

# **Animal Production**

**NTQF Level -II**

## **Learning Guide -20**

**Unit of Competence:** - Assist Basic Husbandry  
Practices of Draft Animals

**Module Title:** - Assisting Basic Husbandry Practices  
of Draft Animals

**LG Code:** AGR APR2 M07 LO1-LG-20

**TTLM Code:** AGR APR2TTLM 0919 v1

**LO 1: Prepare and provide house and work for  
draft animal**



## Instruction Sheet

## Learning Guide #-20

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

- ❖ Introduction to draft animals
- ❖ Housing of draft animals
- ❖ Applying feeding and watering for draft animals
- ❖ Interpreting and confirming Works
- ❖ Selecting, checking, maintaining and using Suitable materials, tools and equipments
- ❖ Selecting, checking, maintaining and using Suitable PPE

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 required buildings or housing for draft animal based on their space requirements
- ❖ Apply Feeding and watering to draft animals appropriately
- ❖ interpret and confirm Work to be undertaken
- ❖ Select, check, and maintain suitable Material, tools and equipment
- ❖ Select, use and maintain Suitable Personal Protective E equipment

### **Learning Instructions:**

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 3 to 7.
3. Read the information written in the “Information Sheets 1,2,3,4 and 5 in page 1,6, 10,12 and 18 respectively”. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish the “Self-check 1,2, 3, 4 and 5 ” **in page 5,9,11, 17, 19 respectively**
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answers only after you finished answering all Self-checks).
6. If you earned a satisfactory evaluation proceed to “next Information Sheets”. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to Learning Activity #20.
7. Submit your accomplished Self-check. This will form part of your training portfolio.



## Information Sheet-1

## Housing of draft animals

### 1.1. Definition of draft animal

Generally, draught animal power (DAP) describes the use of animals to provide the vital power for crop cultivation and transport. There are a number of words used to describe the same, and include: animal traction (AT) and draught animal technology (DAT). Note that draft and draught have been used interchangeably to describe the 'pull' force.

Animal traction, animal-powered mechanization, and animal draft are terms which describe the use of animals to pull farm equipment, vehicles, and other loads.

In many rural communities, cattle, donkey's mules, horses, camels and other working animals are used by farmers in tillage operations and provision of transport services. Ethiopia is the richest country of Africa in draft animals, including cattle, camel, donkey, mule & horse. Draft animals assist the societies in different tasks. The most common use of draft animals (**except** oxen) is as pack animals for transport of **goods** and **people**. They are important in reducing drudgery and intensifying agricultural production.

Structurally, DAP describes a system of interaction between the operator, the implement and the animal. Each of the sub-systems is fundamental and entails a number of factors that are important in ensuring proper functionality

### 1.2. Housing of draft animals

The provision of shelter for draft animals is an essential management practice that not only ensures protection from adverse weather condition but also provides a rest area especially after work. A shed must facilitate feeding, watering and ease of cleaning. Poorly constructed houses are danger to stockowner, often they lack hygienic consideration and are difficult to maintain.

Draft animal house should be prepared using local simple material (i.e. wood, mud bricks) to keep the cost to minimum. In warm dry climate roof supported by poles, however in cool areas half or three quarters of walls is solid. The space requirement of the individual animal is 1.5 -2 ms wide .a yoking bar is fixed at height of 90cm -150cm from the ground used during feeding and watering, harnessing and health care routine.



### **Generally draft animal housing should accomplish the following**

- It must protect the animal from sun, rain and chilling wind
- It must be strong and well-constructed in a way that will prevent from attack of predator
- In a case of theft problems, a shed that completely enclose animals, and has a door that can be locked may be required
- The shed must be adequately hygienic with good drainage, ease of cleaning, a good ventilation and adequate light.
- It should also permit complete removal and utilization of manure



<b>Self-Check -1</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. The terms which describe the use of animals to pull farm equipment, vehicles, and other loads is-----(1pt)
  - A. Animal traction
  - B. Draft animal power
  - C. Animal power mechanization
  - D. All
  
