



## **Artificial Insemination**

**Level- I**

# **Learning Guide #17**

**Unit of Competence: Support Pasture Establishment and Preservation of Feeds**

**Module Title: Supporting Pasture Establishment and Preservation of Feeds**

**LG Code: AGR ATI1 M06 LO1-LG-17**

**TTLM Code: AGR ATI1 M06 TTLM 0919v1**

**LO1: Prepare For Pasture Establishment and Feed Preservation**



<b>Instruction Sheet</b>	<b>Learning Guide #17</b>
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This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics

- Identifying and Checking all materials, tools and equipment.
- Using correct manual handling techniques for loading and unloading materials
- Selecting and checking suitable personnel protective equipment.
- Supporting OHS requirement and work place information.
- Identifying and providing 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**


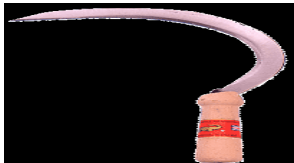
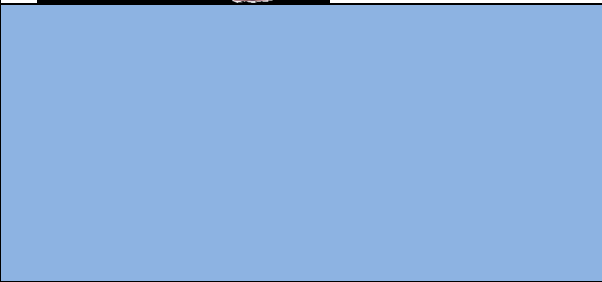




- Identify and Check all materials, tools and equipment.
- Use correct manual handling techniques for loading and unloading materials
- Select and check suitable personnel protective equipment.
- Support OHS requirement and work place information.
- Identify and provide OHS hazards

**Learning Instructions:**






1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information “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 Selfchek”5 in page8,11,14 ,17and 19 respectively.
5. If you earned a satisfactory evaluation from the “Self-check”









<p><b>Axe</b></p>		<p>: a tool consisting of a flat heavy metal head with a sharpened edge attached to a long handle, used to chop wood or fell trees</p>
<p><b>Sickle</b></p>		<p>a short-handled implement with a curved blade used for cutting tall grass or grain</p>
<p><b>Mattock</b></p>		<p>tool like a pickaxe with one end of its blade flattened at right angles to its handle, used for loosening soil and cutting through roots</p>
<p><b>Tractor</b></p>		<p>farm vehicle ( a motor vehicle )used for pulling heavy loads, especially on farms, where its large rear wheels enable it to move in fields</p>
<p><b>Picks</b></p>		<p>a tool used for breaking up hard surfaces, consisting of a long handle and a curved metal head that is pointed at one end and either pointed or like a chisel at the other</p>
<p><b>Shovel/spade</b></p>		<p>a hand tools consisting of a broad, usually curved blade attached to a long handle, used for lifting and moving loose material</p>
<p><b>Plough</b></p>		<p>a heavy farming tool with a sharp blade or series of blades for</p>



		breaking up soil and making furrows, usually pulled by a tractor or draft animal
<b>Sprayer</b>		device that is capable of spraying liquid over an area. An atomizer or pressurized container that releases fine particles of a liquid
<b>Watering can:</b>		
<b>Water pump</b>		is a motorized device that can draw water from its source and pushes through pipe
<b>Mower</b>		a machine, often power-operated, that cuts grass with rotating blades
<b>Baler</b>		is a farm machine used to compress a cut and dried crop (hay, cotton or straw) in to compact bales that are easy to handle, transport and store
<b>Hay fork</b>		is a grapple device used for moving and turning hay
<b>Plastic sheet</b>		is a sheet of plastic used to cover and pack something. It can be used to cover inner surface of pit silo to prevent moisture and air from entering in to the silage.



<p><b>Sacks</b></p>		<p>a large bag, especially one that is made from coarse cloth or thick heavy-duty paper used to hold grain and other similar products</p>
<p><b>Wheel barrow</b></p>		<p>a small cart used to transport things, usually in the form of an open container with a single wheel at the front and two handles at the bac</p>
<p><b>Tape measure</b></p>		<p>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</p>
<p><b>Melcher</b></p>		<p>is a specialized rotary cutter used to cut grass , mulches and spreads it evenly over the cutting width, encouraging quick re-growth.</p>

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

**Importance conducting pre-operational checks on Machinery, Tools and Equipment’s**

- 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 using of the Machinery, Tools and equipment’s and take minimization action timely

**The causes of 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 equipments needed to use certain equipments and machinery

### **Guidelines to conduct pre-operational checks on equipments and tools**

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

- Perform a risk assessment to identify the hazards , the risks arising from those 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



