

Theme 13: Mechanisation of a dairy farm

FARM TOOLS AND EQUIPMENT (Level 1)

Topic	Training & information Content
13.1	Farm tools and equipment
13.2	SOP of farm machinery
13.3	Maintenance of farm machinery and equipment



1. You will learn about (learning objectives):

- ❑ Types of farm tools and equipment.
- ❑ Purposes of these tools and equipment.



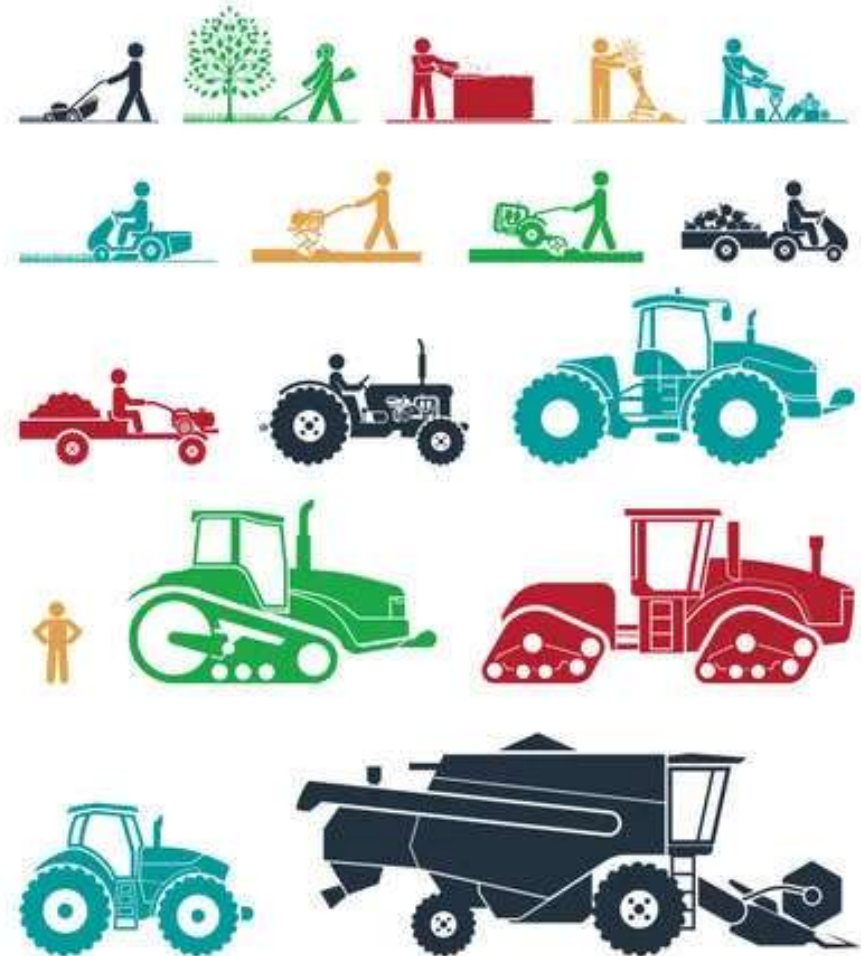
2. Background

- The tools and equipment required depending on the level of mechanization desired and the scale of operation.
- However, some tools and equipment are essentially required such as the chaff cutter machine, milking pails, milk cans, digging hoes, machete (panga) back spay, etc.
- On farms maintaining more than 20 dairy cows, machine milking may be economical and more convenient as compared to hand milking.



3. Introduction

- A well functioning dairy farm requires to have essential tools and equipment to run smoothly.
- There are several other modules that have discussed some of the farm machines, equipment, and tools. In this module, we will cover tools and equipment used in small scale farms and mention some advanced farm equipment at the end.
- Below are some of the modules you can go through that have covered some of the dairy farm tools and equipment in detail;
 - 1.10. Operating farm equipment and self-propelled tractors,
 - 1.11. Mechanization of feeding management,
 - Theme 7. Milk machines and handling (10 modules).



