

## **ANIMAL PRODUCTION Level -III**

**Based on March, 2022 (Version-4) Occupational standard**



**Module Title: - UNDERTAKING LIVESTOCK  
FATTENING**

**LG Code: AGR APN3 M08 LO (1-5) LG (33-37)**

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Adama, Ethiopia**

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### **Introduction to the Module**

This module covers the knowledge, skills and attitude required to undertake livestock fattening that able to prepare for livestock fattening, to select livestock for fattening carryout fattening, feed and feeding for fattening animals and monitor performance of feedlots to aid farming community and enterprises.

Livestock fattening is a common practice in Ethiopia and special attention was given by the government to boost red meat supply through cattle fattening.

Fattening cattle, sheep and goat is one kind of livelihood option with better income for farmers in urban and rural areas. In addition to earning a good income, rural farmers and urban livestock breeders will also utilize locally available crop residues and forages as well as industrial by-products as an opportunity to feed their animals

Ruminant (cud-chewing) animals such as cattle, sheep, and goats convert large quantities of pasture forage, harvested roughage, or by-product feeds, as well as nonprotein nitrogen such as urea, into meat, milk, and wool. Ruminants are therefore extremely important; more than 60 percent of the world's farmland is in meadows and pasture.

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**LG # 33**

## **LO # 1- Prepare for livestock fattening**

### **Instruction sheet**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying Require materials, tools and equipments
- Preparing house and housing facilities
- Using correct manual handling techniques for loading and unloading materials

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify Require materials, tools and equipment
- Prepare house and housing facilities
- Use correct manual handling techniques for loading and unloading materials




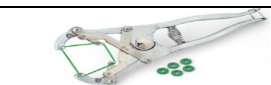





### **Learning Instructions:**




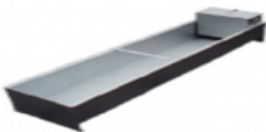



1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

## Information Sheet -1

### 1.1. Identifying Require materials, tools and equipments

Table 1.1. Require materials, tools and equipment for fattening

S/N	Materials	Figure	Uses/Functions
1	Thermometer		Taking body temperatures of farm animals
2	Burdizzo		Used in bloodless method of castration.
3	Trimming knife		Cutting short the overgrown hooves.
4	Elastrator		Stretching rubber ring during castration, dehorning and docking of lambs.
5	Iron dehorner		Applies heat on the horn bud to prevent growth of horns.
6	Nose ring		Used to restraining the bull
7	Trocar and cannula		Relieving a bloated animal of gases particularly ruminants.
8	Hard broom		For scrubbing the floor
9	Ear notcher		Making ear notches in livestock.

10	Rope		Tying or tethering animals.
11	PPE		Used to protect external hazards from operator
12	Cattle crates, or cattle crushes		To ensure the safety of both the animal and the person giving treatment, with the minimum of stress.
13	Cattle Race		To guide your stock from one area to another.
14	Water troughs		Used to watering the animals
15	Feed through		Used to feeding the animals
16	Weighing Equipment		Weighing livestock is an important part of any farmers job
17	Headgate		is the most important part of the entire working facility.

**Holding Chute:** is secured to the head gate and located immediately behind it. The holding chute should generally not be any wider than 26 inches but should be adjustable in order to compensate for different-size animals. The sides should be solid so that animals are not able to look out and be scared by their surroundings.

**Working Chute:** is connects the holding chute with the holding pen. It should be long enough to hold five to six animals at a time.

**Crowding Pen:** is located at the back of the working chute. Size should be about 150 square feet. This area will hold five or six head of cattle.

**Holding Pens:** should mesh conveniently with the rest of the facility. Each holding pen should provide approximately 20 square feet of space per animal.

**Loading Chute:** may be optional if a trailer is used to transport animals. The loading chute should be located directly off the crowding pen.

## 1.2. Preparing House and housing facilities

### 1.2.1. Preparing House

In tropical countries like Ethiopia, cattle are usually kept in the open air but with fenced place (for predator protection) without suitable and appropriate shelter. And yet many small holder farmers cannot afford the construction of suitable cattle fattening shelter. Therefore, many small holder farmers house their fattening cattle in open sheds with earth floors. Although such housing protects the cattle from strong sunshine and heavy rain and is cheap to build there are a number of challenges as mentioned below:

- Loss of energy by the cattle to compensate for heat loss during cold weather as well as heat stress and inconveniences due to strong sunshine.
- Feed wastage by trampling.
- Difficulty of cleaning dung, urine and mud (unhygienic environment)
- Failure to make use of good use of dung and urine

#### **Advantages of shelter.**

- Rain and strong wind.
- Heat and from extreme cold.
- Predator wild animals.
- Easy to look after the animals, ease of feeding, cleaning and watering.
- Avoids unnecessary feed wastage.



- Saves labor and manpower.
- Saves energy while the cattle wonder here and there.
- Helps control disease.

There are different types of fattening house. These are:

**Open sided, single slope roof shed** - This type of housing is most typical of structures used and is suitable for all cattle on the farm. This is the least expensive of new structures and very easy to build. Open sheds should face the south for winter sun and block the prevailing winds. Pole barns of this design can be partitioned for groups of animals without complicated interior construction.



**Figure 1a:** Open sided, single slope roof shed

**Open sided, clear span pole shed** - The clear span provides more space for equipment to remove manure and thus any side of the building can be open to the environment. The gable end of the barn is recommended to be open so that the discharge of rain and snow is not over the open side of the building. When the gable end is open, the bays areas are usually deeper and provide more protection from the wind. The back end of the structure may be dark and damp and may need additional design attention for ventilation and lighting. This type of housing is more practical for smaller sized herds (under 20 head of cattle).



**Figure 1b:** Open sided, clear span pole shed

**Hoop Barns** – One of the least expensive structures for housing cattle is the hoop barn. Hoop barns are similar to greenhouses. One disadvantage is the heat and ventilation problems during the summer months, but this should not pose an issue if you are planning on grazing your cattle during the warmer climate months.



**Figure 1c:** Hoop Barns

When preparing the layout, fattening house should think of the following

- Good use of space

- Low costs
- Locally available resources

Depending on the local weather condition, night time resting place can be constructed with one side walled to four side walled housing. The following parameters describe the cattle house:-

- Height of the roof - from the floor to the roof can be:
  - ✓ 2.5 m in high lands.
  - ✓ 3 m in mid altitude.
  - ✓ 35 m in low lands.
- Floor with 2.5% slope towards the gutter
- Feed trough with 0.4 X 0.4 m<sup>3</sup> and water trough 0.4 X 0.2 m<sup>3</sup>
- Other than housing the cattle shelter needs to have:
  - ✓ Shed against strong sunshine
  - ✓ Treatment crush
  - ✓ Feed store
  - ✓ Office
  - ✓ Guard house
  - ✓ Isolation room for sick animals, etc

At the level of smallholder farmers, to accommodate between one to five fattening cattle, the preparation of shelter should be based on available capacity of the farmer. However, the preparation of all livestock fattening houses should consider the following points:

- **Roof cover:** Make innovative use of locally available resources including tree sheds, side wall of resident house, making thatched roof (from grasses in our area), etc. When an existing wall is used as one side of the shed, the lean-to roof (with a single slope) is the most convenient arrangement. When a separate shed is constructed away from other structures, a roof sloping in either direction from the centre would be best.
- **Wind break:** This protects the cattle from draft wind. Wind breaks can be fences, walls, trees, as well as other natural rocks and slopes.

- **Drainable floor:** The floor shall not lodge in urine and dung. Otherwise it will cause foot rot. To cover the floor use gravel, sand, and if possible cover the floor surface with a flat, uniform stone (paved floor). The point in making the floor drainable is that the floor could facilitate easy cleaning of the urine and dung (as well as slurry) and shall be easy to collect the dung for use.
- **Suitable feeding manger:** The feeding manger can be made from locally available resources, with 30 centimeter height so that it prevents spread (spoilage) of the feed. Consider the points indicated below under the sub title feeding manger.
- **Having gutter:** The gutter is also called drain or dung channel. Even when the floor is of rammed earth and gravel, it is best to have the gutter made in rubble and cement or brick and cement. If the sides of the gutter are not strong, they will continuously erode into the gutter and proper maintenance of the floor of the standing will be impossible. By making the gutter smooth with cement and sand, cleaning will be convenient and the dung and urine can easily be led into a urine pit or a bio-gas digester outside the shed.
- **Water reservoir:** There should be one reservoir the size of which may depend on the type of available water source.
- **Slurry collection pit:** To collect slurry and other sewerage, a pit shall be made from cement, and the floor draining towards the pit.

### 1.2.2. Housing facilities

Farm animals need some kind of shelter to escape the elements. It is commonly thought that winter is the most important time to provide shelter, but an animal's natural coat can allow them to tolerate much colder temperatures than people can. Summer heat can be harder on animals than winter if shade is not available to them, either by trees or structures if they are out on pasture. Similarly, lack of ventilation in a barn or building can also be detrimental to animal health. Many livestock animals like pigs and rabbits do not sweat, which increases the risk of heat stroke and decreases overall production. A simple, three-sided shelter with an open front will meet the needs of many farm animals on pasture and is often the building of choice to raise

healthy livestock. When designing a three-sided animal shelter, make sure the open side faces south, away from prevailing winds. Locate the structure on an elevated, well-drained site and keep winter access in mind for feeding and water handling.

