



FEDERAL TVET AGENCY

***BASIC AGRICULTURAL PRODUCTION AND NATURAL
RESOURCES CONSERVATION
LEVEL I***

Learning Guide #1

UNIT OF COMPETENCE: Support Livestock and Fishery Work

MODULE TITLE: Supporting Livestock and Fishery Work

LG Code: AGR BAN1 M 10 LO1 LG1

TTLM Code: AGR BAN1 TTLM10 0919V1

LO1. Prepare for livestock and fishery work

Sep, 2019

Bahir Dar

Instruction Sheet	Learning Guide #1
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- ✓ Identifying materials, tools and equipment.
- ✓ Checking all materials tools and equipment's
- ✓ Using correct manual handling and techniques for loading and unloading materials
- ✓ Select and check suitable PPE
- ✓ Identifying and respond OHS hazards

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, **upon completion of this Learning Guide, you will be able to:**

- Identify required materials; tools and equipment
- Check all materials, tools and equipment
- Use correct manual handling and techniques for loading and unloading materials to minimize damage to the load and the vehicle.
- Select and check Suitable Personal Protective Equipment (PPE) prior to use.
- Identify and respond OHS hazards according to OHS requirements and workplace information.

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information "Sheet 1, Sheet 2, Sheet 3, Sheet 4" and sheet 5
4. Accomplish the "Self-check 1, Self-check t 2, Self-check 3, Self-check 4" and Self-check 5
5. If you earned a satisfactory evaluation from the "Self-check" proceed to "Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3".
6. Do the "LAP test" (if you are ready).

1.1. Definition of Terms

Livestock:- include all domesticated animals raised in an agricultural setting to produce commodities such as food, fiber and labor.

Ruminant animals: - are mammals that are able to acquire nutrients from plant-based food by fermenting it in a specialized stomach prior to digestion, principally through bacterial actions. Ruminants have a four-compartment stomach.

Non ruminant animals: Non-ruminants are also called "monogastrics"--animals with a single-compartment stomach.

Poultry:-domestic fowl in general, e.g. chickens, turkeys, ducks, or geese, raised for meat or eggs.

Dairy:- a farm that produces milk and milk products

Beef: - is the culinary name for meat from bovines, especially cattle.

Herd: A herd is a social grouping of certain animals of the same species, either wild or domestic

Fish: any of various cold-blooded, aquatic vertebrates having gills, commonly fins, and typically an elongated body covered with scales

Fishery: The industry or occupation devoted to the catching, processing, or selling of fish, shellfish, or other aquatic animals.

: A place where fish or other aquatic animals are caught.

1.2. The importance Livestock production

The importance of livestock production is growing in tropical regions. Livestock account on average for 25 % of the agricultural GDP in Africa (World Bank, 1993). Livestock serve diversified functions as:

- Income generator
- Improvement of diets
- provision of draft power

- Utilization of land which is not suited for cultivation
- As assets, and
- Insurance for difficult times

1.3. Livestock production systems

Based on input used and degree intensity of farming activity livestock production system is broadly categorized as:-

1. Extensive livestock production system

Extensive livestock production system is a production system which is carried out on large sizes of grazing land with large numbers of animals. The economic objectives of this type of production system include:-

- For subsistence: animals are kept for milk production for family consumption(e.g. pastoralism)
- For commercial: producing animals for commercial purpose (as source of income) e.g.

Ranching Characteristics of extensive livestock production

- It is Oldest method
- Low input - low to moderate output
- No or very few purchased inputs.
- All animal production adapted to the existing environment.
- Survival emphasized rather than productivity
- Modest to considerable human activity(low labour)
- Animals fed near or only marginally above maintenance requirements for almost their entire lives.
- Animal products available only during certain seasons.
- Requires extensive land.
- Availability of fodder varies with season so variation in intake.
- Daily / everyday – grazing.
- Animals are given places to sleep at night but during the day they are allowed to go and fend for themselves(Grazing – housed – night)
- Not expensive as compared to intensive and semi-intensive production system.
- No specific breed maintained.
- No specified breeding policy

2. Intensive livestock production system

Intensive farming or intensive agriculture is an agricultural production system characterized by the high inputs of capital, fertilizers, labor, or labor-saving technologies such as pesticides relative to land area.

Intensive Animal Farming is when animals are kept in feedlots, stalls or cages in an attempt to better "manage" the breeding, raising and harvesting of them

Characteristics of intensive livestock production systems

- ✓ It is carried in densely populated areas and the population pressure is high
- ✓ Land holdings are smaller.
- ✓ Total confinement to shed throughout the year and fed.
- ✓ Restricted movement –energy conservation, management easy.
- ✓ Number of animals can be maintained under direct Supervision.
- ✓ Space requirement less when compared with. Ext or SI system.
- ✓ Utilize all resources within a limited area to achieve maximum production from minimum land
- ✓ Animals are been provided everything inside thus their feeding and trough within the farm and animals are not allowed to go out.
- ✓ High input - high output farming
- ✓ Animals' environment modified to suit highly specialized genotypes and production systems.
- ✓ Productivity emphasized.
- ✓ High energy subsidy.
- ✓ Animals fed considerably above maintenance for almost all of their productive lives.
- ✓ Usually low labor - high automation.
- ✓ Seasonal or total confinement.
- ✓ Cereals grown specifically for livestock feed.
- ✓ Disease prevention emphasized.
- ✓ animal products available throughout the year





3. Semi – intensive production system





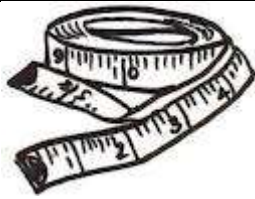

Semi – intensive production system is an intermediate between extensive and intensive production. It is not intensive but it is better in terms of input used and output (livestock products) than extensive production system. It is characterized by:

- various degrees of human activity to supervise or handle livestock
- modest to moderate purchased inputs
- some improved grazing, feed storage, plant residues & by-products used

1.2. Tools and Equipment's used in livestock production

The following lists of equipment and tools are commonly used in both extensive and intensive Dairy, Beef, Sheep and Goat production.

No	Name	Use of tools and equipment's	Image
1	Burdizzo:	The device that is used to castrate male animals.	
2	Ear tag and its applicator	used to fixing identification number/sign to the ear of individual animals	
3	Hoof trimmer	as its name indicated it is used to trim/cut extra or deformed hoof of animals	
4	Knapsack sprayer	is used to apply chemicals (acaricide, disinfectant herbicide and other chemicals) to preferred area /location.	

	Syringe (different size)	an instrument consisting of a piston in a small tube, used in conjunction with a hollow needle or tube for the withdrawal and injection of fluids(medicine, chemicals)	
	Weighing balance	A device for weighing animals, feed medicine or other objects, for different purposes.	
	Rope	A rope is a group of yarns, plies, fibers or strands that are twisted or braided together into a larger and stronger form.	
	Shovel/spade	a hand tools consisting of a broad, usually curved blade attached to a long handle, used for lifting mixing and moving loose materials (soil ,feed, etc)	
	Fencing wire	Strong wire with pointed projections along its length (barbed) used for fencing and barriers.	
	Wheel barrow	a small cart used to transport things(Feed, waste materials other materials in the farm) usually in the form of an open container with a single wheel at the front and two handles at the back	
	Tape measure	a long roll or strip of fabric, plastic, paper, or thin metal that is marked off in inches or centimeters for measuring the length of something	
	nose ring	A ring made of metal designed to be installed through the nasal septum of domestic cattle, usually bulls.	

In addition to those listed above the following tools and equipment's are used specifically in intensive dairy, beef, sheep and Goat production.

Feeder/Feed trough:-a device used for provision of feed for livestock


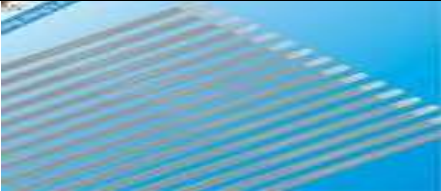






Waterer/water trough: - device a used to provide/supply water for animals.


Milking machine: - machines that can extract from cow

Milk handling processing machinery, tools and equipment's

No	Name of the Item	Figure	Function
	Cream separator		Used to separate cream from higher-butterfat layer skimmed from the top of milk before homogenization
	Churner		Used to produce butter
	Milk pasteurizer		Used to preserve milk and milk products
	Refrigerator		Used to preserve milk and milk products
	Milk storage tank		Used to store milk
	Milk containers		
	Strip cup		Used to get milk sample to check diseased or not

Artificial Insemination tools and equipment's which include:-

No	Name of the Item	Figure	Function
1.	Liquid nitrogen container and its goblet		Used to store semen for long time without loose its quality
2.	AI sheath		Used to cover Insemination gun
3.	Scissors		used to cut tip of non-cotton part of semen straw
4.	Insemination gun		Used to introduce semen into female reproductive organ
5.	Forceps		Used to pick up semen straw from liquid nitrogen container
6.	Thermometer		To measure temperature
7.	AI bag		To carry AI material
8.	Thermo flask		To store warm water
9.	semen straws		It is the container of semen
10.	Soft soap , little water		For cleaning purposes

11.	Towel		To clean drop of water from semen straw after it removed from warm water
12.	Stove		Used to boil water
13.	Record book		Used for recording all reproductive information
14	Arm size glove		It protracts all hand parts from feaces during insertion of hand in rectum of female animal to do insemination and pregnancy diagnosis

Fish production tools and equipment's

- Fish draying frame
- Pond
- Fishing nets with different size
- Stocking materials(fry, fingerlings, egg, larvae)
- buckets
- Ice box, refrigerator
- Measuring board
- Thermometer
- pH meter
- Conductivity meter
- Litmus paper
- Ammonia and Nitrate test Kits
- Plankton nets
- Spray equipment etc.



Tools and Equipment's used in poultry production

Almost all tools and equipment's used in free range (extensive) and intensive (deep litter and cage system) poultry production are the same except some which are specific to intensive production. The followings are common in both free range and intensive production.