4. Farm tools and equipment categories

- Farm tools and equipment can be classified into several categories as follows;
 - 1) Manual tools and equipment.
 - 2) Structures and restraining tools.
 - 3) Animal related tools
 - 4) Milk and milking equipment and tools,
 - 5) Feed and fodder chopping, grinding/crushing, mixing, and pelleting tools.
 - 6) Fodder establishment, harvesting, and conservation,
 - 7) Farm office management tools,



5. Manual tools and equipment

- The picture attached represents most of the tools that are used by workers in a dairy farm. Some of their functions are shared below;

1. Wheelbarrow: carry things from one point to another for example feeds to cows.
2. Watering can: sprinkle liquid such as water, or a solution of molasses. For example during silage making process molasses and water solutions can be sprinkled evenly using this can.
3. Rake: scooping, scraping, gathering, or leveling materials, such as soil, mulch, or leaves e.g. even cow bedding such as sand,



5.1 Manual tools and equipment Cont'd...

4. Sickle: used to harvest forage for cows.
5. Pick Mattock: used for digging, prying, and chopping.
6. Machete: e.g. can be used to cut and chop forage,



5.2 Manual tools and equipment Cont'd...

7. Sprinkler: for irrigating forage,
8. Iron fork hoe: to loosen the soil, prior to planting or sowing.
9. Hammer: can be used to place nails or pull them out, e.g. make or repair fences etc.



7



Iron Fork Hoe

8



Hammers

9

5.3 Manual tools and equipment Cont'd...

10. Digging shovel: digging up, breaking apart, and lifting soil as well as scooping and moving loose materials,
11. Head pan: Used to help with holding water or solution.
12. Spade fork: or loosening, lifting, and turning for example hay.



10

Digging Shovel



11

Head pan



12

Spade Fork

5.4 Manual tools and equipment Cont'd...

- 13. Steel hoe: tilling (mixing) the soil or breaking the ground to loosen it,
- 14. Slasher: clearing thin and dense low-lying bush or scrub,
- 15. Spade: cutting into sod, edging, or digging trenches or anything that requires a sharp, straight edge.



Steel Hoe Head

Slasher

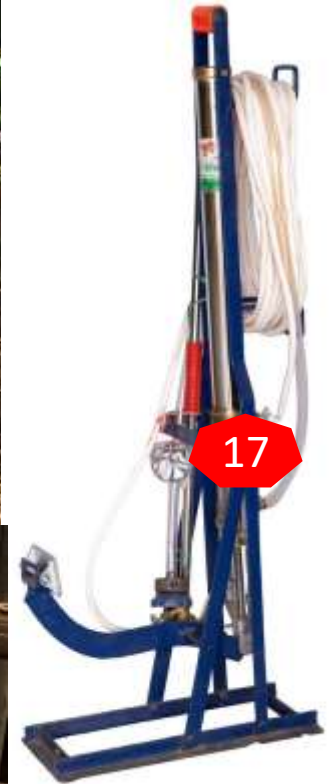
Spade

5.5 Manual tools and equipment Cont'd...

16. Back sprayer; carry on the back and use hand to pump and another hand to spray cows or surfaces.

17. Foot sprayer; use foot to pump solution to spray

18. Weighing bands; Measure the weight of your cows.



6. Structure and restraining

- The dairy farms' structure and equipment have further been discussed under module, **8.1. Farms structures & housing for cows, calves, and youngstock.**
- The fences are used to restrain cows in a selected region of a farm. In extensive and semi-extensive systems (paddock grazing systems) there are types of simple fences that are used as shown;
 - i. Permanent physical fencing is typically for long-term use, so plan the location carefully before building. It consists of enough material, which is sufficiently strong enough to prevent and discourage animals from breaking through.
 - Materials used for this kind of fencing are barbed wire and wooden poles.



7. Tools and equipment for fencing

- 1. Wooden pole,
- 2. Barbed wire,
- 3. Hammer,
- 4. Wire strainer; help in tightening the barbed wire.
- 5. Nails (U shaped)
- 6. Pliers; cut wire,
- 7. Digging bars, dig holes to place wooden poles.