<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

- 1. Identify tools and equipment for pasture establishment? (5 point)**
- 2. What are the causes of risks associated with machinery equipment and tools? (5 point)**

**Note: Satisfactory rating 5 points      Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Information Sheet-2</b>	<b>Using correct manual handling techniques for loading and unloading materials</b>
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## **2. Using correct manual handling techniques for loading and unloading materials**

### **2.1 Definitions terms**

**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

### **Guidelines to load and unload equipments 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

### **Techniques of correct manual handling**

Manual handling refers to any activity that requires the use of force to lift, lower, push, pull, carry or move a person, animal or object. By observing simple, safe manual handling methods, you can avoid manual handling injuries. Since manual handling is intensively used in pasture establishment site practically cannot be free from harms and injuries on the job condition at work place. Through training and risk assessment we aim to eliminate hazardous manual handling activities as far as it is reasonably practicable.



## **Manual Handling Procedure**

In order to reduce the risk of injury from manual handling operations, pasture will ensure them:-

- Assess the risks associated with those manual handling activities that cannot be avoided.
- Eliminate hazardous manual handling activities, so far as is reasonable practicable.

### **Employee's duties**

Employees should ensure that they:-

- Comply with any instruction and training provided in safe manual handling techniques
- Don't put their own health and safety or that of others at risk by carrying out unsafe manual handling activity

Report problems including physical and medical conditions, which may affect their ability to undertake manual handling activities to their line manager

<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

1. What is loading? (5 point)
2. What is unloading? (5 point)
3. What are the guide lines of loading and unloading? (5 point)

**Note: Satisfactory rating - 15 points**

**Unsatisfactory - below 15 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Information Sheet-3</b>	<b>Select and check suitable personnel protective equipments</b>
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**3. Select and check suitable personnel protective equipments**







### 3.1 Definition terms

Personal protective equipment is equipment that protects workers from different damages and injuries.


Therefore when we select these equipments we should conduct process of selecting suitable PPE because:

- PPE is very important when building and maintaining structures.
- Where appropriate clothes for working outdoors, i.e. long trousers and a hat etc.
- Where thick protective gloves when required.
- Solid steel capped working boots will be essential to prevent any crushing injuries to the feet. Joggers are not suitable footwear unless they have steel caps.

*The following are some of personal protecting materials*

No	Materials	Description
1		<b>Body safety cloth (tuta):</b> - This cloth is a type of cloth which covers all the body part except the head and the fingers. It is used to protect the body from dirty.
2		<b>Sun hat:-</b> is the material, that is used to protect head from direct sun radiation
3		<b>Eye protecting device:</b> - it is used to protect the eye from different damage
4		<b>Boot:-</b> it is used to protect leg from sharpen and other damaging



5		<b>Hand glove:</b> - which is made of leather or strong flexible plastic rubber, it used to cover fingers to protect from sharpen materials.
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<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

1. **What is PPE? (5 point)?**
2. **What are PPE? (5 point)?**

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Information Sheet-4</b>	<b>Supporting OHS requirement and work place information</b>
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#### 4. Supporting OHS requirement and work place information

**Occupational Health and Safety (OHS):** Any occurrence which results in personal injury, disease or death, or property damage

Occupational Health & Safety (OH&S) legislation requires businesses to provide employees and visitors with safe premises. This means having properly functioning machinery, as well as a suitable working environment with training and supervision. Many companies are searching for solutions that can provide effective communications to meet the monitoring and audit processes required to gain OHS certification and comply with regulations.

There are many different situations where an incident may affect safety in the workplace and needs to be quickly and effectively communicated to the correct response teams. Perhaps you have personnel who handle dangerous chemicals and need to raise alarms when a leak or spill occurs.

Likewise, production companies have to monitor the product through every stage of the process. Notifications need to be in place to report any equipment failures, downtimes, or out-of-tolerance conditions that occur during these steps especially if your company is spread over multiple buildings and sites, and management needs to be informed when any safety or production incident occurs in another location

**Hazard:** is a situation that has the potential to harm a person, the environment or damage property.

**Risk:** is the probability (likelihood) of harm or damage occurring from exposure to a hazard, and the likely consequences of that harm or damage

**Risk Assessment:** is the process of evaluating the probability and consequences of injury or illness arising from exposure to an identified hazard.

**Hazard Control:** is the elimination or minimization of risk associated with an identified hazard. Related to pasture establishment identification of expected hazards are by most caused by using unsafe hand tools and equipment, plant allergy, insects, spiders, snakes, poor manual handling ... therefore the process of hazard identification should be guided by taking in to consideration of the above and other related situations.