Livestock will produce more meat and reproduce more efficiently if they are protected from extreme heat, i.e. temperatures of 25 - 30 °c, and particularly from direct sunshine. Thus in tropical and subtropical climates, providing shade becomes an important factor. If Livestock are kept in a confined area, it should be free from mud and manure in order to reduce hoof infection to a minimum. Concrete floors or pavements are ideal where the area per cow is limited. However, where ample space is available, an earth yard, properly sloped for good drainage is adequate.

In all available systems a fattening livestock shelter should have:

- Feeding and night time barn (shelter).
- Store for grass and forage.
- Store for concentrate feed.
- Feeding trough.
- Water provision strategy (reservoir or tanker).
- Exercise yard.
- Office and drug store.
- Guard house.
- Air quality:
- Drafts
- Dry bedding area:
- Fresh water:
- Adequate food

### **1.3. Using correct manual handling techniques for loading and unloading materials**

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Loading livestock onto a vehicle is one of the most difficult handling procedures. Few farm animals undergo loading often enough to learn from experience, therefore handlers are usually dealing with untrained and nervous animals. It will help to have well-designed and properly constructed facilities. Ideally, loading and handling facilities should be designed at the same time. The species, maximum number of animals to be handled, and number of skilled handling personnel available, are factors to be considered when designing facilities.

Loading floors, raceways and loading areas should, as far as possible, be non-slip. Good footing for animals is essential.

Unloading areas should be secure and provide a wide, clear straight path from the lorry to the yard, lairage or field. Animals should only have one obvious, clear direction in which to move.

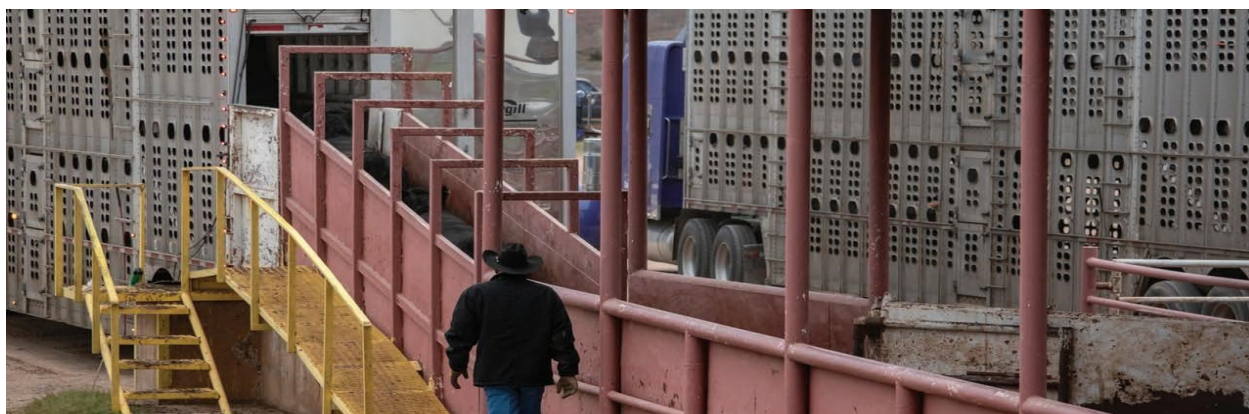
#### **Before you start loading and unloading**

- Plan ahead and allow plenty of time.
- Ensure you know full details of the load, e.g. number of animals, species and type.
- Make sure there are experienced helpers available.
- Arrange and check all facilities thoroughly.
- Remember, animals may be reluctant to move from their familiar housing pens into passageways.
- Check all animals are fit to travel.
- Check that partitions in the lorry are correct for the load
- Placing straw on the ramp may be helpful for certain age groups and species.
- Light the interior of the lorry if necessary

#### **When loading begins**

- It will usually be easier to load several small groups of animals, rather than one large group.
- Unless they are behind the animals, keep people out of raceways.
- Avoid noise, rush and panic. Let animals find their own way, in their own time.
- Make use of the animals' natural behaviour.

- Encourage a lead-animal, giving it plenty of time to see where it is expected to go. Once it is on the ramp, encourage the group to follow.
- Don't get too close to the animals which are moving forwards into the lorry – this may cause them to turn back. If they do, back off, let them down the ramp and give them time to relax before trying again.
- Use your voice, flags, sacks or pig-boards to encourage animals to move in the right direction.
- Be careful not to trap animals' legs or tails when closing partitions, side-gates or ramps of the lorry.
- Be firm, but do not lose your self-control. If animals are being difficult, let them settle before trying again.



**Figure 1.2.a: Loading Chute**

### **Loading**

Ensure cattle can safely enter the trailer without tripping or falling.





**Figure 1.2b: Loading animals**

### Unloading

This is an example of a trailer that needs to re-position to be square to the ramp with no gap.



**Figure 1.2c: Unloading animals**



<b>Self-check – 1</b>	<b>Written test</b>
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Name..... ID..... Date.....

**Directions:** Answer all the questions listed below.

**Test I: Multiple choices**

- The equipment which used to cut the horn of animals is called \_\_\_\_\_  
 A. Burdizo  
 B. Castrator  
 C. Hoof trimmer  
 D. Dehorner
- From the following which one is odd  
 A. Eartag  
 B. Debeaker  
 C. Hoof knife  
 D. Nose ring
- One is **not considered in housing facilities for fattening animals**  
 A. Air quality  
 B. bedding area  
 C. water  
 D. None

**Test II: Short Answer Questions**

- Write the point should be considered during loading and unloading
- List the materials used in livestock fattening
- Write types fattening house

Operation Sheet -1

**1.1. Technique of preparing animals for loading**

**A. Tools and Equipment**

- PPE
- Loading chute
- Rope

**B. Procedures**

- Wear PPE appropriately
- Clean and disinfect materials
- Perform work safely
- Restrain animal

**1.2. Technique of cleaning and drying bed/house for shoat**

**A. Tools and Equipment**

- Brush/clear
- detergent
- Water
- Rakes
- Shovel

**B. Procedures**

- Wear PPE
- Prepare all necessary materials
- Add detergent to the water

<b>LAP TEST-1</b>	<b>Performance Test</b>
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Name.....

ID.....

Date.....

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **1 hour**. The project is expected from each student to do it.

**Task1:** Perform loading animals

**Task2:** Clean and dry bed of shoat

**LG#34**

## **LO#2- Select livestock for fattening**

### **Instruction sheet**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying and clarifying Criteria for livestock selection
- Deciding the length of fattening period and profitability
- Recognizing and controlling hazards
- Planing and managing different breeds, classes and numbers of livestock

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Criteria for livestock selection
- Decide the length of fattening period and profitability
- Recognize and control hazards
- Plan and manage different breeds, classes and numbers of livestock

### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
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## Information Sheet – 2

### 2.1. Identifying and clarifying Criteria for livestock selection

#### 2.1.1. Identifying and clarifying Criteria for cattle selection

While selecting for cattle fattening be careful of the following factors:

##### **A. Select your fattening cattle from locally available breeds**

- Selection of healthy animals is important if you want to have a healthy herd and high productivity.
- You should therefore know how to determine the quality of different breeds irrespective of sex and ages, based primarily on their looks, sound, and behaviour.
- Known breeds of cattle for fattening purpose in Ethiopia. These cattle breeds are known for their fast conversion of available feeds to gain weight faster (ability to convert feed into meat).
- Many of the cattle breeds in Ethiopia are dual purpose cattle rather than dairy or beef cattle since the cattle are not properly characterized by breed, location and behaviour.
- Select the breed type that can best perform in your locality among the following beef cattle breeds in Ethiopia

##### **A. Borena cattle breeds**

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Basically, a beef animal, with large and wide frame; weighs up to 500 kg; it is also a good milker providing most of the staples for the pastoral community. The Boran is a medium-size Bos indicus breed that shows high resistance to heat, ticks, and eye diseases. It can endure scarcity of water and can live on low quality feed. Borans are highly fertile and mature earlier than most other Bos indicus breeds, and are noted for their docility. They are usually white or grey but are also found in red or pied. Bulls often displaying black points.



Figure 2.1. a: Borena cattle breeds

### **B. Horro cattle breed**

Coat colour is mainly brown or reddish brown; cervico□thoracic hump, small to medium in size; dewlap is moderate and thin of skin; horns are moderate but larger than the zebu; deep chest and barrel; wellspring ribs; small and well-proportioned udder with good teat placement; calm disposition; milk production is variable; used for milk, draught and meat.



**Figure 2.1b:** Horro cattle breed

### **C. Fogera cattle breed**

Pied coat of black-and-white or black-and-grey; short, stumpy, pointed horns; hump ranges from thoracic to cervico thoracic; dewlap is folded and moderate to large in size; docile temperament; used for draught, milk and meat.



**Figure 2.1c:** Fogera cattle breed

#### **D. Barka cattle breed**

Active disposition, long legs and large humps that tend to be cervico-thoracic due to the sanga influence. Since these cattle are aggressive, they are difficult to handle.