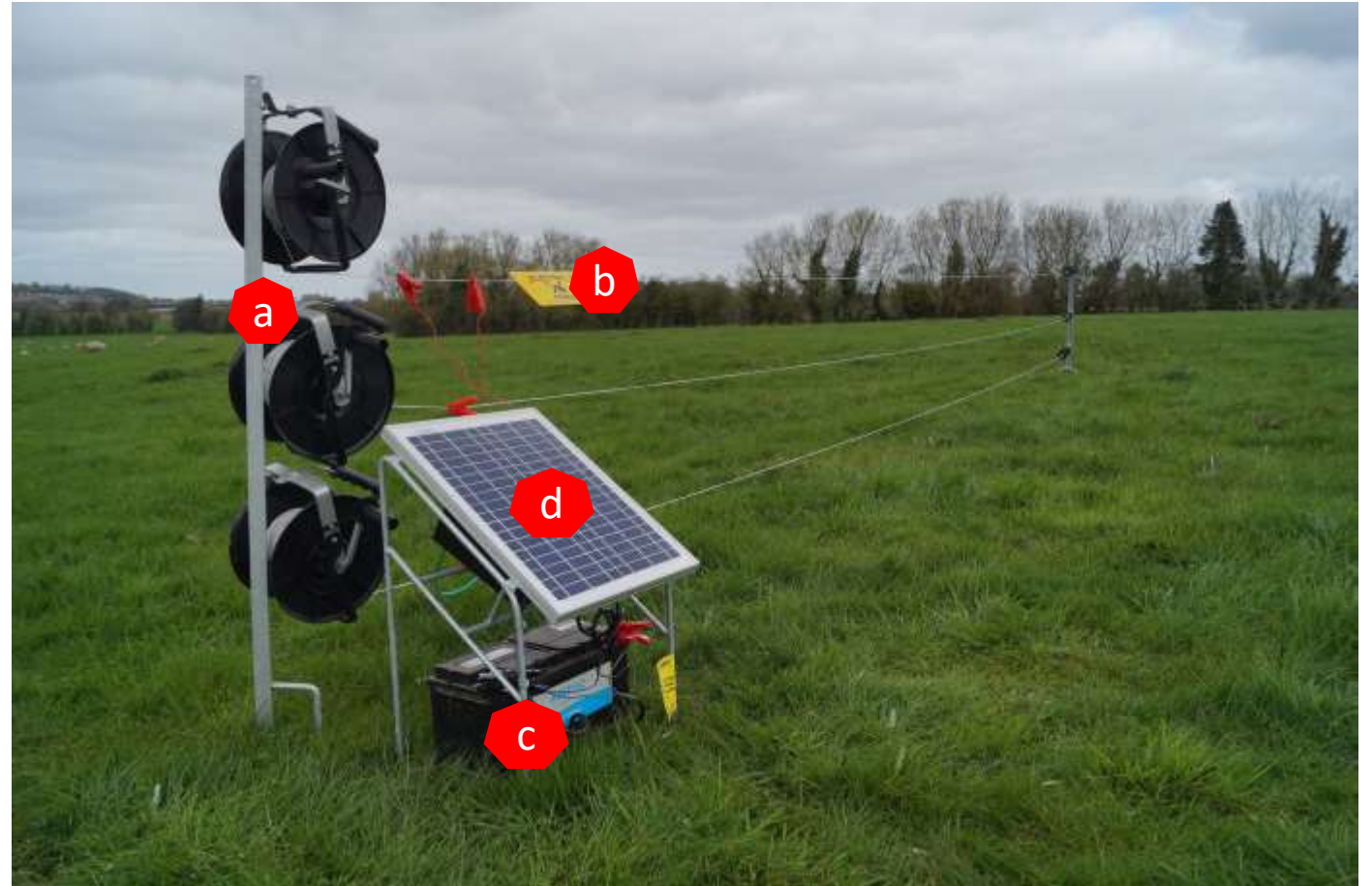
7.1 Electric fencing

- There are other type of fencing systems that can be used in advance on a paddocking grazing system. There are;
 - ii. Electric fencing that is placed on wooden poles and is permanent on the ground.
 - ii. The mobile electric fencing is temporary fencing that is easy to move.



7.2 Electric fencing tools and equipment's

- The tools for movable electric fence consists;
 - a) Easy to move poles(wooden or metal)
 - b) Suitable electric fencing wires,
 - c) Mobile energizer and
 - d) Solar panel.