During the operation of conservation work the workers use different tools, which are sharpen. To keep their health the workers are expected to fulfill the following requirements;

- Provide first aid kit
- Before starting their work, the workers check the arrangement of the tools
- Pick up the tools with great care
- Take care of sharpen tools
- Use these tools properly
- Identify rusted tools
- If they are reusable use them for other purpose

Before beginning their activities the workers be aware about the work place. This awareness may help the workers about what they will do, which instruments they will use, and what type of conservation mechanism they will apply and so on.

During these activities different occupational health hazards may occur. From these hazards some of them may be; erosion, slip, injury and others damages are expected.

<b>Self-Check -4</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

1. What is hazard? (5 point)?
2. What is OHS? (5 point)?
3. What is hazard control? (5 point)?
4. What are OHS requirement and work place information? (5 point)?

**Note:** Satisfactory rating – 10 points

Unsatisfactory - below 10 points

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_

<b>Information Sheet-5</b>	<b>Identify and provide OHS hazards</b>
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## 5. Identify and provide OHS hazards

Hazards are risks that occur when providing pasture establishment support that could affect our health or our safety.

In the different activities there could happen different hazards to our health and safety this could be identified as

Solar radiation, dust, noise, air- and soil-borne micro-organisms, fire hazard, chemicals and hazardous substances, sharp hand tools and equipment, manual handling, holes, and slippery and uneven surfaces

The hazard identification process is designed to identify all the possible situations where people may possibly be exposed to injury, illness and disease arising from all sources including the above.

Prior to the introduction of any plant, substances, processes or work practices in the workplace, it is essential for the hazard identification process to be carried out to identify whether there is any potential for injury, illness or disease associated with such introduction. This will assist you to take the necessary actions for what may otherwise be extremely costly further down the track if no action is taken at this early stage.

Carrying out hazard identification for all existing plant, substances, processes and work practices in your workplace may require some effort. If you have a large workplace, it is a good idea to split it into several discrete areas for the hazard identification process, and to tackle one area at a time. Priority should be given to areas with hazardous plant, substances, processes or environment.



<b>Self-Check -5</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

**1. Identify OHS hazards for pasture establishment? (5 point)?**

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Reference**

[-https://www.agric.wa.gov.au](https://www.agric.wa.gov.au) › Crops › Pastures

[-https://extension.psu.edu](https://extension.psu.edu) › managing-machinery-and-equip..



# **Artificial Insemination**

**Level -I**

## **Learning Guide #18**

**Unit of Competence: Support Pasture Establishment and Preservation of Feeds**

**Module Title: Supporting Pasture Establishment and Preservation of Feeds**

**LG Code: AGR ATI1 M06 LO2-LG-18**

**TTLM Code: AGR ATI1 M06 TTLM 0919v1**

**LO2. : Undertake pasture establishment and preservation activities**



<b>Instruction Sheet</b>	<b>Learning Guide #18</b>
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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.
- Undertaking pasture establishment activities and preservation methods
- Undertaking work *task* in a safe and environmentally appropriate
- Carryout interactions with other staff, farmer 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 to pasture establishment
- Undertake pasture establishment activities and preservation methods to pasture establishment
- Undertake work *task* in a safe and environmentally appropriate pasture establishment
- Carryout interactions with other staff, farmer and customers to pasture establishment
- Observe enterprise or cooperative policy and procedures to pasture establishment

**Learning Instructions:**

5. Read the specific objectives of this Learning Guide.
6. Follow the instructions described below.
7. Read the information written in the information “Sheet 1, Sheet 2, Sheet 3, Sheet 4”and Sheet 5
8. Accomplish the “Self-check 1, Self-check t 2, Self-check 3, Self-check 4”and Selfchek”5 in page 24,34,40,42and 44 respectively.
9. If you earned a satisfactory evaluation from the “Self-check” If you earned a satisfactory evaluation from the “Self-check” proceed to “Operation Sheet 1, Operation Sheet 2 , Operation Sheet 3 ” and Operation Sheet 4 **in page -35,36,37,and 38**
10. Do the “LAP test” **in page – 45** (if you are ready).



<b>Information Sheet-1</b>	<b>Provide instruction and direction</b>
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## 1. Provide instruction and direction

Instruction is a statement of principles that the organization prepare to manage their employees, the work activities and environmental issues. Instruction gives a clear direction to the members of the entire organization. It will also be the basis for any occupational health and safety decisions and action.