- Egg laying net
- Egg collecting basket
- Egg trays
- Incubator
- Brooder
- Water trough/waterer
- Wheel barrow
- Bucket
- Egg candler
- Syringes and other medical equipment's



Self-Check 2

Written Test

Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. _____ is any of various cold-blooded, aquatic vertebrates having gills, commonly fins, and typically an elongated body covered with scales? (2pts).
2. Write importance of livestock production? (3pts)
3. write characteristics of intensive livestock production(5pts)
4. List at list five tools and equipment's used for intensive and extensive livestock work? (10pts)
5. List at list five tools and equipment's used for poultry?(5pts)
6. List at list five tools and equipment's used for fishery work? (5pts)
7. List at list five tools and equipment's used for AI work?(5pts)

Note: Satisfactory rating – 17.5 points

Unsatisfactory - below 17.5 points

You can ask you teacher for the copy of the correct answers

Checking machinery, tools and equipment's refers to the process of examining their parts to ensure their normal functioning

Why we check before use?

- To identify the problems (defects, damages) of the Machinery, Tools and Equipment's and take actions to correct or change them before using them
- To identify any hazards and risks that can be raised from miss-use of the Machinery, Tools and Equipment's and take minimization action timely

The causes of hazards/risks associated with machinery, equipment's and tools

- Using wrong equipment or/and tools for a job
- Not fitting adequate guards on machines leading to accident caused by entanglement, shearing crushing and trapping
- Not fitting adequate controls or wrong type of controls so that equipment cannot be turned off quickly and safely, or starts accidentally
- Not providing right information, instruction and training for those using the equipment
- Not maintain work equipment or carrying out regular inspections and thorough examinations
- Not providing the personal protective equipment's needed to use certain equipment's and machinery

A guideline to conduct pre-operational checks on equipment's and tools

You should make sure that the equipment's and tools used for work are safe to use. Here is list of actions that should be taken to ensure this is so.

- ✓ Perform a risk assessment to identify the hazards and the control measures you should use
- ✓ Check that the equipment/tool is suitable for work and way in which it is going to be used
- ✓ Check that the equipment/tool is in good condition

- ✓ Make sure that the user knows which personal equipment to use and how to use it
- ✓ Think about who will use the equipment/tool including experienced workers, workers with language difficulties, new starter
- ✓ Speaking with team members or team leaders who has used the equipment before will help you identify any potential issues or problems.

Self-Check 3	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Writ the reasons why we check tools and equipment are before use? (5pts)
2. writ the causes of hazards/risks associated with machinery, equipment's and tools?(5pts)

Note: Satisfactory rating – 5 points

Unsatisfactory - below 5 points

You can ask you teacher for the copy of the correct answers

Information Sheet-4	Using correct manual handling and techniques for loading and unloading materials
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Loading: refers to putting of the load (anything) on to the ship, truck or pack animal

Unloading : removing cargo from carrier or taking the load off a ship, truck, or pack animal

A guideline to load and unload equipment's and tools

- Load/unload the material in required order taking care to avoid damage
- Use manual handling techniques of loading /unloading throughout the process to avoid injury or damage
- Install the material in appropriate work or storage area in accordance with direction
- Identify any hazardous items and load /unload these in a manner that minimizes health and safety risks.
- Inspect load prior to transportation to ensure that all items are loaded appropriately and make adjustments as required
- Secure package against shifting within a vehicle during transportation though tying ,blocking and bracing the load
- Load packages with orientation marks (up arrow) so that the marks remain pointed up
- Do not allow any smoking or any source of ignition on or near the vehicle when loading flammable
- Always load materials having high weight at the bottom
- Always load similar materials in one side during loading of different types of items

Self-Check 4	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Define what is loading and unloading? (5pts)

Note: Satisfactory rating –2.5 points

Unsatisfactory - below 2.5 points

You can ask your teacher for the copy of the correct answers

Information Sheet-5

Select and check suitable PPE

Personal protective Equipment's (PPE):-Personal Protective Equipment's are those equipment's that used to protect the body from external hazardous matters or conditions during work activities in the workplace.



Choosing the appropriate PPE








What protective clothing and equipment is necessary? This depends on the duty being undertaken and chemical being used but the work place instruction and manufacturer's directions should be used as a guide.

Generally the degree of protection required will be relative to the degree of hazard presented by a particular product or/and work.

Common PPE items

There are many PPE items however, we will mention some of the ones that you are most likely to come across in most animal care workplaces.

Type of PPE	What are they? Caution...!
Clothing 	<ul style="list-style-type: none">• Long sleeved shirt, long trousers made of water repellent material.• Overalls, waterproof apron, rain coat, rain suit can be used when mixing or pouring concentrates.• Overalls do not provide adequate protection against spills and splashes
Gloves 	<ul style="list-style-type: none">• Elbow length, unlined water proof gloves.• Only use gloves approved for the chemical or product as some rubber products can be reactive with solvents and dissolve. Read the label or (M)SDS

 Shoes/Boots	<ul style="list-style-type: none"> Boots must be made of rubber. Trouser bottoms must be worn outside of boots. Leather, canvas or cloth boots must not be worn when handling chemicals due their absorbency
  Goggles/Face Shields	<ul style="list-style-type: none"> Tight fitting and non-fogging goggles or full face shield must be worn to avoid eyes contamination or if there's a possibility of a splash. Avoid eye contact Take caution when using dusts, powder or toxic spray
 Glasses	<ul style="list-style-type: none"> Wear glasses to avoid eye contact. Contact lenses can trap material beneath, hence increasing the risk of poisoning
   Respirators	<p>Select the respirator that is solely designed for its intended use Understand the limitations of the respirator type</p> <ul style="list-style-type: none"> Always use manufacturer's instructions on use and maintenance. Three types of respirators: <ol style="list-style-type: none"> 1. Negative pressure purifying 2. Supplied-air 3. Self-contained

Self-Check 5	Written Test

Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Define what is PPE? (5pts)
2. list all types of PPE?(10pts)

Note: Satisfactory rating –7.5 points Unsatisfactory - below 7.5 points

You can ask you teacher for the copy of the correct answers

Hazard: is the term that refers to dangerous conditions that can results risks in the working place. This can be physical, mechanical, chemical, and Biological factors which affect or harm the health and safety of all people and animals in the working place.

Physical hazards

- Exposure to high noise levels from mechanical equipment
- Callosities on hands caused by continuous strenuous work with hand tools
- Eye strain due to poor illumination in the tannery

Chemical hazards

- Skin rashes and dermatomes as a result of exposure to cleaners, solvents, disinfectants, Pesticides, leather-processing chemicals, etc.
- Allergies - contact and systemic - caused by many of the chemicals used in tanneries

Biological hazards

- Raw hides and skins may be contaminated with a variety of bacteria, molds, yeasts, etc., and various diseases (e.g., anthrax, leptospirosis, tetanus, Q-fever, brucellosis, etc.)

Ergonomic hazard

- Acute musculoskeletal injuries caused by physical over exertion and awkward posture while moving heavy or bulky loads, in particular bundles of hides, skins and leather,
- Low back pain due to prolonged working in a standing or semi-bending posture and
- Heat stress, in particular when working on warm days in premises lacking good ventilation or air Conditioning.

Preventive measures

- Wear safety shoes with non-slip soles
- Erect fences and post warning signs round open pits in the tannery call a qualified electrician to examine and repair faulty or suspect electric equipment
- Wear protective goggles and respiratory protection during buffing work

- Do not ever enter a confined space when you are alone. To enter such a space, use respiratory protection equipment with autonomous air supply, and have a co-worker stand-by to call a rescue team in case of weakness, asphyxiation or poisoning
- Seek medical attention if skin rashes develop; consult an allergy specialist on
- Keep a high level of personal hygiene; change clothes at the beginning and end of shift; do not take work-soiled clothes home
- Learn correct lifting techniques and work postures, to avoid low back pain use mechanical aids for the lifting and transport of heavy loads how to deal with sensitivity to solvents and adhesives
- Install effective exhaust ventilation to remove hazardous gases and vapors, and eliminate obnoxious odors from the tannery.

Self-Check 6	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. _____ is the term that refers to dangerous conditions that can results risks in the working place? (5pts)
2. Writ types of hazard in the work place?(5pts)

Note: Satisfactory rating 5 points Unsatisfactory – below 5 points

You can ask you teacher for the copy of the correct answers.



FEDERAL TVET AGENCY

***BASIC AGRICULTURAL PRODUCTION AND NATURAL
RESOURCES CONSERVATION
LEVEL I***

Learning Guide #2

UNIT OF COMPETENCE: Support Livestock and Fishery
Work

MODULE TITLE: Supporting Livestock and Fishery Work

LG Code: AGR BAN1 M 10 LO2 LG2

TTLM Code: AGR BAN1 TTLM10 0919V1

LO2 Undertake livestock and fishery work as directed

Sep, 2019

Bahir Dar

Instruction Sheet	Learning Guide #2
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Providing Instructions and directions
- observing and carrying out Tasks in livestock production works
- Carrying out quality assess and handle hide and skin
- Undertaking fishery farming activities
- Undertaking work safe and environmentally
- Carrying out interactions with other staff, farmers and customers
- Observing enterprise or cooperative policy and procedures

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, **upon completion of this Learning Guide, you will be able to:**

- ✓ Provide **Instructions** and directions.
- ✓ observe and carry out **Tasks in livestock production works**
- ✓ Carry out quality assess and handle hide and skin
- ✓ Undertake fishery farming activities
- ✓ Undertake work safe and environmentally
- ✓ Carryout interactions with other staff, farmers and customers
- ✓ Observe enterprise or cooperative policy and procedures

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4”.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3”.
6. Do the “LAP test” (if you are ready).

Information Sheet-1**Following Work Instruction and Directions**

Prior to undertaking tasks it is essential to obtain and confirm your work instructions and quality requirements. When you have your work instructions, make sure you understand what is required of you so you can apply them effectively.