Figure 2.1 d: Barka cattle breed

#### **E. Raya-Azebo breed cattle**

Similar to the Danakil, except that the Raya-Azabo is a slightly bigger animal, probably a result of selection for draught power for the settled agricultural practice. Large and slender body, with long lyre-shaped horns, small hump and moderate dewlap. Horns can form almost a complete circle. Coat colour is mainly chestnut or ash-grey.





**Figure 2.1 f:** Raya-Azebo breed cattle

#### **F. Arsi cattle breed**

small compact animals, with thin prominent dewlap, and small short horns; mainly kept for draught and are poor milkers; they are extremely active and often have very aggressive temperament.



**Figure 2.1g** Arsi cattle breed

## 7. Jijiga cattle breed

Coat colour is mainly chestnut, black, white or red; horns are short pointing mainly sideways or downwards; hump is small but prominent. Good for fattening and can thrive on shortage of pasture as well as resistant to disease.



**Figure 2.1h:** Jijiga cattle breed

### **8. Danakil cattle breed**

Large and slender body, with long lyre-shaped horns, small hump and moderate dewlap; horns can form almost a complete circle; coat colour is mainly chestnut or ash-grey. They are very similar to the Raya-Azabo cattle in Ethiopia that inhabit the adjacent agricultural highlands to the west and south.



**Figure 2.1i:** Danakil cattle breed

### **B. Choose the cattle breed that is best adopted to your environment**

Indigenous cattle breeds have the following strong opportunities as compared to exotic breeds: -

- Can withstand the impact of internal and external parasites.
- Can withstand repeated occurrence of drought and shortage of feed.
- Have high level of feed conversion from low level and poor-quality feed into high quality meat.

However, as various indigenous cattle breeds exhibit different levels of resistance and productivity, try to select the best adopting breed for your locality.

### **C. Choose cattle based on body confirmation**

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The pattern of cattle marketing (buying and selling) in our country is based on visual observation and hand palpation and is not based on standard weights and grades in livestock and meat trade, which are weight-based to determine the quality and price (lack of unified system of grades and standards in the livestock marketing system). Therefore, it is important to explain the sex, age, breed, bone size, and health status of cattle to determine the selection by body confirmation

**A. Age:** Concerning the age of the animal:

- Young animals have striking advantages over older cattle. They need less feed for every unit gain in weight because they can masticate and ruminate thoroughly and can consume more feed in proportion to their body weight. Their increase in weight is due partly to the growth of muscles and vital organs. In older cattle the increase is largely due to fat deposits.
- On the other hand, older animals as feeder stock also have advantages. A 2-years old steer will require a shorter feeding period than a calf or a yearling because the latter grows while it fattens.
- Calves are choosy when given coarse and steamy roughage, while two-year-old steers utilize large quantities of roughage to produce fat primarily because they have a better capacity to digest. In most cases, they readily relish the feeds ordinarily rejected by the calve.
- Age estimation - How do you know the age of the cattle you are to select for your fattening?  
The age cattle can be estimated by looking at its teeth configurations. e.g for cattle age estimation
  - ✓ Milk or 0 permanent incisors(0-18month)
  - ✓ 2 permanent incisors (18-30 months)
  - ✓ 4 permanent incisors (24-36 months)
  - ✓ 6 permanent incisors (30-42 months)
  - ✓ 8 permanent incisors (36 + months)

**B. Disposition:** An active yet mild, quiet, and easily-handled steer usually grows fast and fattens easily. Restless, nervous and erratic cattle waste too much energy when they panic even at the slightest provocation.

**C. Constitution and vigour:** These are determined by the size and quality of the vital organs. A large feeding capacity, strong appetite, a large heart girth well-sprung ribs and a wide, deep and full chest show good constitution and vigour

**D. Sex:** In general, more steers than heifers are available for fattening because some heifers must be retained as herd replacements. If fed for the same period of time, steers gain about 10% faster than heifers and require 10 to 15% less feeds with equal weight gain. On the other hand, young bulls have 20% greater gain in live weight and require 22% less feed to produce a leaner carcass which is nearly of the same quality as that of steers

**E. Health considerations:** A healthy animal is active, has a soft and smooth hair coat, bright eyes and moist muzzle. Special attention should be given to unsoundness and defects in conformation when selecting feeders. Animals that are blind, lame or with crooked legs, rough skin, and evidence of ectoparasite should be avoided.

**F. Body Condition:** Select animals that are healthy and have no visible physical defects. Avoid emaciated animals as their poor condition may not entirely be due to nutritional factors. Emaciated animals often take a long time to recover. Target animals with medium body condition. Body condition scores for sheep and goat 2.25-3.0) and cattle 3.

**G. Skeletal frame:** The animals should have a large skeletal frame and good body condition.

**H. Castration:** Castration influences the fattening process. Castrated animals deposit more fat while uncastrated animals have more muscular growth. The selection of castrated or uncastrated animals depends on the final product desired and market condition.

**I. Weight of animals:** Weight of animals at the start of the feeding operation governs the duration of feeding and the types and amounts of feedstuffs needed.

**J. Feed Efficiency:** to be meaningful, feed efficiency should be measured in feeding tests designed within the framework of present day animal feeding and marketing practices.

**K. Structural Soundness:** is particularly important for productive grazing and pasture breeding. Sound hips, hocks, shoulders and feet are valuable for longevity in the herd.

## 2.1.2. Identifying and clarifying Criteria for sheep and goat selection

### A. Select your fattening Sheep and goat from locally available breeds

- Identify breeds with greatest potential for growth and fattening.
- Early maturing breeds start depositing fat at an earlier age and can be ready for market at a lower weight
- They need a shorter feeding period to reach a good carcass finish although their growth rates are relatively lower
- Late maturing types can reach market readiness at a higher weight. In general, lowland animals mature late compared with highland animals. Hence, lowland animals are preferred for the production of fattened animals at a higher weight.

### B. Choose sheep and goat based on body confirmation

- **Condition:** Select animals that are healthy and have no visible physical defects. Avoid emaciated animals as their poor condition may not entirely be due to nutritional factors. Emaciated animals often take a long time to recover.
- **Skeletal frame:** The animals should have a large skeletal frame and good body condition.
- **Castration factor:** Castration influences the fattening process. Castrated animals deposit more fat while uncastrated animals have more muscular growth. The selection of castrated or uncastrated animals depends on the final product desired and market conditions. Castrated sheep and goats have a higher demand in the local market especially during the holidays.
- **Sex:** Females are earlier maturing than males. Males can do well in feedlots, but often cause problems by fighting. Females can do well in feedlots, but often have lower growth rates partly because they reach carcass finish at an earlier age.
- **Weight of animals:** at the start of the feeding operation governs the duration of feeding and the types and amounts of feedstuffs needed. Lightweight (15-20 kg) animals can use more roughage, whereas heavier lambs (>25 kg) require more concentrates and a shorter feeding period. Light weight sheep and goats are more desirable for conditioning based on a larger proportion of roughage, whereas heavier animals perform best where high concentrate diets



are used. It is therefore best to use sheep and goats with weights ranging from 20-25 Kg for the fattening operation to take advantage of the two situations.

- **Age:** animals can be placed on intensive feeding at any age, usually after weaning. Avoid animals that are too old. Check that the teeth are sound. This has implications on feed utilization. It is advisable to select sheep/goats between 2 and 4 years of age for fattening.

## **2.2. Deciding the length of fattening period and profitability**

### **2.2.1. Deciding the length of fattening period**

Major factors that can decide the duration of the fattening operation are:

- Selected breed, live weight and sex of animal purchased for fattening: Select those animals that can gain weight in short period of time to meet the market demand to be profitable.
- Depend on husbandry practices, season and availability of feed source.
- Customers meat choice:
  - ✓ If the market demand is more fatty meat, select better grades (from medium to good) and feed them with plenty of high level of carbohydrates to shorten the fattening duration.
  - ✓ If the market demand is for lean meat, select Grade level 3 and feed lesser amount of carbohydrate feeds to serve the purpose.

**Note:** What so ever the variables may be, your fattening operation shall not exceed 5 months long (150 days). Try to shorten it to the standard, 3 months (90 days).

### **2.2.2. Deciding the fattening profitability**

In Ethiopia, meat consumption is seasonal. Meat and animal by products consumption therefore tends to be highly seasonal and is greatly affected by religious festivals like:

- Orthodox Christian when there is:

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- ✓ Lower demand during fasting seasons
- ✓ Higher demand during annual festivals such as Ester, New Year, and Christmas.
- Muslim festivals such as fasting month of Ramadan, there is high demand.

To enjoy good market price from your fattened (finished) cattle, therefore, you have to know when to start your fattening operation, and identify the particular seasons when there will be better demand for meat.