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
<b>Plans</b>	<ul style="list-style-type: none"> <li>• Schedules.</li> <li>• Work plans.</li> <li>• Environmental plans.</li> <li>• Safety plans.</li> <li>• Task procedures.</li> <li>• Safe Work Method Statements (SWMS).</li> </ul>
<b>Specifications</b>	<ul style="list-style-type: none"> <li>• Task specifications.</li> <li>• Machinery specifications.</li> <li>• Equipment specifications.</li> <li>• Material specifications.</li> <li>• Site-specific instructions</li> </ul>
<b>Operational Details</b>	<ul style="list-style-type: none"> <li>• Timeframes.</li> <li>• Material availability.</li> <li>• Weather conditions.</li> <li>• Prior task completions.</li> </ul>
	<ul style="list-style-type: none"> <li>• Detail what is to be done and to what standards,</li> <li>• which may be from:</li> <li>• Dimensions.</li> </ul>



<b>Quality Requirements</b>	<ul style="list-style-type: none"> <li>• Tolerances.</li> <li>• Work standards.</li> <li>• Material standards from:</li> <li>• Project drawings.</li> <li>• Specifications.</li> <li>• Project documentation.</li> <li>• Client standards.</li> </ul>
<b>On Site Meetings</b>	<ul style="list-style-type: none"> <li>• These allow you to give suggestions, make comments and assist in decision processes</li> </ul>
<b>Supervisors and/or managers</b>	<ul style="list-style-type: none"> <li>• Written</li> <li>• Verbal</li> </ul>

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



<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

**1. What is instruction? (5 point)?**

**Note: Satisfactory rating - 5 points      Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_





## 2. Undertake pasture establishment activities and preservation methods

### 2.1 Definitions terms

**Pasture:** is a land which is enclosed and separated from surrounding areas by fence or other barriers and devoted to the production of forage for harvest primarily by grazing

**Forage:** herbaceous plants or plant parts consumed by animals

**Forage crop:** plants grown primarily for livestock feeding and either used for grazing or harvested for green chop feeding, silage or hay

**Browse:** leaf and twig growth of shrubs, woody vines trees cacti and other non-herbaceous vegetation available for animal consumption

Establishing a new pasture or renovating an existing pasture usually requires some management to get the forage growing quickly and vigorously. Here are some of the steps involved in establishing or renovating a pasture:

1. Soil testing and correcting soil nutrient deficiencies,
2. Selecting species adapted to the specific area,
3. Implementing the correct seeding method and rate,
4. Implementing a weed control program,
5. Using proper management to maintain a productive stand.

### 1. Site selection

When assessing a locations potential for pasture production, it is important to consider the following site characteristics

#### i. Annual precipitation



Available soil moisture is the limiting factor for plant growth and establishment .sites with less precipitation have limited productivity and may not provide the site should adequate economic return. Therefore the site with adequate annual precipitation should be selected. Most dry land forage species require at least 12 inches of annual precipitation for adequate growth and long term survival.

## **ii. Soil depth**

To provide sufficient water holding capacity for productive plant growth, the soil depth must be at least 18 inches.

## **iii. Soil texture**

Soil texture and depth determine a soil's water holding capacity and therefore strongly influence a site's potential for forage production. Soil texture ranging from a sandy loam to silt or clay loam is most suitable for plant growth.

## **iv. Drainage**

Most forage species thrive in well-drained soils that have no shallow sub surface restrictive layers. The common types of restrictive layer are clay lenses and volcanic ash layers.

## **v. Salt accumulation**

Salt –affected soils present several problems for pasture establishment. The accumulation of salt in soils has negative influences on several soil properties, including soil structure, water infiltration and nutrient availability.

## **vi. Freedom from rocks**

The presence of large rocks in the soil rules out most cultivation and planting options and significantly reduces the potential for success in establishing pasture.

## **vii. Slope**

Slopes should be less than 15% in order to accommodate planting and soil preparation equipment and minimize the potential for erosion.



### **viii. Freedom from over story vegetation**

Dense over story vegetation should be removed or thinned both to decrease competition for moisture and light and to reduce the potential for soil erosion.

## **2. Forage species selection**

Selecting appropriate forage species is one of the most important and fundamental in establishing pasture.

When selecting forage species consider the following things

### **i. Land use objective**

It is important to choose forage species that are capable of meeting your specific land use objectives of land use pasture.

The use objective may include:

- Increasing forage production
- Controlling erosion
- Reducing weed infestation
- Restoring the native forage community

✚ If land use objective is increasing forage production, look for forage species that respond well to grazing and are productive and palatable to the animals.

✚ If weed suppression is a concern, consider species with good seedling vigor, high yield potential and herbicides that are commonly used on the site.

### **ii. soil and climatic characteristics of the site**

It is critical that you select species that are adapted to the soil and precipitation characteristics of the chosen site. Annual precipitation is the most common determining factor for which species will successfully establish and persist on a give site. Do not select species that require more annual precipitation than a typical for the site.

### **iii. Availability and cost of seed**



Seed prices and seed supplies vary from year to year depending on production and demand. The forage species that can be obtained in least cost should be chosen.

