Feed mixing by shovel

- Mixing by shovel can be done on the ground or inside a wheelbarrow.
- Mixing on the ground is usually placed in bags or mixed then transported to feeding area.
- Shovel mixing on the wheelbarrow aids direct delivery to the cow feeding area.

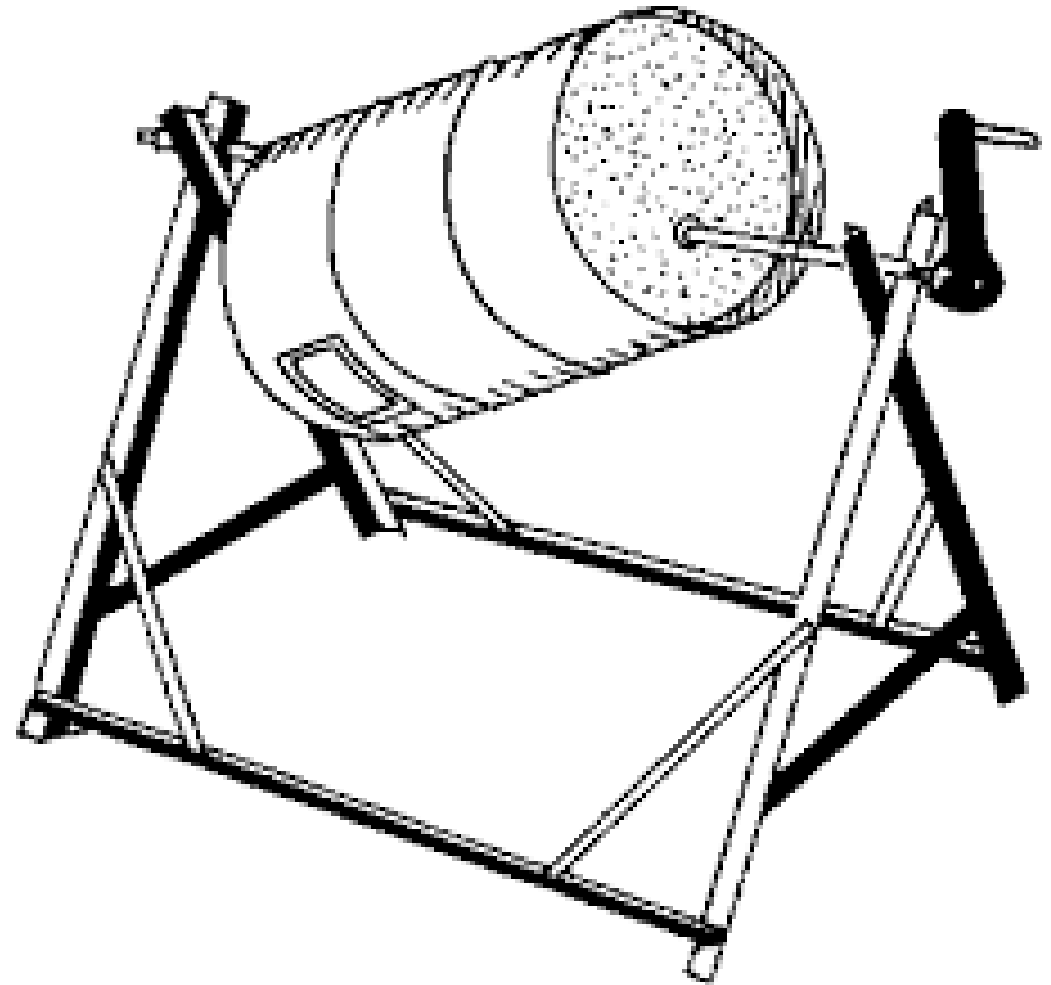


15. Feed mixing by manual drum mixer

- The manual drum mixer is used for mixing feed ingredients in a particular ratios by manually turning the drum to mix feed ingredients inside.
- Used to create small portion of feeds and is recommended for farmers with small herd sizes.

Watch video:

https://www.youtube.com/watch?v=LvyvbSLJ_V0



16. Feed mixing by feed mixer

- Feed mixers in dairy farms can either be manual or mechanically driven. Mixers help create total mixed ration (TMR).
- There are two common types of mixers that farmers can choose from, that is:
 - i. Manual drum mixer
 - ii. TMR mixer



17. TMR mixer

- A TMR mixer is an equipment used for mixing feed ingredients and formulated to a specific nutrient concentration.
- TMR mixer is operated automatically and is mostly used by large farms and agro-industries.