Sources of Work Instructions

Instructions may come from a variety of work site sources including

Source	Types
Plans	<ul style="list-style-type: none">• Schedules.• Work plans.• Environmental plans.• Safety plans.• Task procedures.• Safe Work Method Statements (SWMS).
Specifications	<ul style="list-style-type: none">• Task specifications.• Machinery specifications.• Equipment specifications.• Material specifications.• Site-specific instructions
Operational Details	<ul style="list-style-type: none">• Timeframes.• Material availability.• Weather conditions.• Prior task completions.
Quality Requirements	<ul style="list-style-type: none">• Detail what is to be done and to what standards,• which may be from:• Dimensions.• Tolerances.• Work standards.• Material standards from:• Project drawings.• Specifications.• Project documentation.• Client standards.
On Site Meetings	<ul style="list-style-type: none">• These allow you to give suggestions, make comments and assist in decision processes
Supervisors and/or managers	<ul style="list-style-type: none">• Written• Verbal

Your work instructions could be in the form of:

- Written documents.
- Drawings.
- Sketches.
- Maps.
- Plans.
- Specifications.
- Reports
- Verbal from supervisor/manager



It is important for you to follow directions and work instructions provided by your supervisor when you are working. If you don't follow instructions and directions, you will not be successful at your job and you will result in loss of materials and product, customer complaints, or liability issues. You have to listen to your supervisor's verbal or written directions and follow them for your job to be complete

Example:

The work instructions and written or verbal directions provided by your supervisors in artificial insemination work place may be about the following safety policies, and the general working procedures.

- using personal protective equipment's
- safe handling and restraining animals
- preparing tools & equipment for AI work
- cleaning and returning the materials after work to their right place
- safe handling and disposal of waste materials

Self-Check 1	Written Test
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- OHS requirements etc.

Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Writ sources of work instruction? (5pts)

Note: Satisfactory rating –2.5 points

Unsatisfactory - below 2.5 points

You can ask you teacher for the copy of the correct answers

Information Sheet-2	Tasks in livestock production works
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2.1. Animal handling and restraining

- **Restraining** is technique of keeping animal under the control or within limit.
- Those facility that are properly constructed and maintained in a good working order will enhance the producer`s time management and safety also provide safety for those working animals welfare, sensation of pain, psychological wellbeing and to prevent unnecessary excitement or stress or discomfort.
- While you are performing any management techniques the restraint method that you want to be used will:
 - Minimize danger to the handler
 - Minimize danger to the animal
 - Minimize the unnecessary pain or fright
 - Allow the management techniques completed as necessary
- There are different elaborate facilities to restrain animals such as chute, rope, crush, pen, etc. from these the common and easily affordable for our small scale farmers are cattle crush.

2.1.1. Cattle crush

- The use of crush is the most common ways of restraint for domestic animals.
- The design essential in a crush are that it should be sufficiently strong to restrain any cattle likely to be derived in to it; that cattle should not be able to damage themselves while in it; and that it should provide the necessary facilities for handling the animals, using the minimum labor.
- Average width of a crush for large tropical type cattle should be no more than 70cm, although the sides of the crush don't have to be vertical and it is desirable that the standing space in the crush should be narrower.
- Standing space doesn't need to be more than 53cm wide.
- The height of the crush doesn't have to be more than 1.5m.
- The length will depend up on how many cattle the operator wishes to retain in the crush at one time. Five or six are a suitable number.

- The crush may be constructed of tubular metal, swan timber or roughly dressed timber. Tubular metal is the most satisfactory.
- The whole lengths of the crush should be floored with concrete and where practicable the concrete should be built up to height of 0.6m on either sides of the race.
- This forms a supporting base for the uprights, a protection for the feet and legs of the
- Stock and a platform for the workers.

Procedures for Construction of cattle crush includes;

- Select appropriate site for construction
- Prepare all the necessary materials and equipment's
- Layout the length, width and height of the crush depending upon the number of animals
- Put peg in each corner
- Level the area that are already selected
- Construct the gun pole and other parts of the crush
- Finally Check the strength of the crush

2.2. Handle milking

2.2.1. Milking schedule

Milking is the process of removing milk form udder. This process requires experience and skill. It is important that a cow milked at a faster rate at regular interval. Proper milking is enjoyable to the cow and profitable to the owner. This could be achieved if milking is programmed in coordinated steps. Milking schedule depends on the organization's milking policy as different milking schedules need different resource inputs.

Milking time: milking can be done twice or three times a day. But this interval must be regular. A sudden change in the time of milking affects the total yield

Milking order: clean cow should be milked first. A suggested order

1. First calf heifers free of mastitis
2. Older cows free of mastitis

3. Cows with history of mastitis but not showing the symptoms
4. Cows with quarters producing abnormal milk

2.2.2. Milking systems

There are two types of milking systems. The choice of the system depends on the level of operation, economic efficiency and number of cows to be milked

- Hand milking
- Machine milking

Training first-calf heifers to milking is an important management skill on a dairy farm. The way a fresh heifer is handled during the first days after her first calf is born determines her attitude towards the milking procedures for the rest of her life. She can be a calm and easy to milk or an “outlaw” nearly impossible to milking.

2.2.3. Milking procedures

Requirements: clean water, towel, strip cup, teat dip, bucket, milking machine/if possible/

Machine milking procedures

Requirements/ equipment's needed/

- | | |
|---|-----------------------|
| ➤ Milking machine | ➤ Strip cup |
| ➤ Parlor or stanchion | ➤ Halter |
| ➤ Water hose or bucket of water /
continuous water supply/ | ➤ Teat dip, sanitizer |
| ➤ Paper towel | ➤ Rope |

Step by step procedures

1. Assemble all the necessary equipment's: equipment's must be clean and sanitized
2. Move the fresh heifer and cow into the parlor /stanchion. Avoid shouting
3. Wash the udder, teats/ especially teat ends should be thoroughly washed with warm(110°F) sanitizer solution/
4. The udder should be thoroughly massaged and dried with an individual towel for each heifer and cow

5. The first milk from each quarter should be striped in to a strip cup and discarded or can be striped directly to the floor and hosed with pressurized water. If milk is abnormal / contains clot, flakes, blood, serum/ should be milked in a separate container and discarded. It is better if stripping is done before washing then washing follows

Hand milking procedures

The process of hand milking starts with the same procedures as does machine milking.

1. Place a milk bucket under the cow's udder instead of the machine
2. Milking is done by hand pressure applied at the upper portion of the teat with the thumb and first finger. The pressure traps the milk in the teat
3. The teat is squeezed against the palm of the hand by the remaining three fingers, with pressure first applied by middle finger then follows the other fingers, this causes milk to squirt from the canal
4. When the milk is squeezed out of the teat, the pressure applied by the finger is released and the milk is free to flow from the cistern of the udder to the teat. Then apply the above procedure to the teat to remove the milk. Continue this process until the cow is milked out.
5. If the teats are very short use only the thumb and first two fingers. With extremely short teats, stripping may be necessary. Stripping – milking by applying pressure with the thumb and first finger at the top of the teat as in step 2
6. Immediately after milking, the teats should be dipped in an effective teat-dip solution

2.3. Livestock feed and distribution

The essential nutrients required by grazing animals are water, energy, protein, minerals, and vitamins. These nutrients are needed to maintain body weight, growth, reproduction, lactation, and health. There are other factors that affect nutritional requirements.

1. Water

Water is essential for all livestock, and producers should plan for an adequate supply of clean water when designing any type of livestock enterprise. Dirty, stagnant water

can lead to inadequate water consumption, which will reduce feed and forage intake and compromise livestock performance. The amount of water required depends on the physiological stage of the animal and the climate. Lactating animals require more water, and the amount of water required increases as atmospheric temperature increases.

2. Protein

Protein facilitates tissue synthesis for growth, body repairs, and reproductive processes (e.g. egg formation). Its deficiency can lead to poor growth – such as improper feathering in poultry - and development of vice habits, like cannibalism.

Protein Sources: e.g Fish Meal (FM), Soybean Meal (SBM), nuge seed cake, Synthetic Amino Acids

3. Energy

Energy requirements vary greatly with stage of production, and adequate amounts of energy are extremely important during late gestation and early lactation. Energy deficiencies can cause reduced growth rate, loss of weight, reduced fertility, lowered milk production, and reduced wool quantity and quality.

Energy is obtained from carbohydrates in the plant material and can be stored in the form of body lipids. However, heavy demands against fat stores as an energy source to meet daily needs may delay estrus and reduce conception in breeding females. Live weight gain can only occur after the animal's energy requirements for maintenance and lactation are met.

Energy Sources:.e.g Maize/Corn grits , Wheat Offals, Noodles Waste

4. Vitamins and Minerals

Ruminants require all the fat-soluble vitamins (A, D, E, and K), but they can synthesize the B vitamins in their rumen. Normally, the forage and feed supply contain all essential vitamins in adequate amounts, except vitamin A which is obtained as carotene from green plants and is often deficient in dormant forage. However, vitamin A can be stored in the liver in amounts sufficient to last considerable periods of time, such as winter dormancy or prolonged drought.

Salt is essential for many body functions and important to maintain intake of feeds and water. Calcium and phosphorus are needed to

- Maintain growth,
- Feed consumption,
- Normal bone development, and
- Reproductive efficiency.

Other nutrients and minerals such as vitamin E and selenium are important for maintenance of healthy bodies and reproduction.

2.4. Milling and Mixing livestock feed

Milling

Where milling is required, it is done in the manner specified and using the appropriate equipment. It includes hammer milling and roller milling. Hygiene control include rodent control, dust management, no rat or bird fecal contamination of feeds or raw ingredients, and feed not being wet.

Mixing

A feed for livestock that consists of a mixture of wheat particles, bran, middlings, shorts, and other material in various proportions and is a by-product of flour milling

Ration formulation is a process by which different feed ingredients are combined in a proportion necessary to provide the animal with proper amount of nutrients needed at a particular stage of production.

It requires the knowledge about nutrients, feedstuffs and animal in the development of nutritionally adequate rations that will be eaten in sufficient amounts to provide the level of production at a reasonable cost. The ration should be palatable and will not cause any serious digestive disturbance or toxic effects to the animal.