### **3. Selection of seed**

Selection of quality seed is the important aspect towards the success in the establishment of pasture. Seed quality can be determined by proportion of seed that would germinate to form in to healthy plants. The following points should be considered while selecting a seed for pasture establishment.

#### **i. Seed viability**

The viability of any seed is its capacity to germinate when it is sown under suitable conditions for germinations. The purchased seed should contain only minimum quantity of dead seeds

#### **ii. Purity**

The seed should be free from contamination due to the seeds of other species, inert material, pests and disease infestation, soil straw and the like

#### **iii. Seed size**

Seed size is another aspect of quality seed and important component of seedling vigour. In germination stage seedlings are dependent of food stored in the seed. If the seed are bold and similar in the shape and size, then seedlings emerging from these will also likely to be similar in vigor and growth.

#### **iv. Seed dormancy**

Seed dormancy is the resting period and a natural phenomenon which prevent seed germination. The reason for seed dormancy may be due to:

- ✓ Premature harvest
- ✓ Thick seed coat
- ✓ Chemicals which inhibit seed germination



## 4. Land preparation

Land preparation activities include land clearing and seed bed preparation.

### A. Land clearing

It refers to the activities to remove all unwanted plant materials and other things from the land. The land can be cleaned by hand cutting, by fire and by using land clearing machines like dozer. Which type to use depends on the negative impact on the bio –diversity of the area and cost.

### B. Seed-bed preparation

Seedbed preparation in farm fields often involves secondary tillage via harrows and cultivator

#### Procedures of seed bed preparation

1. The removal of debris. Insect eggs and disease spores are often found in plant debris and so this is removed from the plot. Stones and larger debris will also physically prevent the seedlings from growing.
2. Leveling. The site will have been leveled for even drainage.
3. Breaking up the soil. Compacted soil will be broken up by digging. This allows air and water to enter, and helps the seedling penetrate the soil. Smaller seeds require a finer soil structure. The surface the soil can be broken down into a fine granular structure using a tool such as a rake.
4. Soil improvement. The soil structure may be improved by the introduction of organic matter such as compost or peat.
5. Fertilizing. The nitrate and phosphate levels of the soil can be adjusted with fertilizer. If the soil is deficient in any micro nutrients, these too can be added

Pastures usually require a well- prepared seed –bed for good germination and establishment. Two methods of seed –bed preparation are recommended.

#### i. Land tilling

- Refers to plowing (turning over) of the soil. After the tillage operation is completed, the land should be smoothed and firmed.



- Tillage is not recommended for saline soils. It brings the salt to the surface and change soil structure.

### *Advantages of land tillage*

- ✓ Allows the seed bed to warm quicker( allowing for better germination at cooler temperatures )
- ✓ Controls weeds ( reduce weed infestation )
- ✓ Aerate the soil

### *Disadvantages of land tillage*

- ✓ Loss of moisture through evaporation
- ✓ High potential of erosion
- ✓ Higher oxidation of organic matter

#### **ii. Zero-tillage ( no- tilled seed bed )**

- It involves using of herbicides to kill existing vegetation and seeding directly in to the residue. No –tilled seed bed can also be prepared by reducing surface residue prior to seeding by hard grazing or removal. The advantages of zero- tillage are:
  - ❖ The reduction of soil erosion
  - ❖ Improves moisture conservation
- Slower and less uniform seedling emergence is the disadvantages of zero-tillage.

## **5. Sowing**

The principles of pasture establishment are similar to those for establishing crop. Generally there are two methods of sowing namely line sowing and broadcasting. The type of sowing method to use depends on the type of equipments available and whether sowing is carried out on no-till or tilled seed bed.

**I. Line sowing:** - is the dropping of seeds into the soil in line.

**Drilling:** - involves cutting of a thin furrow in the soil, depositing the seed and then covering it with the soil.



**Cultic- packing:** - the seed is dropped from a hopper of the cultic- packer (sowing machine) on to the soil and pressed below the surface of the soil by toothed rollers fitted on the machine.

**II. Broad- casting:** - The broadcast method involves scattering seeds at random on the seed bed and then covering it lightly with soil.

## **Seed treatment**

The purpose of seed treatment is to break dormancy and improve seed germination. Seed treatment is also done for protection of seeds from seed borne diseases. To break dormancy, the common methods of treating the seed are hot water method, mechanical method and chemical method. A widely accepted and most suitable method is treating with hot water. The temperature of water is kept according to the recommendations for that particular seed.

## **Time of sowing**

- Sowing time of the forage species is influenced by a number of factors. Among these factors, the important ones are the temperatures and moisture.
- The best recommended sowing time of forage species is just early as possible in the rainy season to obtain maximum growth.