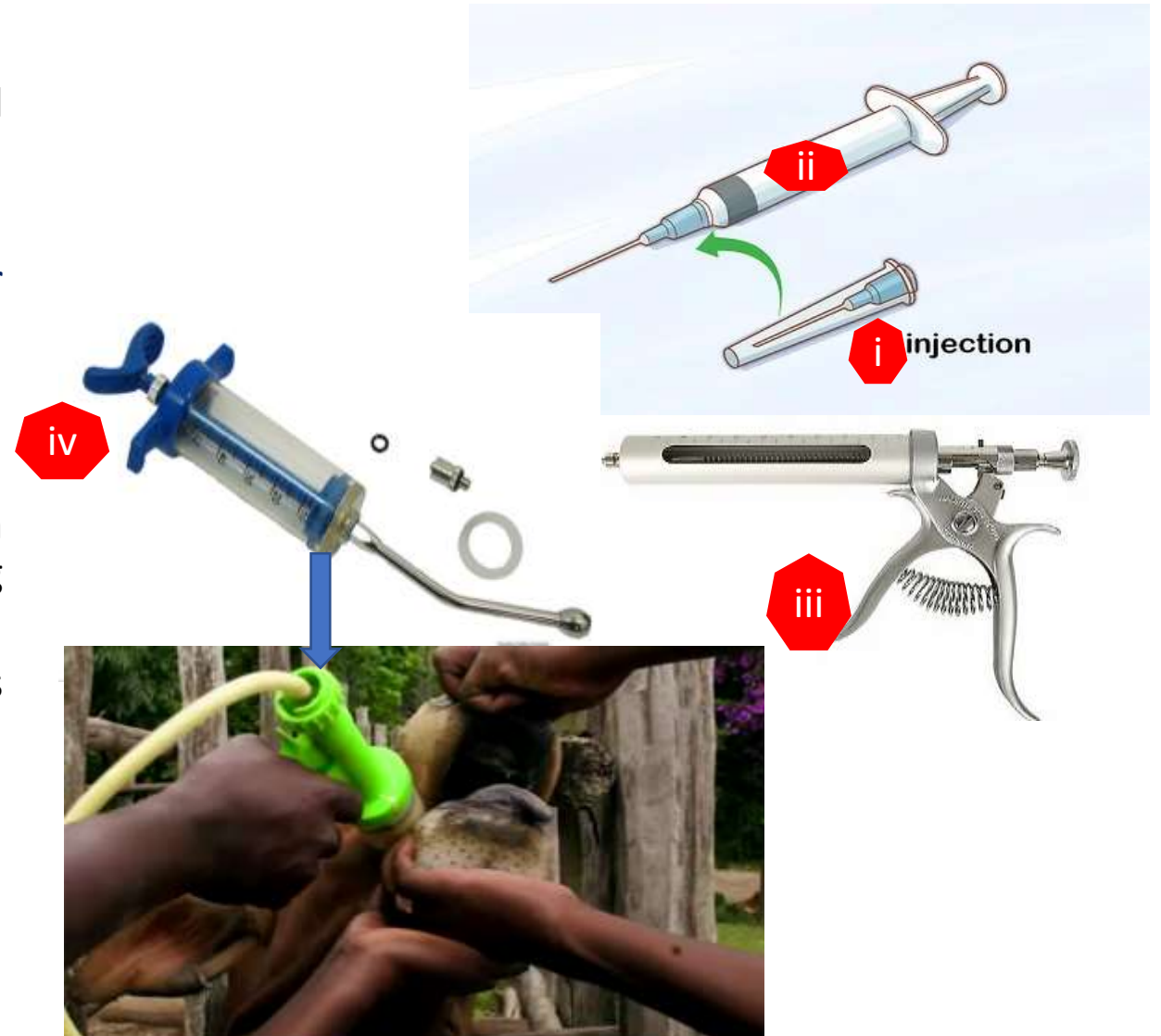


8. Animal related tools and equipment

- In a dairy farm there are several tools and equipment that are used on the cow, these are;