- Different species, strains or classes of animals have different requirements for energy (carbohydrates and fats), proteins, minerals and vitamins in order to maintain its various functions like maintenance, reproduction, production (egg production, lactation and/or growth).

2.5. Livestock husbandry practices

Feeding

Feeding behavior of livestock (type and parts of plants they eat, their tolerance to saline or bitter feed and saline water, the distance of travelling to find food, the frequency of drinking and their walking ability) can provide assistance to range managers for making the right management decisions and improving livestock performance.

Feed are grouped in to:

- **Forage grasses** that include: Napier grass, Para grass, guinea grass and
- **Tree leaves** such as leucenea, sessbania, tree lucern, alfalfa
- **Concentrates that include** Wheat bran, soybean oil meal, corn bran, linseed cake
- **Feed supplements includes** molasses, vitamins and minerals and premixes
- **Alternative feed resources include** Tree leaves, Shrubs, Hay, Straw and corn

Mating

- There are several methods of undertaking mating

1. Random mating:

This is done by making one or more males left permanently with the females.

Random mating is:-

- Suitable for the a seasonal nature of the sexual activity
- Enable to exploit the maximum reproductive potential of animals
- Difficult to organize selective breeding
- males are not always with the best conformation
- There is no rotation of males, which leads to inbreeding

2. “Organized” mating:

- This is by putting the female to the male at regular intervals for a predetermined period of time.

3. Controlled mating:

- This is done by allowing a group of females is left with one male for a predetermined Period

Parturition

- Parturition in healthy females is generally normal but females in poor condition or small-framed females mated to big males can have difficulty in parturition and may have to be assisted.
- Assistance may also be required during instances of abnormal presentations
- You should first see the front legs and nose or head of the lamb if it is a normal birth.
- In normal parturition case, delivery can be expected within fifteen minutes.
- ❖ There are different presentations during parturition
 - Anterior presentations,
 - Posterior presentations
 - Normal presentation of twins.
- ❖ Abnormal presentations of fetus in livestock during parturition that need assistance
 - If one leg is held back
 - If the two legs held back and only head is presented
 - found upside down
- ❖ Back to front presentation/breech birth, i.e. if two hind legs are presented when parturition approaches the female shows the following signs of kidding/lambing/calving.
 - Restlessness
 - Sitting down and getting up
 - Smelling the ground
 - Kidding/lambing with 1 –2 hrs.
 - Appearance of the water bag
 - Onset of contraction and
 - Appearance of parts of the kid/lamb/calf

Docking methods

There are several methods of docking

Using knife:-Should be confined to lambs that are not more than a week or 10 days old as older lambs can easily bleed to death.

Using hot iron:-Is much lower than knife method, but it is much safer as it sterilizes the wound, sear/burn and prevent bleeding.

Rubber band method:-Is known as blood less method of docking. Here there is rubber band which will be fitted around the tail with the elastrator, then it will prevent circulation and finally the tail will dry off.

Hoof Trimming

In management systems where livestock are mostly confined and do not walk daily on hard groundcover or climb rocks, abrasion of the hoof is not balanced with hoof growth. This affects mobility and could lead to reduced intake from grazing. It may additionally lead to diseases such as foot rot. To avoid these problems, hooves need to be examined regularly and trimmed as needed.

A sharp knife or hoof shears can be used for hoof trimming.



Dehorning

- Dehorning may be performed as a management tool in intensive systems to avoid damage that could possibly arise from fighting or as a safety precaution for personnel dealing with the flock.
- Under extensive systems this may not be necessary as horns are a defensive mechanism and also may be used by producers in restraining animals.

Debeaking:

❖ This involves partial removal of the beak to prevent habits such as:

- pecking,

- feather-pulling,
 - cannibalism and
 - Egg eating depending on the age these occurs.
- ❖ It take place at 3-5 weeks, the birds should be debeaked at least between 15-17 weeks of age.
- ❖ Debeaking is done to control or solve these problems because they are indices of management defects like:
- Inadequate feeding and drinking,
 - Inadequate floor spaces,
 - Imbalanced diet,
 - Stress.
- ❖ Debeaking should be performed in the morning in hot weather to minimize bleeding.
- ❖ A higher level of vitamin K may be fed before debeaking to accelerate clotting.
- ❖ Debeaking can be done using a pair of scissors or an electric debeaker.
- ❖ If the former is used to cut the beaks, the raw surface should be rubbed with caustic potash to minimize bleeding which normally is excessive.
- ❖ The electric debeaker on the other hand cuts the beak and simultaneously cauterizes the raw surface and thereby stops or minimizes bleeding.

Castration

- Castration is the process of severing or crushing the spermatoc cords so that sperms can no longer be produced.
- Bull to be castrated has to be placed in a clean and dry pen where they may be easily caught. There are several methods of castration of which Burdizzo castration is the common one.

NB: Burdizzo: - Burdizzo is an instrument used to crush the cord leading to the testicles. Here the cord is destroyed, leaving the testicle gradually dry up.

Castrating is important for the following purposes

- Castrated animals become docile
- Castrated animals are good for fattening purpose

- Sometimes Livestock keepers like cattle, sheep and goat keepers prefer to castrate the young's which are not allowed to reproduce and which are bred for meat production.
- Castration is usually performed for management reasons so that the livestock can be looked after together in one flock without the possibility of the females becoming pregnant.
- At early age castration is quick and effective treatment.
- Male calves are castrated at the earliest within 2-3 months of age.

2.6. Identifying female animals in estrus reporting to AI technician

Definitions of terms

Artificial Insemination (AI):- is the deliberate introduction of semen into a female's vagina or oviduct for the purpose of achieving a pregnancy through fertilization by means other than copulation. It is the medical alternative to sexual intercourse, or natural insemination.

The Advantages and Disadvantages of Artificial Insemination

Advantages:

There are several advantages by artificial insemination over natural mating or servicing.

- There is no need of maintenance of breeding bull for a herd; hence the cost of maintenance of breeding bull is saved.
- It prevents the spread of certain diseases and sterility due to genital diseases.
Eg: contagious abortion, vibriosis.
- By regular examination of semen after collection and frequent checking on fertility make early detection of inferior males and better breeding efficiency is ensured.
- The semen of a desired size can be used even after the death of that particular sire.
- The semen collected can be taken to the urban areas or rural areas for insemination.

- It makes possible the mating of animals with great differences in size without injury to either of the animal.
- It is helpful to inseminate the animals that are refusing to stand or accept the male at the time of oestrus.
- It helps in better record keeping.
- Old, heavy and injured sires can be used.

Disadvantages:

- Requires well-trained operators and special equipment.
- Necessitates the knowledge of the structure and function of reproductive organs
- Improper cleaning of instruments and in sanitary conditions may lead to lower fertility
- If the bull is not properly tested, the spreading of genital diseases will be increased.
- Market for bulls will be reduced, while that for superior bull is increased.

Preparing the Animal for Artificial Insemination

2.6.1. Identifying the Animal in Estrus

Estrus (heat): is a fairly well-defined period that occurs in non-pregnant cows once each 19 to 23 days. In other words estrus is the time during which the female will accept the male for copulation or breeding.

- The female mammal begins to have estrus period when it is old enough to be breed.
- The estrus cycle begins when a follicle on the ovary begins to develop.
- The hormone **estrogen** is produced and causes the animal to show the sign of estrus.
- This period is characterized by increased sexual activity and acceptance of the bull by cow.
- The period basically begins with the first acceptance of the bull and ends with last acceptance.

- European cattle have a 12 to 18 hours heat period, while zebu cattle may exhibit estrus only for 3 to 6 hours.

A number of both beef and dairy producers use Artificial insemination (AI). One of the major problems with these programs is **heat (estrus)** detection. An experienced observer with well trained eye can do a good job by observing the herd for ½ to 1 hour early in the morning and 1/2 to 1 hour in the evening.

Heat detection is more an art than a science, and not everyone can do a good job of it. The observer must be taught to recognize the signs of estrus and must be aware that some cows show only abbreviated signs of estrus. If heat periods are missed or incorrectly identified, increased calving intervals will result, with longer periods and reduce profits. It is extremely important that cows be inseminated at the proper time in relationship to ovulation.

Methods of Estrus Detection

Estrus must be detected accurately because it signals the time of ovulation and determines the proper time of insemination.

In most case animal observed during normal activity or as they move to and from housing, feeding or pasture area. In dairy operations cows can also observed as they are moved to and from the milking parlor but the animal must be observed Regular for 20-30 min three times per day to detect heat. Behavioral heat activity is usually seen in the early morning between 2:00 and 6:00.

For good detection there must be:-

- Clear identification of individual animals with ear tags or other
- Adequate lighting to aid accurate identification
- A permanent recorded of the cow`s identify made at the time of observation
- Regular observation for 20-30 min three times per day other than milking or feeding observation
- Adequate area with enough space and a good floor surface to enables the cows to express estrus behavior.
- A recorded of all estrus periods even before the earliest service date

The features listed in the following table describe the visual signs of estrus activity for different animals, and it is mandatory to become familiar with each and every sign of estrous to distinguish whether a given animal is in heat or not. Some cows display all the signs, while other cows exhibit one or two.

Cow	Doe	Ewe
<ul style="list-style-type: none"> ➤ Standing when mounted by another cow (best indicator for the time to breed). ➤ Nervousness ➤ Swelling of the vulva ➤ Inflamed appearance around the lips of the vulva ➤ Frequent urination ➤ Mucus discharge from the vulva ➤ Trying to mount other cattle (cattle not in estrous may do this). ➤ Bellowing when isolated ➤ The only reliable signs are standing to be mounted and head-mounting (in small percentage of cows that exhibit this). 	<ul style="list-style-type: none"> ➤ Nervousness ➤ Frequent urination ➤ Mucus discharge from the vulva ➤ Bleating ➤ Ride other animals and standing when ridden ➤ Shaking the tail ➤ Swelling, red appearance of the vulva 	<ul style="list-style-type: none"> ➤ Sheep do not show any visible sign of estrus. The only way to tell if the ewe is in estrous is if she accepts the ram. A ram with an apron to prevent breeding is sometimes used to see if the ewe is in estrous. The apron prevents the ram from completing the act of copulation when mounting the ewe. Most sheep have seasonal estrous periods. They come in to estrous only in the fall. Seasonal estrous in sheep seems to be the result of the shorter hours of day light and the cooler temperature in the fall.