## **5. Management**

### **Weeding**

Weeding of pasture is essential for proper growth and development of forage, because weed compete with the sown grasses and legumes for moisture, nutrients, space and light. In the first year the first year of pasture establishment one weeding is required after 10 – 15 days of germination.

### **Fertilizer application**

In areas receiving average annual rain fall up to 30mm, 20kgN AND 20KG P/ha should be applied as a basal dose at the time of sowing. But in the areas receiving average rainfall more than 30mm, this quantity can be increased by 40kg N and 20 kg P /ha. In case of more than one cutting, 20kgN/ha per cutting may be applied.

### **Grazing management**

Utilization of pasture is one of the most important aspects of pasture land management. For proper utilization the entire area should be divided in to number of blocks based on its carrying



capacity and rotational grazing system should be applied. In this system of grazing, the sequence of grazing is changed in the way that each block is grazed for specific period and protected for the rest.

## 11. Feed preservation methods

**Feed preservation:** is keeping green animal feed (without very much loss of its quality) to use it during deficiency of green feed. Conservation of forage to bridge the gap in the supply and quality of fodder between wet and dry seasons is an applicable method of efficient utilization of feed resources.

**Hay:** is grass, legumes or other herbaceous plants that have been cut dried and stored for use as animal feed particularly for grazing animals

**Silage:** is fermented, high-moisture fodder that can be fed to ruminants.

- **Fodder** is any agricultural foodstuff used specifically to feed domesticated animal such as cattle, goats, sheep, horses, chickens and pigs and legumes.

### 1. Hay making

Hay is the most common and important conserved fodder used to maintain feed supplies throughout the year. Hay is produced by dehydrating green forage to a moisture content of 15% or less. It is generally the most convenient form of stored fodder and an appropriate forage conservation method for small-scale farmers and pastoralists with limited resources.

#### Steps of hay making

##### *i. Harvesting*

Stage of maturity is the most important factor that influences chemical composition and quality.

##### *ii Drying*

Proper drying is essential so that the hay can be stored safely without heating excessively or becoming moldy. Maximum leafiness, green color, nutrient value and palatability can also be retained

##### *iii Storing*





Hay must be stored in a dry environment. Good quality hay should never be poorly stored. The type of storage may vary from area to area.

## **2. Silage making**

Silage making is the best method of fodder conservation. Making silage involves cutting fodder at the optimum stage of development, chopping to the right size and proper compaction to create an air-tight condition.

### **Steps of Silage Making**

#### **i. Harvesting fodder to be ensiled**

The forage crop going to be made in to silage should be harvested at the right stage of maturity. The quality of silage depends upon the stage of harvesting. The stage of plant growth at harvest mainly affects the amounts of digestible protein and energy. Recommended stages of harvest are: Legumes and grass legume mixtures, when legumes reach the 10% bloom stage.

**In general**, grasses should be harvested just before flowering.

#### **ii. Wilting**

The crops should contain about 30-35% dry matter at the time of ensiling. If moisture content is high, first wilt the crop to 30-35 % dry matter content by spreading the fodder under shade and frequently checking the drop in the moisture content so that the material will not be too dry.

#### **iii Chopping**

Chop the fodder into small pieces (1-3cm) before ensiling. Chopping makes it easy to compact the silage and to remove the air. The fodder can be chopped by hand, with a large knife / guillotine, or using a chaff-cutter with a rotating blade if available.

#### **Iv Filling and compacting**

Fill the chopped fodder into one of the silo layer by layer and compress and compact in such a manner that no air pockets are left. After the silo is filled in such manner it should be packed in the way that rain water or flood and air is not entered to it.



- 3. Green chopping:** is the machine harvested forage is fed to the livestock in self feeding wagons or conventional feed in bunks in dry lot.



**Self-Check -2**

**Written Test**

**Directions:**

1. Answer all the questions listed below

1. \_\_\_\_is grass, legumes or other herbaceous plants that have been cut dried and stored for use as animal feed particularly for grazing animals? **(5 point)**  
**A. Hay B. Silage C. forage D. legume**
2. \_\_\_\_\_is fermented, high-moisture fodder that can be fed to ruminants? **(5 point)**  
**A. Hay B. Silage C. forage D. legume**
3. *What is feed preservation?* **(5 point)**
4. *What are sowing methods?* **(5 point)**
5. *What is green chopping?* **(5 point)**
6. *What are the characteristics of seed quality?* **(5 point)**

**Note: Satisfactory rating - 15 points**

**Unsatisfactory - below 15 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_



<b>Operation Sheet-1</b>	<b>Undertake pasture establishment activities and preservation methods</b>
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**Title: Undertake pasture establishment activities and preservation methods**

**Purpose:** procedures of establishing pasture

**Condition:** Safe and good working environment

**Supplies & Materials** Machete axe, sickle, picks, hay fork, shovel/spade

**Procedure:**

- .1. Soil testing and correcting soil nutrient deficiencies,
2. Selecting species adapted to the specific area,
3. Implementing the correct seeding method and rate,
4. Implementing a weed control program,
5. Using proper management to maintain a productive stand.