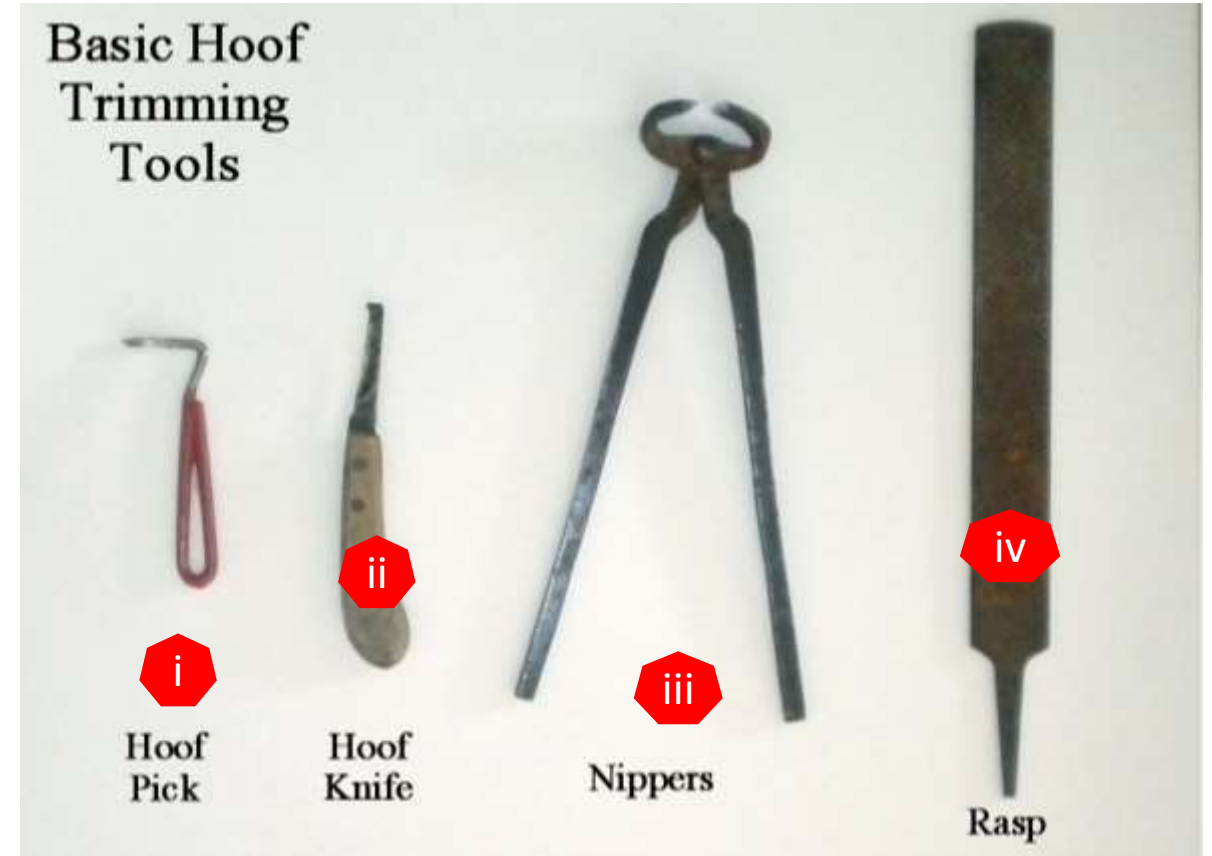
1. Medicine and vaccine administer tools.

- Needle,
- Syringe,
- Treatment gun; (i, ii, iii) all three can be used for administering the drug through the skin.
- Drench syringe and gun: Administers drug through the mouth.



8.1 Animal related tools and equipment Cont'd: Hoof care tools for hoof trimming

- i. Hoof pick; pick dirt or object stuck on the hooves,
- ii. Hoof knives; trim hoof by slicing bit by bit,
- iii. Hoof nippers; trim by clipping hoof,
- iv. Hoof rasp (file); for filing the hooves to make a smooth finish.



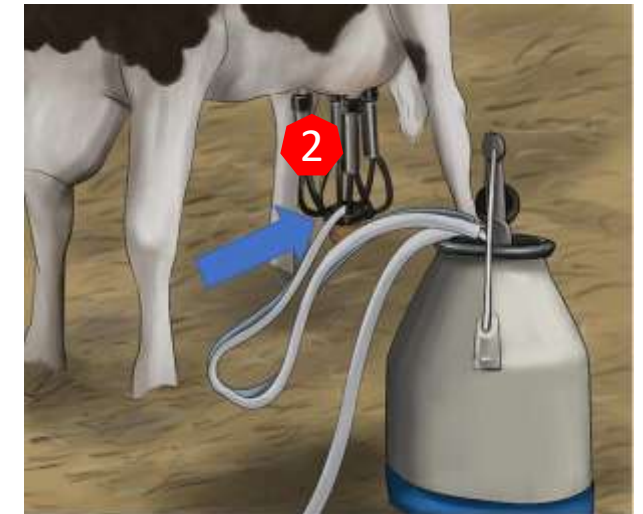
8.2 Animal related tools and equipment's Cont'd: Identification tools