Self-Check 2	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Define what is restraining? (5pts)
2. Write types of milking system?(5pts)
3. Write five essential nutrients of feed?(5pts)
4. Define what is AI? (2pts)
5. Mention at list 5 husbandry practices of livestock? (3pts)

Note: Satisfactory rating 10 points Unsatisfactory – below 10 points

You can ask your teacher for the copy of the correct answers.

1. Hide and Skin Preservation Methods

The basic idea of curing or preservation is to keep the hides and skins in good condition without putrefaction until they are processed in tanneries. Being portentous (33%) in nature, hides and skins are liable to attacks by bacteria or mold, which leads to putrefaction especially in hot and humid conditions. The portentous matter is hydrolyzed by bacteria leading to loss of hide substance resulting in poor quality leather. On the other hand, the moisture content of hide or skin is about 60-62%, which is very ideal for bacterial growth.

Methods of preservation

There are two major methods of preservation

- **Air – drying**
- **Salting**

In all the techniques, natural water is removed so that the low percentage & moisture makes the bacteria ineffective. The two methods of preservation/ air drying and salting/ can be used depending on the following factor

- Weather condition
- Availability of material
- Location of the tanneries
- Economic factors

1. Air- drying methods

This methods of preservation is usually applies in countries with hot climate such as equatorial countries of Africa. The **air-drying** method means the drying of hides and skin in the open air in order to reduce the moister down to **12- 15%**. Air drying techniques are:

- Drying on the ground
- Drying by suspension (frame drying)
- Drying by suspension over cords
- Tent and parasol drying.

a) **Drying by Suspension on frame (frame drying).**

- It is best as compared to others.

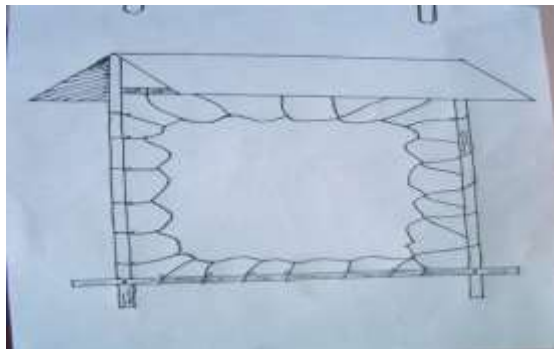
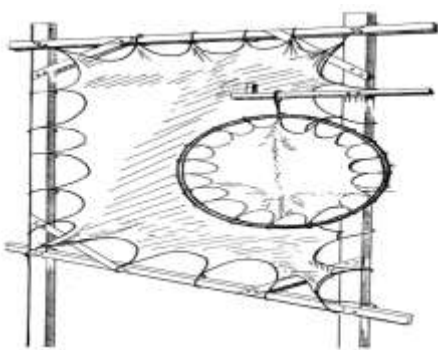
- Frame can be erected in an open air or under sheds.
- The best way is to drying under shed
- If shed is used, it is important that the shed has ventilation to avoid spoilage

Size of hide and skin	Size of fame
Hide	2.5m x 2.5m small
	2.75mx2.75m medium
	2.75mx3m large
	3mx3m extra large
Skin	1.2x1.2m small
	1.3x1.3m medium
	1.5x1.5m large.

Advantage of frame draying

- It allows free circulation of air on both side of hide or skin
- The rain drains of the surface and does not collect in puddles on the hide
- The sun's rays strike obliquely not directly
- No hairclip or putrefaction as there are no folds no points of contacts b/n the hide and any solid subject (as compared to ground dried hides which touches the earth, folded hides which touches themselves, or pole-dried hides which touch the solid pole)
- It permits the hide to cool off rapidly, since heat is lost through both surfaces

Cheaper transportation, as dry hides are lighter than salted hides



Frame drying

b) Drying by suspension over cords or rope

According to the Ethiopian policy all goat skins, which are not salted, should be prepared by these techniques. Suspending them over one, better tree, wires or cords stretched horizontally, may also dry sheep and goat skins. This method can yield good results, provided the greatest care is taken that the sides of the suspended skins do not touch each other (which happens when only one wire is used), and that all folds, especially those on the shanks, are stretched out by means of small sticks or straws.

The main drawback of this method is that during drying wrinkles develop which, when stretched out, may lead to cracks. If heavy rope or wire, i.e. thicker than the little finger, were used, it would produce faults similar to those occurring in pole drying, namely, damage along the line of contact due to impeded drying. If the cord or pole is thick, the portion in contact with the pole will not dry and get putrefied.

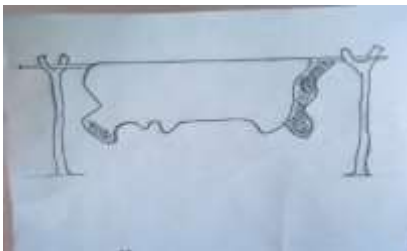


Fig . a) **single line**

b) triple line

c) Tent and parasol drying.

It is used in the area where there is a shortage of wood for frame construction. Hides and skins are placed on a wire stretched between two poles and edge of the skin or hide is stretched by cords pegged on ground along each side. The ***parasol technique*** is a modification of ground draying method and involves a single central vertical pole to support the middle of the hide with edges stretched out to pegs on ground.



tent drying

d) Ground drying

Hides and skin are placed directly on ground to dry. It is the worst drying technique for skin and hides. Dried skin and hides produced on this way are of poor quality and consequently producer get low return. There is no free air movement underneath and hence sun heat coupled with moisture trapped under the hides and skin encourages bacterial attack causing damage to the product. This method is not recommends.



Ground Drying

2. Salting

a) Wet salting.

The hide or skin is spread on floor or wooden pallet and salt is uniformly applied on the flesh side with common salt to the extent of 30 to 40% on green weight. The second hide is now spread on the first one with flesh side up and salt applied in the same manner, curing takes approximately 3 weeks and the piles need to be turned and restocked every 10 days.

This salting technique is preferred by the tanners to air drying as tanners find it easier to process wet salted stock and they obtain better results. And also salting is highly

beneficial during the long rainy season as hides and skins cannot be properly air dried at that time. Preservation time to wet salting extends up to six month

Disadvantage:

- Cost of salt
- Transportation of wet salted stock is more expensive than the dry ones
- Can be stocked for much lesser time compared to dry ones
- Require trained staff

Advantage:

- Better quality and hence higher price
- The tanneries spend much less in soaking expenses compared with dry ones
- Good during rainy season
- Increase in area compared with dry ones

b) Dry salting

Dry salting is a method of preservation of hides and skins widely used in tropical countries. The difference between dry-and wet salting is that in dry salting, salt is used for the initial period only (when the hides are highly susceptible to damage), the remaining moisture being Removed by the exposure to air.

- Especially suited for preparing stock for export purposes, at the same time overcoming the problems of wet salting.
- The quantity of salt used is 10% less than in wet
- With the advent rains, air-drying of salted hides may cause considerable difficulties. In this period, a mixture of one part of common salt to four parts of anhydrous sodium sulphate is very often used to speed up drying.
- With rains, air-drying of salted hides may [resent considerable difficulties.
- Dry- salted goods do not require protection form beetles but are very susceptible to damage by wetting.

Type of salt used for preservation

In our countries sea salt /Asab salt/ are the type of salt used for preservation of hides & skins. Sea salt contains halophillic /salt loving/ bacteria which causes red heat defects if used directly Halphillic bacteria are only be ineffective if the salt is treated with chemicals, therefore it is recommended to use salt which is chemically treated.

Sodium silico fluoide is the most effective chemical and for 100kg of salt 2kg of this chemical are used. Naphthalene can also be used.

Self-Check 2	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Define hide and skin.(5pts)
2. List two major methods of hide and skin preservation? (5pts)
3. Write the advantages and disadvantages of wet drying ?(5pts)

Note: Satisfactory rating 7.5 points Unsatisfactory – below 7.5 points

You can ask your teacher for the copy of the correct answers.

4.1. Introduction

Ethiopia's economy is largely dependent on agriculture which accounts for 49 percent of the gross domestic product (GDP) and more than 80 percent of total employment. The total employment generated by fisheries is about 13 200 while up to 40 000 livelihoods are positively impacted upon by the sector.

The country has an estimated fish production potential of 51 481 tonnes. However, national per capita fish consumption is very low, being a mere 0.20 kg. Whereas beef is the dominant source of animal protein all over the country, fresh fish is consumed mainly in areas surrounding the Great Rift Valley, south of Addis Ababa, which contains a system of small- to medium-sized lakes.

Lake Tana, nestling at an altitude of 1 830 m, with a mean depth of 8.0 m, surface area of 3 500 km² and a shoreline of about 385 km, is the largest water body in the country. And with a potential annual fish yield of 24 900 tonnes, it is the leading water in fish production, accounting for at least 25 percent of the country's water resource.

Challenges affecting fisheries in Ethiopia

- ✓ Insufficient institutional and management capacity,
- ✓ Limited resource allocation and investment,
- ✓ Poor policy and regulatory framework, and
- ✓ Insufficient value chain and fish marketing infrastructure,

Opportunities exist

- ✓ To increase the global social,
- ✓ Health and economic value for fish;
- ✓ To increase demand for fish and fishery products; and
- ✓ To grow intra-regional trade,

4.2. Pond preparation for stocking,

Pond culture, or the breeding and rearing of fish in natural or artificial basins, is the

earliest form of aquaculture with its origins dating back to the era of the Yin Dynasty (1400-1137 B.C.). Over the years, the practice has spread to almost all parts of the world and is used for a wide variety of culture organisms in

- ✓ Freshwater,
- ✓ brackish water /Salt water, and
- ✓ Marine environments.