**Precautions:**

- Safety first (for yourself, friends, tools & equipment's)
- Use right equipment for the right purpose
- Strictly follow the given procedures
- Put each tools and equipment and work shop after the session

**Criteria:**

- All steps were completed in the correct sequence.
- All precautions were followed

**Operation Sheet-2****Undertake pasture establishment activities and preservation methods**

**Title:** Undertake pasture establishment activities and preservation methods

**Purpose:** procedures of seed bed preparation

**Condition:** Safe and good working environment

**Supplies & Materials** Machete axe, sickle, picks, hay fork, shovel/spade

**Procedure:**

Step1 the removal of debris.

Step2 Leveling

Step3 Breaking up the soil

Step4 Soil improvement

Step5 Fertilizing

**Precautions:**

- Safety first (for yourself, friends, tools & equipment's)
- Use right equipment for the right purpose
- Strictly follow the given procedures
- Put each tools and equipment and work shop after the session

**Criteria:**

- All steps were completed in the correct sequence.
- All precautions were followed

**Operation Sheet-3****Undertake pasture establishment activities and preservation methods**

**Title:** Undertake pasture establishment activities and preservation methods

**Purpose:** prepare hay making

**Condition:** Safe and good working environment

**Supplies & Materials** Machete axe, sickle, picks, hay fork, shovel/spade

**Procedure:**

**Step1** *Harvesting*

Step2 *Drying*

**Step3** *Storing*

**Precautions:**

- Safety first (for yourself, friends, tools & equipment's)
- Use right equipment for the right purpose
- Strictly follow the given procedures
- Put each tools and equipment and work shop after the session

**Criteria:**

- All steps were completed in the correct sequence.
- All precautions were followed.

**Operation Sheet-4****Undertake pasture establishment activities and preservation methods**

**Title: Undertake pasture establishment activities and preservation methods**

**Purpose:** prepare silage making

**Condition:** Safe and good working environment

**Supplies & Materials** Machete axe, sickle, picks, hay fork, shovel/spade

**Procedure:**

**Step1 Harvesting fodder to be ensiled**

**Step2 Wilting**

**Step3 Chopping**

**Step4 Filling and compacting**

**Precautions:**

- Safety first (for yourself, friends, tools & equipment's)
- Use right equipment for the right purpose
- Strictly follow the given procedures
- Put each tools and equipment and work shop after the session

**Criteria:**

- All steps were completed in the correct sequence.
- All precautions were followed.

**Information Sheet-3****Undertake work *task* in a safe and environmentally appropriate**

The operation of pasture establishment need care to protect the environment from different problems like Plant debris, Litter and broken components, Plastic, Metal, paper-based materials.

These may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work procedures.

During work operation the workers keep the working environment neat or clean by accumulating the generated wastes at the time of preparation of work place. In the other way before starting the work, the working environment should be ready to operate or begin the work. This situation initiates the workers to perform their work properly and accurately. Sometimes unsafe work place may discourage the workers and delay the work activities. To prohibit this condition the workers perform their work in a safe and environmentally sound manner without polluting the environment.





**Self-Check -3**

**Written Test**

**Directions:**

1. Answer all the questions listed below

**1. Identify problems of environment in pasture establishment? (5 point)**

**Note: Satisfactory rating – 5 points**

**Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_



**Information Sheet-4**

**Carryout interactions with other staff, farmer and customers**

#### **4. Carryout interactions with other staff, farmer and customers**

Interaction is very important to understand the overall activities of conservation works with other staffs. The interaction may create some impression between the workers and other staffs about the significance of pasture establishment and environmental importance. In addition to these the interaction also develops positive relationship among the industry, staff and customers in order to protect the pasture establishment from different damaging agents.



<b>Self-Check -4</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

*1. What is the advantage of work with other staff? (5 point)*

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = \_\_\_\_\_

Rating: \_\_\_\_\_

Name: \_\_\_\_\_

Date: \_\_\_\_\_



<b>Information Sheet-5</b>	<b>Observe enterprise or cooperative policy and procedures</b>
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### **5. Observe enterprise or cooperative policy and procedures**

Any enterprise has its own policy and procedures that helps to guide the work operators how to use their time, how to perform their work, how to handle their tools, materials and equipments and other activities. Therefore, the employee before starting their work, they should know or understand the enterprise policies and procedures to perform their work properly with in proposed time. Knowing the policy and procedures of the enterprise may support the employee from doing wrong things.