## **2.3. Recognizing and controlling hazards**

### **2.3.1. Recognizing hazards**

Different categories of hazard types should be considered during the hazard identification process:

**A. Equipment:** Under certain conditions/situations tools, machines, or equipment ppl use and work near can be hazardous. Ex. defective tools (broken ladder) and unguarded moving machinery (unguarded saw blades in a butcher shop)

**B. Environment:** Some hazards can be created by a work environment and can be either naturally occurring (ex. Weather in outdoor work environments) or result of poorly maintained equipment, tools or facilities. Examples of an unsafe work environment:

- Improper illumination too dark
- Poor exhaust or ventilation systems
- Defective equipment and materials
- Adverse temp conditions
- Poor indoor air quality

**C. Materials:** Materials are any w/p substance, matter or provision used in the w/p that have the potential to cause harm / loss

**D. Processes:** Processes involve the flow of work and include factors such as design, pace and org of the various types of work via policies, procedures and work processes

**E. People:**

- Unsafe Act



- Human Factor

**In general, the hazards occurred in the work place can be**

- Physical hazards
- Chemical hazards
- Biological hazards
- Ergonomic and social factors

### **2.3.2. Controlling Hazards**

Controlling Hazard: is the program or process used to establish preventive and corrective measures.

#### **Goals of Controlling Hazards**

- To eliminate hazards whenever possible
- When not possible, to reduce the exposure

Controlling Hazards comprises of 3 levels of intervention:

1. Precontact Control
2. Point of Contact Control
3. Post contact Control

## **2.4. Planing and managing different breeds, classes and numbers of livestock**

### **2.4.1. Planning and managing different breeds of livestock**

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Livestock make a major, although largely underestimated, contribution to rural development in developing countries. They produce food, enhance crop production and provide additional economic goods and services as well as cash income. The inclusion of livestock diversifies and increases total farm production and income, provides year-round employment and disperses risk. Sales of livestock products provide funds for purchasing crop inputs and for financing farm investments. Livestock often form the major capital reserve of farming households and, in general, enhance the economic viability and sustainability of a farming system.

Furthermore, animal production is increasingly being viewed far more critically:

- Intensive production systems, particularly in industrialized countries, are seen as a major source of pollution;
- Increasing ruminant numbers in developing countries are being associated with the degradation of the rangelands and soil erosion;
- Livestock development is said to favour the richer segments of society - both producers and consumers rather than the most vulnerable;
- Livestock are thought to compete directly with humans for cereal grains.

Such controversies and the inherent complexity of livestock production impose constraints that have to be addressed and which pose particular challenges not normally faced by the agricultural planner. Yet it is the very complexity of animal production systems that also offers some of the greatest opportunities for development. Livestock, because of their linkages with the overall farming system, make valuable entry points for wider agricultural development programmers. To exploit these opportunities, an integrated approach that combines both technical and institutional interventions is required.

In many countries, the difficulties associated with increasing sustainable animal production are exacerbated by limited public-sector investment and weak, ineffective support services. Programmers and projects are often poorly designed and inadequately targeted, leading to the inefficient and fragmented allocation of scarce development resources. Policies related to the livestock sector are often incoherent with ill-defined goals and with little or no assessment of their likely impact. The lack of consistent, integrated strategies that focus limited resources on

identified and attainable goals remains a major constraint to livestock development. The situation is further complicated in that livestock, especially cattle, represent wealth and status and, as a consequence, are disproportionately owned by policy-makers who have a clear vested interest - an interest that is not necessarily beneficial to livestock development in general.

#### **2.4.2. Planing and managing classes and numbers of livestock**

To plan classes and numbers of livestock raised for fattening the following parameters should be considered.

**Livestock.** Animals themselves are the major resource, but their mobility makes them a difficult resource to quantify.

**Capital.** Livestock ownership is more skewed than ownership of or access to land, and, as a consequence, livestock development, especially if it concerns larger and more expensive species such as cattle, tends to produce benefits of low equity

**Feed.** Whereas animals can substitute for capital, purchased feeds can substitute for land, creating "landless" production systems, where land is no longer a production factor.

**Land.** Escalating ruminant (large and small) populations, agricultural encroachment and decline in traditional authority have put an increasing strain on "open access" feed resources particularly extensive grazing areas leading, in extreme cases, to irreversible degradation.

**Access to water:** Major environmental issues have recently arisen over the provision of new water sources, however, particularly perennial boreholes.

**Labor:** is the other important resource for which livestock production has a specific requirement. The distribution of labor, responsibilities and benefits tends to be favorable for women, especially with the smaller animal species, which they themselves may own.

**Self-Check – 2**

**Written test**

Name..... ID..... Date.....

**I. Choose the best alternative**

1. The animals which have visible physical defects are select for fattening
  - A. True
  - B. False
2. One is not considered during animal selecting for fattening
  - A. Body measurement
  - C. Breed
  - B. Age
  - D. Sanitation of house
3. One is true about length of fattening livestock
  - A. The length of fattening is not depend on the season

- B. The length of fattening is depend on availability of feed source
- C. The length of fattening is not affected by skill manpower
- D. Sanitation is not affecting the length of fattening

## **II. Write discuss accordingly**

1. Write and discus the criteria of selecting for fattening livestock
2. Write the length of fattening for livestock
3. Write the hazard types should be considered during the hazard identification process

### Operation Sheet -2

#### **2.1. Techniques of recognizing and controlling hazards**

##### **A. Tools and Equipments**

- Rubber glove
- Musk
- Boots
- Overall
- Helmet
- Record book

## B. Procedures

- Wear PPE
- Ask information about farm status
- Carryout activities

<b>LAP TEST-2</b>	<b>Performance Test</b>
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Name..... ID.....

Date.....

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **3** hour. The project is expected from each student to do it.

**Task 1:** Recognize the hazards occurred in beef farm

**LG#35**

**LO#3- Carryout fattening**

**Instruction sheet**

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

3.1. Deciding systems of fattening

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- 3.2. Performing routine fattening activities
- 3.3. Inspecting purchase, De-worming and vaccination livestock
- 3.4. Planning weight gain, availability of feed resource and feeding condition

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- 3.1. Decide systems of fattening
- 3.2. Perform routine fattening activities
- 3.3. Inspect purchase, de-worm and vaccination livestock
- 3.4. Planning weight gain, availability of feed resource and feeding condition

#### **Learning Instructions:**

- 1. Read the specific objectives of this Learning Guide.
- 2. Follow the instructions described below.
- 3. Read the information written in the information Sheets
- 4. Accomplish the Self-checks
- 5. Perform Operation Sheets
- 6. Do the “LAP test”

### **Information Sheet – 3**

#### **3.1. Deciding systems of fattening**

Based on the cattle fattening practice down at the grass root level, in different agro-ecological setting the following types are in the context of livestock production system in Ethiopia:

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### **3.1.1. Traditional fattening system**

Traditional fattening system: is customary to keep farm animals in traditional manner. Due to this traditional livestock reproduction Ethiopia has the first total livestock population in Africa and 10th in the world. We can categorize this traditional livestock keeping into two as follows:

#### **A. Pastoral and agro-pastoral areas**

In general, pastoral systems are associated with agro-ecological zones (AEZ) that are too dry to sustain crop production. These are characterized by little or no crop agriculture and high mobility in search of grazing and water.

Under Ethiopian conditions, pastoral systems of production are found at altitudes below 1500 meters above sea level and where the annual precipitation is less than 500 mm. The following characterize pastoral systems:

- Livestock are maintained as a principal activity. Fifty percent of household revenue comes from livestock or more than 20% of household food energy is derived directly from livestock or livestock-related activities.
- Rangeland is the main land resource.

Livestock species consist of camels, cattle, sheep, goats and donkeys. In recent years, pastoralists have shown an increasing interest in keeping larger numbers of sheep and goats. There are more goats than sheep in this system. Milk and meat are the two outputs. In drought years, goats gain more importance as suppliers of milk to the household. Goats also help to control bush encroachment.

Pastoralists depend on their livestock not only for their income but also for their survival. Consequently, risk avoidance is very important to the pastoralist. Livestock management is, therefore, directed towards risk minimization, which tends to reduce productivity. Pastoralism is ecologically, economically and socially important for sustainable development in dry lands.

In Ethiopia, in the different regional states, there are seven known pastoral and agro-pastoral areas. These are: Afar, Somali, Gambella, Southern Nations and nationalities and people Regional State (Hammer, Mursi, etc) Oromiya (Kereyu and Borena).

The traditional livestock production under these pastoral and agro pastoral areas is primarily characterized by keeping large number of animals over an extensive rangeland (pasture) with calculated movement routes for pasture and water. Agro-ecologically these areas are known to be rain shortage and low-lying areas. These pastoralists are used to reproduce primarily cattle, camel, sheep, and goat for milk, meat, and transport (pack). Pastoralists feed on milk and meat from their own herd and whenever they need, they sale selected livestock and surplus milk to meet purchase requirements like grain, cloths, etc. In addition, livestock in pastoral areas play important traditional and cultural role.

### **B. Mixed crop livestock system**

In many highland and midland areas of Ethiopia/ smallholder farmers practice mixed crop-livestock agriculture. These means that farmers use animal power to plough the land to cultivate crop as well as keep livestock to get milk, meat, skin and hide and also to earn cash by marketing livestock. This traditional livestock reproduction has deep cultural root where there is synergy between crop and livestock. The above two traditional livestock reproduction methods are known to be not market oriented. This means that farmers do not calculate their inputs to raise and breed their livestock and simply market without profit analysis.