It is carried out mostly using stagnant waters but can also be used in running waters especially in highland sites with flowing water.

Commonly raised species in freshwater ponds are the carps, tilapia, catfish, snakehead, eel, trout, goldfish, gouramy, trout, pike, tench, salmonids, palaemonids, and the giant freshwater prawn Macrobrachium. In brackish water ponds, common species include milkfish (Chanos chanos), mullet (Mugil sp.) and the different penaeid shrimps (Penaeus monodon, P. orientalis, P. merguensis, P. penicillatus, P. semisulcatus, P. japonicus, and M. ensis).

The more popular species for culture in marine ponds are the sea bass, grouper, red sea bream, yellowtail, rabbit fish, and marine shrimps.

Site Selection

Proper site selection is recognized as the first step guaranteeing the eventual success of any aquaculture project and forms the basis for the design, layout, and management of the project

Guidelines for the selection of a suitable site for coastal fish ponds:

1. **Soil Quality:** preferably, clay-loam, or sandy-clay for water retention and suitability for diking; alkaline pH (7 and above) to prevent problems that result from acid-sulphate soils (e.g., poor fertilizer response; low natural food production and slow growth of culture species; probable fish kills). Dike
2. **Land elevation and tidal characteristics;** preferably with average elevation that can be watered by ordinary high tides and drained by ordinary low tides; tidal fluctuation preferably moderate at 2-3 m. (Sites where tidal fluctuation is large, say 4 m, are not suitable because they would require very large, expensive dikes to prevent flooding

during high tide. On the other hand, areas with slight tidal fluctuation, say 1 m or less, could not be drained or filled properly.)

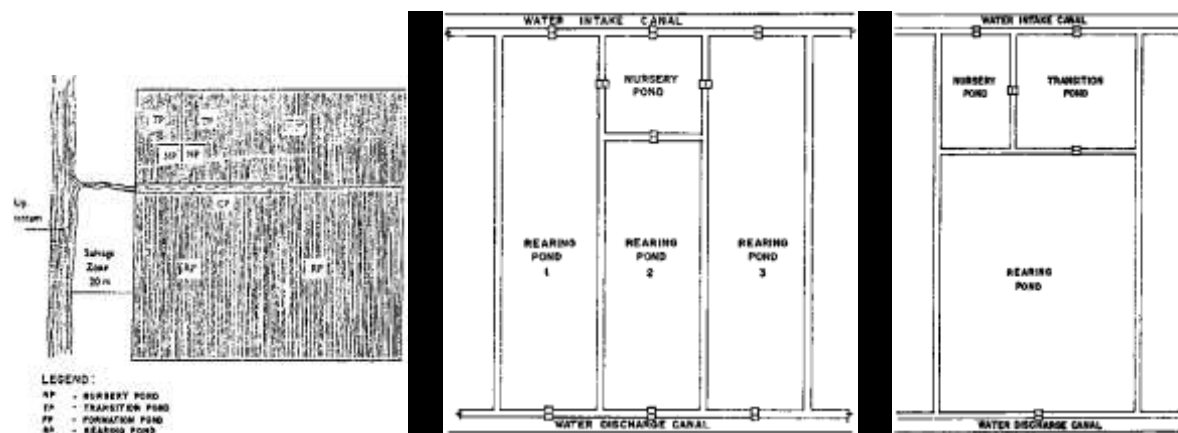
3. **Vegetation;**
4. **Water supply and quality:** with steady supply of both fresh and brackish water in adequate quantities throughout the year; water supply should be pollution-free and with a pH of 7.8-8.5.
5. **Accessibility:** preferably readily accessible by land/water transport; close to sources of inputs such as fry, feeds, fertilizers, and markets, fish ports, processing plants, and ice plants; and linked by communication facilities to major centers.
6. **Availability of manpower** for construction and operation.

Pond Layout

The layout of the pond system depends on the species for culture and on the size and shape of the area, which in turn determines the number and sizes of ponds and the position of the water canals and gates.

A fish farm is considered properly planned if all the water control structures, canals, and the different pond compartments mutually complement each other.

A complete fish farm has nursery and grow-out ponds and, in some instances, transition ponds for intermediate-sized fish/shrimp, all of which are properly proportioned and positioned



4.3. Water Management

Water in the pond is kept at certain levels for optimal fish growth. In general, a pond water depth of 1 meter is considered best for culture of tilapia, carps, and shrimps; traditional milkfish ponds can do with just 40-60 cm of water.

Pond water is not just maintained at a certain depth; its quality must also be kept high to ensure optimal growth of the culture organism.

To prevent the deterioration of the pond environment, pond water is continuously freshened by the entry of new water from the river or water source (through the supply canal) while old water is drained through the outlet/drainage gate and through the drainage canal into the sea or river.

A flow-through system of water management that allows the simultaneous entry and exit of water into and out of the pond is essential in any high-density culture system.

4.4. Stocking

After the pond is prepared, fish fingerlings or shrimp post larvae are stocked at the appropriate density depending on the culture strategy, size of pond, and the size of fingerlings, among others.

The fingerlings are properly acclimated and conditioned prior to stocking and weak or diseased fish eliminated. Stocking is usually done in the early morning or late afternoon.

4.5. Feeding, water transparency measurement

Feeding

A wide variety of feed ingredients is used to prepare supplemental/artificial feeds. The simplest fish feeds are prepared at the pond site using locally available raw materials like rice or corn bran, copra meal, and rice mill sweepings as sources of carbohydrates.

These are usually mixed with animal protein like trash fish/fish meal, shrimp heads, and snail meat. Supplemental feeds for tilapia are prepared using 80% rice bran and 20% fish meal. Those for shrimps in improved extensive culture (low-density stocking but given dietary supplements).

The daily feed rations are given in equal portions during the course of a day. Freshwater fish like tilapia are usually fed twice a day - early morning and late afternoon.

Pond water is also regularly sampled and measurements taken of basic/essential parameters, particularly dissolved oxygen, pH, and salinity. This is important for the purpose of determining the need for corrective/remedial action to bring water quality to optimum levels and obtain good yields.

Dissolved oxygen levels are kept, as much as possible, above 5 ppm by pumping and aeration. Problems of acidity are corrected by liming. Salinity is an important parameter for penaeid culture and has to be maintained within a range of 15-25 ppt for best results. During summer months, high-salinity water can be diluted by mixing with fresh water from springs or deep wells.

4.6. Pond Maintenance

(i) Fertilization

Apart from feeds and water management, the following pond maintenance procedures are carried out: regular application of fertilizers, lime, and pesticides; prevention of entry of predators; monitoring of the stock for growth rate determination as a basis of feeds and water management; and regular pond upkeep and maintenance.

Extensive ponds are fertilized regularly using either organic fertilizers like chicken, cow, or pig manure, or inorganic fertilizers like urea, ammonium phosphate, or both, to maintain the plankton population in the pond. The fertilizers are either broadcast over the pond water surface or kept in sacks suspended from poles staked at certain portions along the pond periphery. Semi-intensive and intensive culture systems do not require fertilization since they are not natural food-based, except for those which grow plankton-feeders like milkfish whose diet is largely algae dependent.

(ii) Liming

In addition to fertilization, ponds also need to be given regular doses of lime to maintain water pH at alkaline or near-alkaline levels (preferably not lower than six). Agricultural lime is broadcast over the pond and applied on the sides of the dikes to correct soil and water acidity.

(iii) Elimination of Pests and Predators

Unwanted and predatory species which may have survived the application of pesticides during pond preparation or which were able to enter the pond through the gate screens or through cracks in the dikes, are eliminated by the application of pesticides, preferably organic, into the pond.

It is also important that the gates are properly screened and the screens kept whole, to prevent the entry of small unwanted fish into the pond. Double screens are usually installed at the main intake to ensure that pests and predators are prevented from entering the pond system.

(iv) Stock Monitoring

The culture organisms are monitored closely and regularly to determine their rate of growth and the general condition of the stock. They are regularly sampled for length-weight measurements as a basis for determining/estimating their biomass in the pond and therefore their daily feed rations, as well as for making projections on harvest schedules and procurement of pond inputs.

In the first few months of culture, the feeding tray is a good tool for stock monitoring. As the organisms grow in size, cast-netting is used as a sampling tool, with those caught in the throw of the cast net providing an indication as to sizes and weights of stock. Based on the sampled weights and the daily feed consumption, it is possible to predict the available biomass (i.e., stock surviving after initial mortalities) and make projections on volume of harvest. For this purpose, it is essential that accurate records are kept for analysis at a later time. Data on initial size/weight and number of fry/post larvae stocked, average body weight at each sampling, and feed consumption on a daily basis, are important to have on file.

(v) Regular Upkeep and Maintenance of Facilities

The pond dike and gates are checked regularly for cracks that could lead to seepages and losses of stock. The dikes are best planted with grass or vegetative cover to prevent erosion. The gates and other support infrastructure are properly maintained for efficient operation.

4.7. Harvesting

Marketable-size fish are harvested at the end of the culture period by draining the pond and using harvesting nets to catch the fish. The latter are harvested with a bag-net

attached to the sluice gate as water is drained out of the pond at low tide. Tilapias are harvested using seine nets after the pond water is drained to half-level the night before.

Self-Check 2	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Writ site selection criteria for fish pond constriction? (10pts)
2. Writ fish pond maintenance techniques (5pts)

Note: Satisfactory rating 15 points Unsatisfactory – below 15 points

You can ask you teacher for the copy of the correct answers.

5.1 Undertake work safe and environmentally

- Procedure is a safe work procedure that must be carried out in a given work place for effectiveness of work and manual handling. Some of these may include but not limited to:
- ❖ Safe animal handling system and procedures
 - ❖ Identifying hazards and zoonosis
 - ❖ Safe system and procedures for outdoor work including protection from solar radiation
 - ❖ Appropriate use of PPE
 - ❖ Following work procedure for every activity

Maintaining a safe working environment involves the following:

- Regular housekeeping
 - Periodic inspection to detect and correct physical hazards
 - Preventive maintenance of equipment, machinery and structures
- Self-inspection checklists identify areas and items that need scheduled housekeeping, inspection and maintenance.