<b>Self-Check -5</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

**1. Why observe enterprise or cooperative policy and procedures? (5 point)**

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_



<b>LAP Test</b>	<b>Practical Demonstration</b>
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Name: \_\_\_\_\_ Date: \_\_\_\_\_

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

**Instructions:** Given necessary templates, tools and materials you are required to perform the following tasks within 2 hour.

**Task1. Prepare hay making?**

**Task2. Prepare silage making?**

**Task3 prepare seed bed?**



## **Artificial Insemination**

**NTQF Level- I**

# **Learning Guide #19**

**Unit of Competence: Support Pasture Establishment and Preservation of Feeds**

**Module Title: Supporting Pasture Establishment and Preservation of Feeds**

**LG Code: AGR ATI1 M06 LO3-LG-19**

**TTLM Code: AGR ATI1 M06 TTLM 0919v1**

**LO3: Clean up and store materials and equipment**



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

- Storing waste materials in a designated areas
- Handling and transporting materials, equipments and machinery
- Returning materials
- Cleaning, maintaining and store 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 materials in a designated areas
- Handle and transport materials, equipments and machinery
- Return materials
- Cleaning, maintaining and store tools and equipment.

**Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described below.
3. Read the information written in the information “Sheet 1, Sheet 2,”and Sheet 3
4. Accomplish the “Self-check 1, Self-check 2, and Selfchek”<sup>3</sup> in page48, 50 and 52 respectively.
5. If you earned a satisfactory evaluation from the “Self-check”





<b>Information Sheet-1</b>	<b>Store waste materials in a designated areas</b>
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### 1. Store waste materials in a designated areas

The law says you must keep every part of your construction site in ‘good order’ and every place of work clean”. The objective is to achieve what is usually called a good standard of working site. In addition, all contractors must plan, manage and monitor their work so it is carried safely and without risks to health and environment. This includes careful planning on how the site will be kept tidy and work operation actively managed.

Safe and efficient waste materials storage depends on good co-operation and co-ordination between everyone involved including, client, contractors, suppliers and the residents.

**Storage areas-** designate storage areas for Plant debris, Litter and broken components, Plastic, Metal, paper-based materials.

These may be recycled, re-used, returned to the manufacturer or disposed of according to enterprise work procedures.

**Pedestrian routes-** do not allow storage to ‘spread’ in an uncontrolled manner on to footpaths and other walkways. Do not store materials where they obstruct access routes or where they could interfere with emergency escape;

- **Flammable materials-** will usually need to be stored away from other materials and protected from accidental ignition;

Storing of plants and materials involve diverse operations; such as hosting tone of cut wooden materials, piece of irons, destroyed seedlings, surplus plant and materials and others should be collected and stored properly during cleaning. The efficient storing of materials is vital to industry. In addition to raw materials, these operations provide a continuous flow of parts and assemblies through the workplace and ensure the materials are available when needed. Unfortunately, the improper handling and storing of materials often result in costly injuries.



<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

*1. Why store waste materials in designated area? (5 point)*

**Note: Satisfactory rating – 5 points**

**Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_



## **2. Handle and transport materials, equipments and machinery**

To operate these work activity different materials, equipments and machinery are very important component of the work. These mentioned materials, equipment and machinery needs great care during handling and transportation. During handling and transportation the users of these materials, equipment and machinery should give great emphasis to sustain their durability unless they may be exposed for different damage and for unexpected expense.



<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

**1. Why Handle and transport materials, equipment and machinery? (5 point)**

**Note: Satisfactory rating - 5 points      Unsatisfactory – below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_



<b>Information Sheet-3</b>	<b>Cleaning, maintaining and store tools and equipment.</b>
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### **3. Cleaning, maintaining and store tools and equipment.**

The work place should be clear and safe always, this favorable situation encourages the workers to perform their task properly. To sustain clean and safe work site, this place should be cleaned before starting and after finishing their work.

Regular maintenance is essential to keep equipment, machines and the work environment safe and reliable. Lack of maintenance or inadequate maintenance can lead to dangerous situations, accidents and health problems. Maintenance is a high-risk activity with some of the hazards resulting from the nature of the work. Maintenance is carried out in all pasture establishment and all workplaces.



<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:**

1. Answer all the questions listed below

**1. Why cleaning, maintaining and store tools and equipment? (5 point)**

**Note: Satisfactory rating – 5 points**

**Unsatisfactory - below 5 points**

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

**Answer Sheet**

Score = _____
Rating: _____

Name: \_\_\_\_\_

Date: \_\_\_\_\_



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