Therefore, when it is said that pastoralists and smallholder farmers traditionally keep and reproduce livestock, it means that the following reproduction characteristics are common features:

- Keeping any livestock without proper selection.
- Usually practice grazing rather than cultivating, cutting and feeding forage and grass.
- Do not regularly feed concentrate unless it is occasionally left over.
- Livestock watering is time consuming as it takes long distance to water points.

- Poor animal health care provisions to the livestock characterized by erratic treatment when animals succumb to illness and rare preventive vaccination coverage on regular basis. Even when animals get ill traditional herbal medicine comes to the front.
- Livestock are considered as bank deposit to generate income when the need arises as individuals prefer to count more number of heads rather than to sell their livestock to reserve cash.

### **3.1.2. Market Oriented Livestock Fattening**

Contrary to what has been said about the none-market oriented traditional cattle fattening, the following characteristic make market-oriented Livestock fattening successful:

- Cattles for fattening are kept under shed constructed for them.
- Keeps and fattens suitable cattle breeds known for better fattening rate.
- At the start of the fattening operation treat and vaccinate the cattle to be fattened.
- Considers cultivating and cut and carry feeding of forages.
- Gathers and stores sufficient amount of concentrate feed to feed on daily amounts.
- Chooses appropriate and suitable time for better market value. Earlier identification of various inputs before the start of the fattening operation.
- Assesses the local livestock market and work on how to earn better price.
- Availability of good quality pasture, forage and concentrate feed with sufficient potable water throughout the year.
- Presence of skill and knowledge on good animal husbandry.
- Availability of reliable condition for the control of animal diseases and parasites. Presence of reliable market for fattened/finished cattle.
- Presence of favorable government policy for smallholder farmers engaged in cattle fattening

### **3.2. Performing routine fattening activities**

#### **1. Castration**

Reasons for castration

- This is a means of preventing inferior male animals from breeding (reproducing)
- It is done to induce docility in male animals
- Castrates are easy to feed: there is no fighting in pens hence they spend more time feeding than fighting. Castrates tend to produce tender and fatter meat at mature age
- Castration is also done to prevent the strong odour in meat, which may not be desirable.

#### **Castration methods**

##### **a. Burdizzo forceps method**

This is done by pulling down the testes and holding the spermatic cords between the jaws of the forceps. The jaws are then closed and then given a jerk to completely sever the cords. This is the most suitable method for beef; it is fast and bloodless and requires some skill. It can be at the same time as dehorning or 2-3 months of age.

##### **b. Knife method**

This is done by incising the bottom of the scrotum and pulling out the testes. Then rub the knife against the spermatic cords until they break. This method can be used at any stage. But it is illegal to castrate an animal that is more than 12 months old without the use of anesthesia. This method requires some skill and is slow. It also requires the use of chemicals to treat the opened wounds.

##### **c. Elastrator ring method**

This is slow and should be done within the first week of life. It is more painful. It involves putting a rubber ring (elastrator ring) such that the testes are below the ring. This stops blood flowing to the testes, which eventually die and drop in about two weeks. The rings must be close to the body.

## **2. Dehorning**

The principle is to cauterize the horn bud and the surrounding skin. If this is not properly done, you get scar or deformed horns. Dehorned animals are easier and safer to work with than horned animals. There is reduced damage inflicted without horns to the skin and udders. Dehorned animals require less space in terms of feeding space, transport space in the truck and floor space. Generally, it is done within a few months after birth or when the horn buds can be felt to about 5mm long.

## **3. Dosing**

- Farmers to follow proper dosing intervals to control internal parasites
- Strategic dosing involves dosing cattle for every change in season

Drugs in liquid form may be administered by mouth, using a long-necked bottle or dosing gun. When administered as a drench, raise the animal's head slightly and slowly and administer the fluid into the side of the mouth, allowing the animal to swallow freely. If the animal's head is raised too high or if the tongue is pulled out, it interferes with normal swallowing and could cause the drench to enter the lungs. The resulting pneumonia can be fatal. Dosing guns should be checked periodically for accuracy.

## **4. Dipping**

- Tick control (spraying / plunge dipping)
- Correct dip must be used
- Follow dipping intervals
- Dipping programme should be planned according to acaricides used

## **5. Weighing**

Weighing of different classes of cattle at various stages is essential for the efficient management, supplementary feeding and selection of cattle. However, weighing should be kept to the minimum that is necessary, and often only a sample of each herd need to be weighed. If a sample is weighed, this should be at the same marked sample of approximately 30 herd or 10% of the

herd whichever is the greater. Animals should be weighed at the same time of day under conditions as constant as possible.

## **6. Identification**

### **▪ Ear Tags**

These come in many different designs but they prove not to meet the twin requirements of permanency and legibility at a distance. Ear tags can therefore not be used as a permanent form of identification but are useful aids to management. The following types are in common use:

#### **✓ Self-locking metal tags**

These are reliable and easily applied by the special applicator. Allow space in the tag for the ear to grow if the animal is still young.

#### **✓ Plastic tags**

Many types are available on the market. An appropriate tag should be used to suit the farm circumstance.

#### **✓ Tattooing**

Tattoos are made using a specially spiked applicator and ink to apply the tattoo to body parts such as the ears and occasionally the lips of the animals. Although it provides a permanent record, a tattoo is awkward to read and if not done skillfully, can be difficult to read. Tattooed animals cannot be identified without first catching them.

## **7. Body weight measurements**

- Determine proper feed rations,
- administer the proper dosage of a medication,
- Track how individual animals grow and use their feed

## **8. Age determination by teeth**

### **3.3. Inspecting purchase, de-worming and vaccination livestock for fattening**

#### **3.3.1. Inspecting purchase livestock for fattening**

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Purchase of livestock in the market could really be a tedious process due to the environment especially in raining seasons such as this period of the year and more so predispose one to different hazards such as getting scammed by middle cattlemen, buying stolen animals especially when the animals are not traceable, or purchasing unhealthy animals which may look apparently healthy before purchase e.t.c.

The following points should be considered while purchasing animals for feedlot fattening:

- The animals should be alert and healthy
- The weight of the animals should be average weight of that age. The emaciated, thin and worm infested sick animals do not give optimum growth rates. Animals that are under size for their particular breed are not recommended.
- The purchase of animals should be on live weight basis rather visual estimates. The weight of the animals should be taken after at least twelve hour fasting.
- The animals having missing teeth and lower jaw not matching upper jaw properly (either over short or undershot) cannot eat well and should not be purchased.
- Purchase of animals from too distant places results in transportation losses and may have acclimatization problems
- While purchasing goats and lambs consideration should be given to a local predominant breed since it is more likely to be well suited to the climate, helps save transportation costs and a stressful journey for the animal.
- The age of the sheep should be more than six months, and goats more than nine months.
- Limping animal indicates hoof disease and should be avoided.

selection parameters for cattle fattening through visual observation, physical condition and conformity:

- Broader body frame and wider-bone.
- Longer height.
- Shorter neck.
- Short and thick leg

**After the cattle are purchased**

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#### **i. Transport with suitable means**

After the cattle purchased, you can transport them in the following two ways:

- Tracking on foot.
- Load and transport with trucks/train.

In both cattle transport means take care of the following points

- Avoid haste and manage travel in silent and peacefully manner.
- After travelling from 3-4 hours take rest for one hour while providing water and feed.
- Watch out for and prevent from attacking each other.
- Avoid travelling during heavy rain and strong sunshine and take rest under shed.

#### **ii. Put on identification marks**

- There are different ways of identifying animals. The most commonly practised are: tattooing, neck chains, ear tags and ear notching
- Proper identification of cattle for fattening is necessary for accurate record keeping on the farm such as to record the kind and amount of feed and amount of water consumed, occurrence of disease and treatment follow up, weight gain, etc.

#### **iii. Castrate the male animal**

- Castrated males grow faster than entire males, irrespective of the method of castration (open or emasculation).
- Sometimes the weight increase may slow down after castration but the level of fat increases. Therefore, you have to think of the demand for fatty meat before you castrate your cattle.

#### **iv. Animal weighing**

- It is important that you have weigh your cattle (measure their body weight) at arrival. To weigh your cattle there are different ways.

#### **v. Basic animal health care**

- Caring for cattle in the transport phase avoids health problems later. Feedlot health management is based on the following two principles

#### **vi. Vaccination:**

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- It is one of the most effective means of controlling diseases on the farm. Consult the local or Woreda level practicing veterinarian based on the threat of diseases in a particular area, season or part of the year and in particular vaccinate against important, diseases of cattle raised under feedlot fattening.

#### **vii. Culling:**

- Points that will be used to cull cattle from the fattening operation are:
  - Aggressive and attacking people and other animals.
  - If not increasing weight; not efficiently changing the given feed into meat.
  - Cannot resist disease succumb to illness.
  - Lower growth rate.
  - Older in ages, etc.

#### **3.3.2. De-worming Livestock**

There are more options than ever to safely and effectively deworm livestock. Oral drenches, pour-ons and injectables are the traditional methods. Feed-through products like blocks and pellets are newer alternatives to control worms. Management style often drives which type of dewormer you use. If you handle cattle more regularly through a chute, oral drenches and injectables may be the best fit. Otherwise, a feed-through product may be a solution for your operation when cattle don't frequently go through a chute. When selecting a cattle dewormer, know the active ingredient for the parasiticide.

The following parasiticides are available.