5.2 Carryout interactions with other staff, farmers and customers

Other than any day to day interaction between livestock fish Experts and workers, workers with workers, there should be interaction (communication) between this part (livestock and fish producing planting material) and to whom these products are going to be forwarded, mostly this “traditional interactions” can be in practice are interaction with customers (product users) and also with other staffs (knowledgeable and skilled persons) from different organizations related to the demand of livestock and fish products.

5.3 Observe enterprise or cooperative policy and procedures

Operation sheet-1	Cattle Crush Construction
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Procedures

1. Follow the following procedures and construct cattle crush based on the given specification
 - Select appropriate site for construction
 - Prepare all the necessary materials and equipments
 - Layout the length, width and height of the crush depending upon the number of animals
 - Put peg in each corner
 - Level the area that are already selected
 - Construct the gun pole and other parts of the crush
 - Finally Check the strength of the crush

Specifications

- Crush width =53cm wide.
- The height crush =1.5m.
- The length crush=2m/caw

Procedures

1. Prepare all the necessary equipment's and materials. Make sure that all the equipment's are clean and sanitized.
2. Put on clean clothes/apron/ and cover hair
3. Move the animal into the milking area /parlor/
4. Do not shout/disturb the animal during milking
5. Prepare warm water
6. Strip the first drop of milk from each quarter into a strip cup or onto a floor. Check for color of a drop of milk.
7. Wash the udder and tips of the teats thoroughly with warm water and sanitizer solution /110⁰ F/
8. The udder should be thoroughly massaged and dried with and individual towel for each cow
9. Put the machine/or bucket under the cow
- 10.No eating, smoking and talking in the milking room during this process
- 11.Remove the machine or the bucket upon the completion of milking. In case of machine milking the vacuum should be turned off and the machine removed
- 12.Immediately after milking, the teats should be dipped in an effective teat dip solution.
- 13.All the milking equipment's should be thoroughly cleaned, sanitized and properly stored

Caution

The milker must protect himself from being kicked by cow. Restraining may be important.

Operation sheet 3	Techniques of Preserving hide and skins
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3.1. Frame drying

It is applied in dry areas and windy situation. In frame drying on the edge of skin make a hole by using sharp knife at 1-2 cm from the edge to inside of skin with 10 cm distance between holes.

Equipment's, tools and materials

- Rectangular frame (1.20 X1.20m for skin and 2.75 X 2.75m for hide)
- Sharp knife
- Rope
- Water
- Nails
- PPE
- Detergent

A. Procedures 1

1. skin is collected
2. Fleshing and trimming by laying down on flat table
3. Washing by water (keep the outer part of skin not to contact with water)
4. Dry the washed skin for 1 hour
5. Tie the skin on the frame with nails or rope as available starting from the neck part of the skin.
6. After drying detach the frame and put the skin on flat table without turning it

B. Procedure 2

In frame drying on the edge of hide make a hole by using sharp knife at 2 cm from the edge to inside of skin with 20 cm distance between holes.

1. hide is collected
2. Fleshing and trimming by laying down on flat table
3. Washing by water (keep the outer part of skin not to contact with water)
4. Dry the washed hide for 1 hour
5. Tie the skin on the frame with nails or rope as available starting from the neck part of the skin.

6. After drying detach the frame and put the skin on flat table without turning it

Precaution: wear PPE and use sharp knife appropriately.

3.2. Salt drying

Purpose: - to remove the moisture from hide or skin and to prevent putrefaction of hide and skin

Salt drying technique is applied in high humid area

Equipment's, tools and materials

- Water
- Salt
- Sharp knife
- PPE
- Table
- Sensitive balance

Procedures

1. Hide or skin is collected
2. Fleshing and trimming
3. Washing by water
4. Put hide or skin on flat floor or table flesh side up
5. Apply the grain salt on the flesh side with grain size 0.4-1 mm of salt for skin 1.3-3.2 mm for hide and 33-50% of weight of hide and skin. And also 4% moisture content of the salt.
6. Repeat step "6"
7. Keep in safe place

Precaution: 1. wear PPE and use sharp knife appropriately

LAP Test 1	Practical Demonstration
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Name: _____

Date: _____

Time started: _____

Time finished: _____

Instruction: Given necessary templates, tools and materials you are required to perform the following tasks within --- hour.

Task 1: Support and operate procedures of hand milking operation?

Task 2: Support procedures of hide and skin preservation operation?

Task 3: Support procedures of estrus sign detection operation?



FEDERAL TVET AGENCY

***BASIC AGRICULTURAL PRODUCTION AND
NATURAL RESOURCES CONSERVATION
LEVEL I***

Learning Guide #3

UNIT OF COMPETENCE: Support Livestock and Fishery Work

MODULE TITLE: Supporting Livestock and Fishery Work

LG Code: AGR BAN1 M 10 LO3 LG3

TTLM Code: AGR BAN1 TTLM10 0919V1

LO3 Clean up and store materials and equipment

**Sep, 2019
Bahir Dar**

Instruction Sheet	Learning Guide #2
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- ✓ Storing waste material and environmental safety
- ✓ Handling and transporting materials, machinery and equipment.
- ✓ Returning materials and disposing
- ✓ Cleaning, maintaining and storing tools and equipment

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, **upon completion of this Learning Guide, you will be able to:**

- store *Waste material* produced during work
- Handle and transport Materials, equipment and machinery according to supervisor's instructions and enterprise guidelines.
- Returned and dispose Materials
- Clean, maintain and store tools and equipment

.Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4”.
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 ”.
6. Do the “LAP test” (if you are ready).

The cost, storage and disposal of the soiled material need to be taken into account. Soiled waste needs to be disposed of appropriately and depends on the quantity and local government regulations. Placing waste in the wheelie bin is appropriate for pet animals; however, industrial waste bins or incineration will be more suited to larger facilities.

Types of waste

The types of waste that are generated by animal housing facilities include:

- biological and organic waste, including:
 - soiled bedding materials
 - faeces
 - urine
 - hair/fur
 - leftover food
- chemical waste, including:
 - disinfectants
 - detergents
 - shampoos
 - therapeutic agents—eg discarded medicines
 - parasiticide rinses
- contaminated or infectious waste, including:
 - sharps
 - needles
 - anything that can cause disease to humans or other animals—eg hair clipped from a cat with ringworm
- ordinary household type waste, including:
 - ✓ recyclable waste, such as paper wrappings, steel and aluminium tins, plastic, cans, glass and glass bottles
 - ✓ Non-recyclable household waste that goes into the general household waste disposal—eg plastic wrappers and chemical containers.

Reducing health risks

There are many important reasons to remove waste promptly and adequately including to:

- reduce the transmission of disease
- decrease environmental contamination of toxic products
- decrease the attraction of vermin
- prevent unpleasant odours in the workplace
- reduce the likelihood of zoonotic disease
- maintain workplace hygiene
- Contribute to aseptic technique.

Handling and removing waste safely

You should do the following when removing waste:

- Wear protective clothing—eg gloves, aprons, gumboots.
- Consider taking the appropriate vaccination—eg tetanus, hepatitis, rabies.
- Follow recommendations for disposal of harmful substances. For example, cytotoxic waste must be double-bagged, sealed and incinerated at high temperatures.
- Dispose of contaminated waste—including sharps and infectious disease samples—in an appropriately labelled waste receptacle. Then, either incinerates or dispose of in the allocated place at the local tip.
- Comply with council regulations regarding which waste can be disposed of as ordinary household waste, down the sink, in the carcass section of the local tip, etc.
- Non-recyclable household type rubbish should be disposed of in a sealed plastic bag inside a sealed bin. The bin should be emptied daily to minimise the possibility of bad odour and disease.

Disposing of compostable waste

Parts of the compostable waste may be picked up as 'green waste' by your local council or there may be a special place at the council tip where grass and plant clippings can be put.

The organic waste collected when cages are cleaned—faeces leftover food, etc—needs to be composted in an area away from the enclosures and under a cover to prevent vermin access. This prevents wild animals picking up disease and parasites from the waste and transferring them back to your captive reptiles. The heat produced by the composting process will eventually kill parasite eggs and bacteria and allow you to use the compost on the garden once it is well rotted.

Disposing of chemical waste

The drainage from your outdoor enclosures should go into a council sewer and not out onto the street. Disinfectants and detergents can be drained into the sewers so long as they are rinsed with plenty of water. You will need to contact your local council regarding drainage if you are planning to build more than one enclosure in your back yard.

Self-Check	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. What are the wastes materials in livestock work? (3 points)
2. How to handle clean and store materials, tools and equipment's? (4 points)

Note: Satisfactory rating -7 points Unsatisfactory - below 7 points

You can ask your teacher for the copy of the correct answers

Information sheet – 2	Handle and transport materials, machinery and equipment's
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General guidelines

Identifying and moving materials and equipment

- First of all identify materials and equipment that need to be moved
- Assess risk associated with the materials and equipment to be used
- access other help where necessary
- Ensure that you move and handle materials and equipment:
 - follow legal and organizational policies, procedures and requirements
 - handle and position the materials and equipment safely, securely and in a way which protects them from damage and/or contamination
- you check that the materials and equipment are safe and secure when they have been moved
- update records and report any problems about moving materials and equipment, according to legal and organizational requirements

Monitoring the receipt and use of materials and equipment

- check that any materials and equipment received are correct and not faulty
- store materials and equipment according to the manufacturer's, users and organizational recommendations and requirements
- when distributing materials and equipment handle them safely and according to legal requirements and organizational policies and procedures
- monitor and control the use of materials and equipment to minimize loss and damage
- record, report and take action to:
 - remedy any faults and incorrect deliveries
 - replace and repair materials and equipment that have been lost and damaged
 - replenish materials and equipment that have run out

Maintaining materials and equipment

- use and encourage others to use, maintain and clean materials and equipment according to:
 - manufacturer's instructions
 - organizational policies and procedures
- use appropriate protective clothing and equipment when cleaning equipment
- maintain and store materials and equipment so they are easily accessible and ready for future use
- label, remove and report to appropriate people, any materials and equipment that are unsuitable for use
- you dispose of any waste safely and according to legal and organizational requirements
- keep accurate and up-to-date records of the materials and equipment for which you are responsible

Self-Check	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. How to handle clean and store materials, tools and equipment's? (4 points)

Note: Satisfactory rating -2 points Unsatisfactory - below 2 points

You can ask your teacher for the copy of the correct answers



FEDERAL TVET AGENCY

***BASIC AGRICULTURAL PRODUCTION AND NATURAL
RESOURCES CONSERVATION
LEVEL I***

Learning Guide #4

UNIT OF COMPETENCE: Support Livestock and Fishery Work

MODULE TITLE: Supporting Livestock and Fishery Work

LG Code: AGR BAN1 M 10 LO3 LG3

TTLM Code: AGR BAN1 TTLM10 0919V1

LO4. Record and report activities

Sep, 2019

Bahir Dar

Instruction Sheet	Learning Guide #2
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- ✓ Recording activities accomplishment and incidences
- ✓ Reporting problems or difficulties in completing work
- ✓ Reporting work outcomes.