- i. Ear tags
- ii. Ear tag applicator



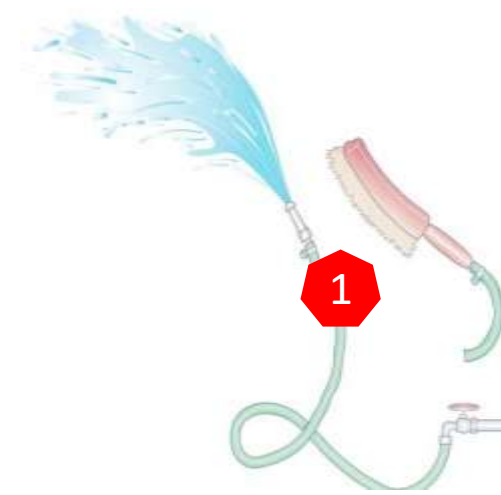
9. Milking tools and equipment categories

- These are any kind of machine, equipment, and tools for the purpose of milking, storing, preserving, and transporting milk.
- We will just mention a few here because this category was covered under theme **7. Milk machines and handling (module 1-10)**
- The common production processes are hand milking (use buckets or pails picture labeled 1) and machine milking (vacuum buckets milking picture labeled 2).



10. Tools and equipment's used during the milking process

1. Water pipes, cleaning brushes, and clothes/towels; for cleaning the cow, cow's udder, and equipment.
2. Udder cleaning and drying clothes/towels or disposables.
3. Udder clipping (shaving) makes it a lot easier to clean the udder.
4. Teat dip for prep and post dipping; used to disinfect the teats before and after milking.



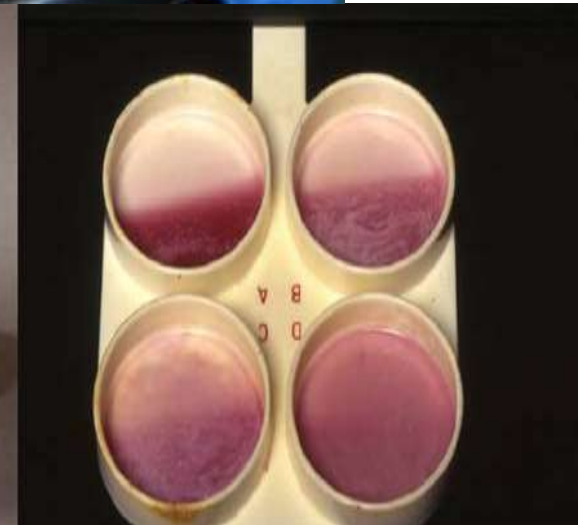
10.1 Tools and equipment's used during the milking process Cont'd...

- For mastitis check before milking, the following tools could be used;

5. Strip cup; for clinical mastitis check,

6. California mastitis test (CMT) kit; both clinical and subclinical mastitis check.

- More details on module **9.8. California Mastitis test**



10.2 Tools and equipment's used during the milking process Cont'd...

- For milk storage and during milking in the parlour the following tools and equipment are used;

7. Milking buckets/pails for hand milking,

8. Milk sieves and sieving clothes are used to filter milk after milking.

9. Milk cans for the temporary storage of milk.



10.3 Tools and equipment's used during the milking process Cont'd...

- After milking a farmer should measure the milk and record the milk quantity per cow. The following tools are used;

10. Weighing scale; weighing the amount of milk in kilograms,

11. Weighing jugs; weighing the amount of milk in liters using volume.

12. Recording milk; using pen and paper for record-



11. Feed and fodder chopping, grinding/crushing, mixing, and pelleting tools

- Fodder (forage) chopping tools and equipment after harvesting are;
 - i. Chaff Cutter; It is a machine used for cutting fodder. Can be manually operated, animal operated and power operated chaff cutters.
 - ii. Chopper; to cut the straw or hay into small pieces to mix it together and feed to cows which is power operated.
- These are equipment used for smallholder farms. For large farmers, a bigger chopper machine is recommended.



11.1 Feed and fodder chopping, grinding/crushing, mixing, and pelleting tools Cont'd...

- Feed and fodder mixing and serving tools and equipment are;
 - iii. A cereals grinding machine; used to grind and crush seeds to smaller particles that the cow can digest.
 - iv. Total mixed ration (TMR) mixer; the machine is used to mix the fodder and feeds thoroughly to make a uniform mix before serving it to the cows.
- These are small and simple tools used in small-scale dairy farms, however, bigger machines can be found in the market.



12. Tools and equipment in more advanced farms

- The dairy farm tools and equipment mentioned in the slides above are the most common that can be found in small-scale farms.
- The slides that follow will mention some examples of tools and equipment that can be on dairy farms that are more advanced and or large-scale farms. For example using machine milking in place of hand milking, transporting manure using trailers mounted on a tractor in place of wheelbarrows, etc.