- Moxidectin
- Fenbendazole
- Eprinomectin
- Doramectin
- Ivermectin
- Oxfendazole
- Albendazole

The parasiticide you choose is dependent on which species of worm you have locally. Your veterinarian can help determine which mode of action works best for your herd. Resistance is a concern in nearly all classes of dewormers. Implementing a few different strategies can help improve program efficacy.

**Here are a few additional livestock deworming tips:**

**Use the proper dosage:** Underdosing and overdosing a cattle dewormer can result in ineffective control or development of resistance, respectively. Always follow label recommendations.

**Rotate dewormers:** Using different worm control classes helps reduce resistance by changing which ingredients the worms are exposed to.

**Rotate pastures:** Rotating cattle amongst pastures spreads manure to other parts of the farm or ranch, rather than concentrating the manure's worm load in one pasture and increasing the spread among the herd.

**Implement refugia:** Refugia is a strategy where you leave certain cattle untreated, so worms have a refuge animal to go to within the herd. It decreases the selection pressure of worms to particular dewormers. There are a few ways to manage refugia:

- Deworming approximately 90% of the herd and leaving the other cattle untreated, known as selective non-treatment. As cattle age, they gain immunity to parasites, so older animals are good candidates for selective non-treatment.
- Only deworming when parasites are present. You might skip deworming when worm loads are lower, during the hottest time of the year in the South or during the coldest time of the year in the North.
- Deworming newly arriving cattle and not treating resident cattle when parasite loads are low.
- Not rotating dewormed cattle into a new pasture until they have had a chance to shed worms.

### **3.3.3. Vaccination livestock**

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A general vaccination program could include coverage against the following diseases:  
Viral Pathogens

- Infectious bovine rhinotracheitis virus (IBRV)
- Bovine viral diarrhea virus (BVDV) – types I and II
- Bovine respiratory syncytial virus (BRSV)
- Parainfluenza-3 virus (PI-3V)

### **Bacterial Pathogens**

- Mannheimia haemolytica
- Pasteurella multocida
- Clostridium
- Leptospirosis (cows)
- Vibriosis (cows)

## **3.4. Planning weight gain, availability of feed resource and feeding condition**

### **3.4.1. Planning weight gain of animals**

Feed your cattle based on priority of productivity (weight increase) In addition to maintaining ration, it is important to feed your cattle based on their productivity. Since one individual fattening cattle can increase from 400 up to 700 grams of weight per day, you have to provide from 7 - 8 kilograms of dry feed in general. Out of this daily amount from 3 - 4 kilograms should be balanced ration.

### **3.4.2. Availability of feed resource and feeding condition**

#### **1. Natural Pastures: includes**

- Grasses
- Legumes

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- Herbs
- Tree foliage
- Shrubs

Their availability and quality might be vary with: altitude rainfall soil type and cropping intensity

## 2. Crop Residues (Cereals and Pulses) includes

### ▪ Cereal straws

- ✓ Teff
- ✓ Maize
- ✓ Wheat
- ✓ sorghum etc
- ✓ Barley

### ▪ Legume haulms

- ✓ haricot beans
- ✓ lentils
- ✓ field peas
- ✓ groundnut etc
- ✓ chickpeas

The nutritive value of crop residues is varies based on the species of crops variety of the crops, time of harvest and handling and storage conditions.

## 3. Agro-Industrial By-Products

- Sugar industries
- Oil industries
- Slaughter houses
- Citrus industries

## Feeding condition of Beef cattle

- Beef cattle can utilize roughages of both low and high quality, including pasture forage, hay, silage, corn (maize) fodder, straw, and grain by-products.
- Cattle also utilize nonprotein nitrogen in the form of urea and biuret feed supplements, which can supply from one-third to one-half of all the protein needs of beef animals.



C. Dosing

D. Debeaking

7. Deworming is not recommended for small ruminant animals

A. True

B. False

Test 2: **write and discuss accordingly**

2. Write systems of fattening in livestock (2pts)
3. Write the difference between dehorner and burdizo (4pts)
4. Write feed sources from industrial products (3pts)

### Operation Sheet -3

Satisfactory rating - 15 points

Unsatisfactory - below 15 points

#### 3.5. Technique of measuring of body weight of animal

##### A. Tools and equipments

- PPE
- Measurement scale
- Record book

##### B. Procedures

- Prepare necessary materials
- Restrain animal
- Perform activities

#### 3.6. Technique of deworming fattening livestock/shoat

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## 1. Tools and equipments

- PPE
- Chemical
- Water
- Shoat

## 2. Procedures

- Prepare necessary materials
- Wear PPE
- Restrain animals
- Apply chemical as recommendation
- Perform activities

<b>LAP TEST-3</b>	<b>Performance Test</b>
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Name.....

ID.....

Date.....

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **1:30 hour**. The project is expected from each student to do it.

**Task1:** Measuring the shoat to perform fattening

**Task2:** Deworm the shoat selected for the fattening

<b>LG #36</b>	<b>LO # 4- Feed and Feeding for fattening animals</b>
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### Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Identifying nutritional requirement of fattening animals
- Identifying, treating, measuring and blending ingredients
- Checking physical quality, quantity and type of feed
- Storing feed
- Identifying method(s) of feeding
- Planning feeding scheduled time, type, rate and frequency of fattening
- Providing adequate and clean water

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify nutritional requirement of fattening animals
- Identify, treat, measure and blend ingredients
- Checking physical quality, quantity and type of feed
- Store feed
- Identify method(s) of feeding
- plan feed scheduled time, type, rate and frequency of fattening
- Provide adequate and clean water

### Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

## Information Sheet – 4

### 4.1. Identifying nutritional requirement of fattening animals

**Nutrient:** substance contained in feedstuff used in an organism's metabolism.

The six main groups of nutrients are:

- Carbohydrates
- Fats
- Proteins
- Vitamins
- Minerals and water

They are major factors determining productivity of animals growth, feed efficiency, reproductive efficiency and body composition of an organism. Feed requirements represent the amount of feed which must be consumed to sustain a defined level of production.

#### Factor affecting nutrient content

- Age
- Weight
- Stage of production
- Breed
- Sex

#### 4.1.1. Energy requirement

##### 1. Maintenance

The amount of nutrient that results in no loss or gain of the nutrient in the body enables the body to perform its essential functions:

- Heart to beat (blood circulation )
- Force air in and out of the lungs
- Maintain the body temperature
- Digestion

- Excretion
- **Growth (weight gain/ fattening)**

Excess energy from carbohydrates, fats or protein beyond the maintenance requirements if energy intake does not meet maintenance requirements the animal will not be able to gain weight, they rather may loose weight. However, cattle on full feed usually gain faster and require less feed energy for a pound of gain when they consume high-energy rations. Due to a larger daily energy intake on this type of ration, which results in a larger percentage of the daily energy being left for gain after body maintenance requirements have been met. Feed high energy fattening rations (over 70% TDN and less than 8% CF) rather than low energy fattening rations (60% to 65% TDN and 15% to 20% CF).

#### 4.1.2. **Protein requirement**

Protein is used for muscle, blood proteins, and other body components.

- **Maintenance:** metabolizable protein required equals 3.8 times shrunk body weight to the power of 0.75)
- **Growth (for production):** When determining the animal protein requirements, the net protein requirement shall be assumed amount of protein that animals use for maintenance and incorporate into animal products (milk, weight gain, foetus and wool). The amount of protein deposited in tissue is between 10 and 20% of the body weight gain; with younger, faster growing animals depositing more protein in each unit of live weight gain than an older animal.

#### 4.1.3. **Vitamin requirements**

The role of Vitamin metabolic function and some act as antioxidants. They are grouped into: fat-soluble vitamins ( A, D and E) and Water-soluble vitamins(B and C).

#### 4.1.4. **Mineral requirements**

Qualitatively, beef cattle require the same mineral elements as do dairy cattle; however, the relative quantities of the several minerals are different. The minerals most apt to be deficient in

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beef cattle diets are sodium (as salt), calcium, phosphorus, magnesium, zinc, copper, and selenium.

#### **4.1.5. Water**

Water, although not considered a nutrient per se, is required for regulation of body temperature, as well as for growth, reproduction, lactation, digestion, metabolism, excretion, hydrolysis of nutrients, transportation of nutrients and waste in the body, joint lubrication, plus many more functions. Restricting water intake results in impaired performance. An animal will expire more quickly from a water deficiency than from a deficiency of any nutrient.

### **4.2. Identifying, treating, measuring and blending ingredients**

#### **4.2.1. Identifying ingredients**

##### **1. Energy Sources or Carbohydrates**

This refers to food high in carbohydrates and primarily gives energy to your livestock.

##### **Energy Sources Plant and plant by product**

- wheat bran,
- wheat middling,
- wheat screening
- Maize
- Wheat
- Noodles Waste

##### **2. Protein sources**

##### **▪ Plant and plant by product sources**

- ✓ Nougcake
- ✓ cottonseed cake
- ✓ Groundnut cake
- ✓ Linseed cake

- ✓ Sesame cake
- ✓ Sunflower cake
- ✓ Soya Beans

▪ **Animal by product sources**

- ✓ Meat meal
- ✓ Bone meal
- ✓ Blood meal
- ✓ Fish meal
- ✓ Milk and milk by-products

### 3. **Vitamins and Minerals**

These essential nutrients boost your livestock's immune system and repair any cellular damage. It also supports other organs in the body and facilitates their overall health.