This guide will also assist you to attain the learning outcome stated in the cover page.

Specifically, **upon completion of this Learning Guide, you will be able to:**

- Record activities accomplishment and incidences
- Report problems or difficulties in completing work
- Report work outcomes.

.Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below 3 to 6.
3. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3 and Sheet 4”.
4. Accomplish the “Self-check 1, Self-check t 2, Self-check 3 and Self-check 4”
5. If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 and Operation Sheet 3 ”.
6. Do the “LAP test” in (if you are ready).

Information sheet - 1	Recording activities accomplishment and incidences
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1.1. What is it to 'keep records'?

To keep records is simply to collect relevant information that can help you to take good decisions and to keep track of activities, production and important events on a farm.

Records can be about

- Any performance of the animals,
- Economic development, or
- Any activity of the farmer or veterinarian.

It is important to keep record keeping simple, and to keep records systematic. If records should be of use for the farmer, than they must be complete (none missing), they should be true (collected carefully). When record can't be trusted because they are not complete or true, time should not be spent on it at all.

The records can:

- Be used in determining profitability of various techniques used at the farm
- Be used to keep your memory on what you did and/or what happened
- Be used in decision making, especially on a strategic level
- Be used to compare the efficiency of use of inputs, such as land, labour and capital, for example when implementing a new / alternative systems
- Help the farmer / investor in improving the efficiency of farm's operations

The real value is to support the farmer and the advisors to keep track and take decisions. Too often, records are only kept for the purpose of official reporting, e.g. to the Ministry headquarters for the parasitical and not used as a tool on the farm/ranch for making the decision in time.

The records should be simple, easy and quick to interpret, and then they can be supplemented with remarks which can explain some unusual events or findings.

1.2. What can records are used for?

If a farmer wants to build a financially successful livestock enterprise, record keeping is a must. The records can be used to further develop the farm and the herd, and thereby the

sector in the country. For many farmers, it helps to think of their farm as a business, and to see that good care and good management actually also influences the production and profitability of the farm.

Records are important in (animal) farming because:

- To keep track of all animals (Identification records)
- Evaluation of livestock for selection (breeding records; financial records; production records)
- Control of inbreeding and aid in breeding planning (breeding records)
- Aid in selecting animals with the right characteristics for breeding (production, health, feed efficiency) to improve the herd or flock
- To rationalize labour
- Aids in feed planning and management
- Aids in disease management; keeping track about treatment (disease records)
- Aids in finding the effective treatments
- To assess profitability/losses (financial records)
- Improves bargaining power on products, because you can see the investment and the price of the production (financial records)
- Credit/loan access (financial records)

1.3. Types of Records

The following are major types of records which are all described below:

1. Identification Records

- Used for identifying individual animals

2. Breeding Records

- The importance of breeding records is to measure the productive efficiency of the herd and to enable culling and selection.
- The most important data in breeding records include:
 - Pedigree/parentage (name or other identification of parents and grandparents)

- Fertility (dates of all services (this also allows calculating the number of services per conception), dates of giving birth (allows to calculate the age of first calving/giving birth and the period between successive birth)
- Birth details (number and weight of newborns, was assistance necessary? Stillborn / perinatal deaths / vitality score).

3. Production Records

- These records are useful in measuring the performance of the animals and the herd. It contributes greatly to the economic appraisal of the enterprise. It can help farmers take decisions on investments, based on how many animals produce how much on the farm, so how much surplus can the family expects.
- The records can also be used by the whole sector to improve the genetics of the animals in the country, with specific focus on the production.

4. Feeding Records

- Feeding records give information about the amount, type and quality of the feed
- Feeding records can be used both for day to day management and adjustment of the feed ration.
- The important feeding records are:
 - Produced and available fodder on farm; quantity and if possible quality of the different feeds. Including content of energy, protein and minerals
 - A feeding plan which tells how much feed is required per day per animal in different age groups (grown-ups, newborn, pregnant the first time etc.) or per group of animals (hens):
 - Left-over feed if any (per head and per feed, if possible) Spoilage (per batch)

5. Disease and treatment records

- Disease and treatment records are necessary to keep track of the disease events in which each animal is involved during its lifetime. This can guide to better management practices by leading the attention to repeated events or certain vulnerable groups of animals over time (e.g. it can show how animals almost always need disease treatments during weaning).
- Disease and treatment records can for example involve:
 - ✓ Disease occurrence and date.

- ✓ All handlings to cure diseases (also non chemical treatment)
 - Vaccination
 - Dipping/spraying
 - Treatment
 - De-worming
 - Postmortem

6. Financial Records

- The records of the costs and earnings related to the animal farming are kept for cash analysis and enterprise appraisal.
- In most households, the most necessary records are simple overview over the family cash flow, that is, the total economy in the household: what comes in? and what do we buy?
- Economic records are of paramount interest in providing the farmer with information concerning the profitability of his farm. Moreover they are of great help in decision making at the right time.

Self-Check	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Mention types of records in livestock production? (5 points)

Note: Satisfactory rating 2.5 points Unsatisfactory - below 2.5 points

You can ask your teacher for the copy of the correct answers

➤ **Human health impact**

Farms on which animals are intensively reared can cause adverse health reactions in farm workers. Workers may develop acute and chronic lung disease, musculoskeletal injuries, and may catch infections that transmit from animals to human beings (such as tuberculosis).

➤ **Animal health impact**

Confinement and overcrowding of animals result in a lack of exercise and natural locomotors behavior; which weakens their bones and muscles. An intensive poultry farm provides the optimum conditions for viral mutation and transmission – thousands of birds crowded together in a closed, warm, and dusty environment is highly conducive to the transmission of a contagious disease.

Selecting generations of birds for their faster growth rates and higher meat yields has left birds' immune systems less able to cope with infections and there is a high degree of genetic uniformity in the population, making the spread of disease more likely. Further intensification of the industry has been suggested by some as the solution to avian flu, on the rationale that keeping birds indoors will prevent contamination

➤ **Environmental impact**

Concentrating large numbers of animals in factory farms is a major contribution to global environmental degradation, through the need to grow feed (often by intensive methods using excessive fertilizer and pesticides), pollution of water, soil and air by agrochemicals and manure waste, and use of limited resources (water, energy)

➤ **Animal welfare impact**

Animal welfare impacts of factory farming can includes:

- Close confinement systems (cages, crates) or lifetime confinement in indoor sheds
- Discomfort and injuries caused by inappropriate flooring and housing
- Restriction or prevention of normal exercise and most of natural foraging or exploratory behavior
- Restriction or prevention of natural maternal nesting behavior
- Lack of daylight or fresh air and poor air quality in animal sheds
- Social stress and injuries caused by overcrowding

- Health problems caused by extreme selective breeding and management for fast growth and high productivity
- Reduced lifetime (longevity) of breeding animals (dairy cows, breeding sows)
- Fast-spreading infections encouraged by crowding and stress in intensive conditions
- Debeaking (beak trimming or shortening) in the poultry and egg industry to avoid pecking in overcrowded quarters. Sexual and physical abuse at the hands of workers. Forced and over feeding (by inserting tubes into the throats of ducks) in the production of foie gras

➤ **Labor**

Small farmers are often absorbed into factory farm operations, acting as contract growers for the industrial facilities. In the case of poultry contract growers, farmers are required to make costly investments in construction of sheds to house the birds, buy required feed and drugs - often settling for slim profit margins, or even losses. Factory farm workers also cite the repetitive actions and high line speeds that are features of the large-scale slaughtering and processing facilities that characterize the factory farming poultry sectors, as causing injuries and illness to workers. Forced labor is another problem encountered in factory farming system.

Self-Check	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. List at list 5 animal welfare impacts? (5pts)

Note: Satisfactory rating -7 points Unsatisfactory - below 7 points

You can ask your teacher for the copy of the correct answers

Information sheet 3	Reporting work outcome
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An important point in every work including livestock work is recording data, analyzing and reporting, all the steps from the initial to the final product of the work. One of the ways of communicating to the employer or the customer is reporting work outcome .This report includes information regarding

- Raw materials
- Problem encountered
- Length of work
- Hazards and safety
- Techniques and system of work
- Cost expended
- Material availability
- Sustainability of work
- Labor required
- Facilities in work

Report work outcome

1. Prepare recording file
2. Record all the data and steps in work of hide and skin
3. Arrange the data
4. Select the relevant data to the work
5. Interpret according to your work
6. Compile the data properly
7. Report the total outcomes of the work to the concerned body

Self-Check	Written Test
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Name: _____

Date: _____

Directions: Answer all the questions listed below. Illustrations may be necessary to aid some explanations/answers.

1. Mention report outcomes? (5pts)

Note: Satisfactory rating -7 points Unsatisfactory - below 7 points

You can ask your teacher for the copy of the correct answers

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