#### 4.2.2. **Treating ingredient**

Possible to improve feed palatability nutritive value and digestibility.

- Treatment (physical and chemical)
  - ✓ Grinding
  - ✓ Soaking
  - ✓ urea treatment
- Supplementation with:
  - ✓ Molasses
  - ✓ oil cakes
  - ✓ leguminous fodders

#### 4.2.3. **Measuring and blending ingredients**

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Feed measuring and formulation is used to meet the nutrient requirement of the animal economically.

#### **Methods** formulating ingredients

- ✓ Pearson square method
- ✓ Algebraic method
- ✓ Computer software

#### **4.3. Checking the quality of livestock feed ingredients**

During food production for livestock, workers would conduct quality checks to ensure that the feed ingredients are safe, correct, and high-standard. It would begin with examining each component of animal feed then undergo specific testing methods.

There are many factors to consider when checking the quality of animal feed ingredients. For instance, the team would need to look into the nutritional value, quantity, fat and protein content, pathogens, and many more.

#### **4.4. Storing feed**

Livestock feed should never be exposed to direct sunlight. Ensure you store the food in an enclosed container or a shelter, like these from Shelter Logic, which will prevent direct sunlight from negatively impacting the feed's quality. Build a well-shaded storage shelter and ensure it is adequately ventilated and has a cover to avoid rain and predators from getting inside. It's essential to lift the feed by placing it on pallets or any other elevated place to prevent water from getting inside the storage shelter. Any water that should make its way into the shelter should be able to drain without affecting the feed in any way.

#### **The following are the materials used to Store feed**

**Use Metal Cans:** is to store your animal's feed in an enclosed facility. Convert your metallic trash cans into ideal livestock feed containers. Just be sure that the containers have tightly secured lids, as this is the only way to keep mice and squirrels away.

**Utilize Large Plastic Drums:** metal cans can be quite expensive and may not be viable for everyone. You can consider using plastic drums as an alternative for your livestock feed storage. Purchase the heavy-duty gallon plastic drums as these are more challenging for mice and squirrels to chew. Even when they do, it will take a while for the rodents to get to the feed, and by then, you would have found a permanent solution like the metallic bins or a permanent storage shelter.

**Store Feed Indoors:** this option only works if your house is tightly sealed. If you have a completed basement that is hardly in use and your home is tightly sealed so that no mice or squirrels can get in, consider storing the livestock feed indoors. For extra reinforcement, keep the feed in plastic containers before taking them to the basement.

**Use a Silo:** is an old-school technique that many large farms with lots of animal feed have used for years. It is a practical storage option because it is more resistant to mice and other rodents. Many silos are appropriately sealed and will hardly allow any rodents to access them. They are typically larger than other storage options as well. These are great alternatives for feed storage if you are the kind of person that must stock up a lot of animal feed for future use

**Buy or Make your Feed Storage Bin:** you can shop around for feed bins typically used to store feed. These are generally suitable for all types of feed.

#### **4.5. Identifying method(s) of feeding**

In the early stages, more intensive nutrition is required. A cow weighing 200 kg should consume about 4.5 kg of dry matter. At the same time, for an older individual that has gained a live weight of around 600 kg, the required amount of dry matter will already be only 9.5 kg.

There are two methods of feeding:

- **Intensive**

suitable for rapid muscle building, more often used for young animals and meat individuals.

Intensive fattening is usually chosen for:

- ✓ Male related to the meat direction;
- ✓ young female;

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- ✓ calves, kids and lamb belonging to the first calving

This method of fattening is also used for meat and dairy and dairy groups. The meat of these animals also has high quality characteristics, yielding to beef cattle in terms of fat content. The basis of the diet for intensive fattening will be corn silage with high quality characteristics.

#### ▪ **stall fattening**

Nutritional composition depending on the availability of feed and the time of year, suggests a smoother weight gain. The stall-feeding method is equally well suited for both adults and young animals.

This type of fattening involves the use of the following types of feed:

- Molasses and bard
- Beet pulp
- Potato pulp
- Strength

Young animals should also receive rough and concentrated nutrition. Usually, the process of fattening in the stall is usually divided into 3 main stages:

- Initial (30 days)
- Medium (40 days)
- Final (20 days)

Each stage differs not only in duration, but also in the composition of the diet consumed by cows. In the first 70 days (initial and middle stages), animals can receive cheaper food. But at the final stage, the amount of concentrated feed must be increased several times.

## **4.6. Planning feeding scheduled time, type, rate and frequency of fattening**

### **4.6.1. Planning feeding scheduled time of fattening**

The animals raised for feedlot fattening are offered good quality feedstuff, which are palatable and free from fungus growth and any contaminations. The green roughages are harvested at

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proper stage of growth i.e. pre-flowering, at this stage the forages has better palatability, intake and maximum amount of desirable nutrients.

In the grazing along with supplementation of concentrate ration system, at early hour of the day 50% of the daily requirement of the concentrate i.e. 1% of the body weight ration is offered, thereafter the animals are sent for grazing for few hours so that animals can consume 2% of their body weight green fodder. The duration of the grazing will depends on the availability of the green fodder. Whereas, remaining 1% of the body weight of the concentrate ration is offered in the evening in the shed. In total mixed ration system, the fodder along with dry and/or green fodder is offered twice a day along with concentrate ration.

It is important that all animal raised on feedlot system should have free access to clean drinking water all the time.

#### **4.6.2. Planning Feeding type**

Cattle fattening operation involves the provision of artificial environment in which cattle are placed in a confined area to consume a predetermined diet. An increase in profit results from better growth of the animal and an improved carcase relative to the cost of the extra feed and other inputs.

**Pasture Grazing:** Before deciding the location where your cattle are grazed it is important to evaluate and know the types, growth and quality of the grass and/or forage feed. If the forage field has better yield and quality, it minimizes the cost of supplementary feeds which directly or indirectly results in the fattening business more profitable

**Zero grazing system (cut-and-carry feeding):** The feeding strategy discussed here deals with Zero grazing system- cut-and-carry feeding for fattening (it can be natural grass cut and sold to urban dwellers or those produced for forage marketing). Note that, the feeding strategy helps you to calculate rations for your animals.

#### **4.6.3. Planning feeding rate and frequency of fattening**

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Divide the daily supplementary feed in two equal amounts and feed your cattle twice a day. Give half of the daily feed amount early and late afternoon.

#### 4.7. Providing adequate and clean water

- Provide clean water without limit or ad libitum depends on temperature, humidity, moisture content of the feed and salt content of the feed
- Restrict the movement of at all times so that it uses less energy and gains weight quickly.

<b>Self-Check – 4</b>	<b>Written test</b>
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Name..... ID..... Date.....

#### Test 1: Write and discuss accordingly

- Why fattening animals require energy?
- Why fattening animals require protein?
- Write energy source ingredient for animal fattening
- Write protein source ingredient for animal fattening
- Write Vitamin source ingredient for animal fattening
- Write methods of treating ingredients for fattening animals

Operation Sheet -4

**4.1. Technique of preparing ration for fattening cattle**

1. Tools and equipments

- PPE
- Soyabean
- Wheat
- linseed cake
- Wheat brain
- Scale

2. Procedures

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- Wear PPE
- Clean area
- Measure ingredients according to formula

<b>LAP TEST-4</b>	<b>Performance Test</b>
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Name.....

ID.....

Date.....

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **4 hour**. The project is expected from each student to do it.

**Task 1:** Perform mixing of ingredients for fattening animals

<b>LG #37</b>	<b>LO # 5- Monitor performance of feedlots</b>
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### Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following content coverage and topics:

- Monitoring and maintaining shed hygiene
- Monitoring of the hygiene and health of the livestock
- Monitoring and reporting any change in production levels
- Giving advice to operational staff during the feeding operation
- Removing and storing wastes
- Collating and storing record keeping

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Monitor and maintain shed hygiene
- Monitor of the hygiene and health of the livestock
- Monitor and report any change in production levels
- Give advice to operational staff during the feeding operation
- Remove and storing wastes
- Collate and store record keeping

### Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information Sheets
4. Accomplish the Self-checks
5. Perform Operation Sheets
6. Do the “LAP test”

### Information Sheet – 5

### **5.1. Monitoring and maintaining shed hygiene**

In modern livestock farming, regular, thorough cleaning and subsequent professional disinfection of shed enclosures is a fundamental requirement to ensure animal health.

A lack of hygiene management will lead to an increase in germ diversity and to a surge in the total germ load. It can produce unnecessary strain on animal immune systems and increase performance-reducing illnesses. General germ reduction and a break in an infection chain reduce the risk of disease. Thorough cleaning followed by disinfection of shed facilities prevent certain pathogens from multiplying.

#### **Cleaning livestock sheds**

Efficient stable disinfection strongly depends on prior effective cleaning. Fat and protein films are carriers of infective agents, and cannot be easily removed with a pressure washer. Disinfectants applied after a pressure wash cannot penetrate them.

The disinfect hygiene range offers high-alkaline cleaning concentrate with high degreasing and dirt-removing power with the products stall clean Basis and stall clean Profi. Their use particularly improves cleaning with shorter cleaning times where fat-containing faeces is involved and helps to reduce water consumption.

#### **Work steps when using stall clean basis and stall clean profi:**

- Move animals out of the shed
- Make preparations, such as removing movable equipment
- Use a soaking system to soak the shed
- Foam the shed with a 1–2 per cent Stall Clean basis and Stall Clean profi application solution
- Clean shed thoroughly with pressure washer

#### **Shed disinfection**

Where there is a subsequent disinfection, it should be considered that the various germ compositions require a targeted implementation of disinfectant. General disinfectants with an aldehyde and acidic base will combat fundamental germ groups such as bacteria and viruses.

**You must comply with the disinfection measures as follows:**

- Disinfect the wet shed with Alzogur to combat dysentery and flies.
- Let the shed surfaces dry completely. They must no longer be damp.
- Apply general disinfectant to eliminate bacteria and viruses
- Allow for an exposure time of two hours, then ensure shed surfaces dry completely.

**Calculating application solution for disinfectant:**

Shed surface in square metres x 0.4 litres of application solution (as per DVG) x 1.7 (factor for walls, partition grids and shed equipment) = application solution in litres.

**Surface disinfection with Peroxx Liquid**

The Desintec Peroxx liquid solution is applied with the usual application devices for peracetic acid (e.g. 200-litre disinfection trolley or stainless steel disinfection lances) onto the dried service after cleaning.

**Bactericide:**

- Special disinfection: 0.75%/30 min. or 0.5%/60–120 min.
- (At 10 °C); preventative disinfection: 0.5%/30–60 min. or 0.25%/120 min.

**Virucide:**

- Non-enveloped viruses: 0.75%/30 min. or 0.5%/60 min. or 0.25%/120 min.
- (At 20 °C); enveloped viruses: 0.5%/30 min. or 0.25%/60–120 min.

**Some important activities concerning animal house hygiene are listed below:**

- (a) Provision of ample clean and safe water
- (b) Good ventilation
- (c) Safe disposal of animal excreta and other farm waste
- (d) Cleaning and disinfection of premises and equipment's
- (e) Vector control





Figure 5. house hygiene

## 5.2. Monitoring of the hygiene and health of the livestock

The management practices you use on your farm/ranch contribute to the health of your animals. Good husbandry combined with good biosecurity helps animals thrive. Disease monitoring means watching animals for signs of illness or poor health, so they do not suffer or spread disease to others.

### Animal caretakers should

- Check for signs of illness often such as lower feed intake, weight loss, decreased activity, lameness, difficulty breathing, deep coughing, eye or nasal discharge, bloody diarrhea, depression, abortion.
- Set up an isolation area for sick animals.
- separate location, away from the rest of the herd/flock with separate cleaning and feeding supplies.

## 5.3. Monitoring and reporting any change in production levels

If the animals become sick or injured you may provide information about the animals, including:

- Species (e. g., sheep, cattle, swine, poultry, goat, other)
- Age, weight, breed, production, and housing

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- Previous health status of the animals
- Other foods, or drugs the animals received
- Clinical signs observed (e.g., diarrhea, lethargy, staggering)
- How soon after consuming the product the clinical signs appeared
- Your veterinarian or other consulted professional's contact information
- How many animals consuming the product were affected
- Why you suspect the product caused the illness

#### **5.4. Giving advice to operational staff during the feeding operation**

Developing an appropriate feeding plan that is practical to implement and still meets nutritional needs of the variety of animals entering a shelter is challenging, but key to proper health. Here are actions you can take to ensure good nutrition is provided for the animals in your care:

- Record weight and body condition score (BCS) as part of your intake examination and repeat regularly throughout shelter stay and be sure you route animals promptly to the veterinarian if you observe animals who are very thin, obese or experiencing significant weight gain or loss.
- Calculate the amount each animal is to be fed. Having an accurate weight and BCS is only a part of calculating an animal's daily nutritional requirement. The amount each animal is fed can be calculated from a formula that takes into account life stage (adult, young, pregnant, nursing), health status, activity level and very importantly, type of food chosen. The calories (expressed as kcals) and nutritional value vary considerably among types and brands of food. This affects the amount of a specific food that an animal needs. Our calculator lets you enter the number of kcalories per cup of a specific food and will automatically calculate the amount of food to feed based on weight and life stage for dogs and cats. You can print this and use it to train your staff how to feed animals at consistent times.
- Create a written feeding protocol to use with each group of animals in your shelter based on the food(s) in use. Whatever food brand is selected should minimally be one that has been through feeding trials to validate its nutritional adequacy. You can determine this by

checking the label, which should state that the diet is adequate for the life stages indicated based on the Association of American Feed Control Officials (AAFCO) feeding trials.

- Use flat-bottom stainless-steel bowls or disposable paper food trays. Use clean bowls or new trays at each feeding, and remove uneaten food and used bowls or trays.
- If possible, separate morning feeding from cage cleaning. Ideally, let the animals eat before the disruption of cleaning.
- Offer canned food to cats who seem uninterested in dry food. Wet food may be more appealing, and can help prevent dehydration.
- Ensure that fresh, clean water is available at all times unless there is a medical reason for water to be withheld for a prescribed period of time. Water should be changed daily and whenever it is visibly soiled.
- Be sure you monitor whether animals are eating, drinking, and eliminating. Here is a worksheet to help you track this information consistently. Route animals promptly to the veterinarian for evaluation and/or work-up if significant appetite or elimination abnormalities are noted.
- In group housing, pay special attention to access to food and water. Ensure that all animals are eating and drinking sufficiently and that no animal is preventing others from reaching food or water.

### **5.5. Removing and storing wastes**

Do

1. Store waste securely, to prevent harm to the environment or to human health.
2. Only burn waste
3. Follow "The 4 Point Plan", which offers guidance on how to:
  - Reduce dirty water around the farm
  - Improve nutrient use
  - Carry out a land risk assessment for slurry and manure
  - Manage your water margins

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4. Reduce, re-use and recycle waste
5. Recycle waste oil, lubricants, scrap metal and tyres.
6. Keep farm steadings and farmlands clean and tidy and free from unsightly litter from farming activity, especially farm plastics, containers and scrap.
9. Monitor water use carefully and reduce any leakage or wastage, especially where such leakage is contributing to levels of waste production (i.e. of stored slurry).

#### DON'Ts

1. Don't import anybody else's waste without proper authority
2. Don't give waste to a third party without:
  - Ensuring that the person it is being given to is authorized
  - Providing that person with a written description of it
3. Don't dispose of any waste, including scrap metal, plastic or other rubbish
4. Don't keep hold of waste or store it for more than one year if your intention is to dispose of the waste, otherwise a landfill permit is required.
5. Don't keep hold of waste or store it for more than three years if you intend to recycle it, otherwise a landfill permit is required.
6. Burning of plastic is not recommended, because it can result in nuisance. Great care is required in using this disposal method.
7. Don't contaminate clean water with livestock slurry, animal manures or farmyard run-off.
8. Don't tolerate fly-tipping.
9. Don't hesitate to get involved in any local recycling initiatives operated by Machinery Rings or other groups.

#### 5.6. Collating and storing record keeping

Record keeping is an essential part of good livestock and farm business management. Recording can be done most easily if animals have some form of identification. Thus, animal recording and identification are inseparable. There are two main objectives of animal identification and recording:

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- To identify animals belonging to a particular owner; proof of ownership.
- To use as a management tool to:
  - ✓ Undertake performance evaluation,
  - ✓ Perform genetic selection,
  - ✓ Keep proper health records,
  - ✓ Accurately measure production and reproduction, and
  - ✓ Perform other important management functions required to run an effective

Establishment of a national livestock data-recording system is important for a uniform development of recording and analysis procedures.

The national recording system should be:

- uniformly used throughout the country.
- simple to implement and use.
- allow identification of the best and poorest management procedures.
- provide information necessary to make management decisions.
- provide data for research, policy development and extension.
- help in implementing genetic improvement programs.

### **Types of Record**

- Identity, dam ID, weight, date of birth, type of birth and sex.
- Growth or weight records kept periodically by recording the body weight of animals.
- Health records including morbidity, mortality, signs and symptoms, diagnosis, treatments and vaccinations, etc.
- Feed consumption
- Mating records
- Testes size
- Carcass yield or dressing percentage
- Hides and skins:

<b>Self-Check – 5</b>	<b>Written test</b>
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Name..... ID..... Date.....

Test 1: **Write and discuss accordingly**

1. Write Types of Record
2. Write the two main objectives of animal identification and recording
3. Write the things Animal caretakers should done

## Operation Sheet -5

### 5.1. Technique of recording daily feed intake fattening cattle

#### A. Tools and equipments

- PPE
- Scale
- Record book
- Pen

#### B. Procedures

- Prepare all necessary materials
- Ask information about cattle
- Take the record

<b>LAP TEST-5</b>	<b>Performance Test</b>
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Name.....

ID.....

Date.....

Time started: \_\_\_\_\_ Time finished: \_\_\_\_\_

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within **1:30 hour**. The project is expected from each student to do it.

**Task1:** Perform recording daily feed intake of fattening cattle



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