2. One is not the main use of draft animal power (1pt)
  - A. Transporting of goods
  - B. Transporting of people
  - C. For milk production
  - D. For tillage
  
3. List at least four (4) the purpose of draft animal power housing (2pts).

**Note: Satisfactory rating - 3 points**

**Unsatisfactory - below 3 points**

**Answer Sheet**

Score = _____
Rating: _____

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

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

**Short Answer Questions**

1. -----
2. \_\_\_\_\_
3. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## **2.1. Feeding to draft animal animals**

A good feeding program is essential in maintaining the strength and health of draft animals. Food is the fuel which an animal converts to energy and pulling power. Animals that are not fed enough of the right feeds can show chronic fatigue, will lose the ability to work, and are more susceptible to disease. Excess calories are stored as fat, causing animals to become inefficient workers, lazy, stubborn and ill-tempered.

A basic knowledge of the dietary, needs of draft animals and of the nutritional content of available feeds will enable owners to plan a feeding program that will help their animals to work to their full potential.

Grazing draft animals need supplemental feeding for the following reasons:

- to increase energy intake and prevent protein, vitamin-and mineral deficiencies
- Because of limited grazing time or limited forages availability.

Animals burn many more calories when working than when idle or grazing. This means that the energy requirements of an animal will increase with the work load. Experience and research have shown that animals need about twice their normal energy maintenance requirement when they are used for.

### **2.1.1. General Rules for Feeding:-**

1. Feed the animal so that it gains weight and maintains strength but does not become fat or lazy .Never let it lose weight.
2. Feed large quantities of grass, straw, and other bulky, fibrous foods. These foods are called roughages. If they are of good quality, they supply all the nutrients that a grazing (non-working) animal needs for body maintenance. Protein, phosphorous and Vitamin A maybe deficient in forage growing on arid land.
3. If only poor quality roughage diet is available, supplement the roughage diet with grain and other concentrate feeds such as beans, seeds, mill by products and oil cakes. These feeds give the animal' additional energy for work.
4. Give the animals salt and mineral supplements.



5. Deworm the animals regularly if parasites are present. This ensures that parasites do not interfere with digestion and that animals get the full value of food.
6. Use quality feeds:
  - ❖ Do not let animals graze in pastures where herds of other animals graze, or eat grain or hay from the ground or stable floor. These may be contaminated with parasites.
  - ❖ Never feed mouldy or dusty feeds. These cause serious digestive problems.
  - ❖ Improve the nutritional value of insect-infested grain by mixing good grains, mill by-products, or peanut or cotton-seed cake into the daily ration.
  - ❖ Never give animals' free access to lush; young grass or leaves of young corn or peanut plants. These can cause serious conditions like bloat, colic, or dehydration due to diarrhoea.

### **2.1.2. How much to feed**

The amount of extra feed that draft animal need depends on their size, the amount of work load, the quantity and quality of pasture available and the type and quality of feed used for supplementation.

E.g. Draft animal have stomachs designed for frequent small meals (such as when grazing naturally) so the more often they are fed the better. It is not a good idea to feed a lot of forage in the morning before work.

Give small amounts then and during rest periods in the day. Supply supplementary forages in the afternoon and evening, allowing donkeys to feed during the night. A nursing jenny needs the equivalent of about 2 - 3% of her body weight a day if she is only fed forage. A working donkey needs about 3 - 4% of its body weight a day. Thus an average donkey will need about 4 to 6 kg of fodder a day if nursing or working. A jenny that is both nursing and working will need more. If a donkey cannot obtain this amount from available grazing, it will need supplements. In any case, if donkeys are fed concentrate each working day, they will require less grazing, and learn that work brings rewards.

## **2.2. Watering to draft animals**

During the rainy season, grazing animals get considerable amounts of water from the grasses and other succulent forages they consume. Under these circumstances, drinking water consumption is not an accurate indication of water requirements. Actual water needs are determined by size, species, environment, and intensity of work. Larger animals drink



more because they have a greater body mass to cool. Muscular activity (work) generates additional heat. Working animals lose water from sweating and therefore need to increase their water intake.

Table 1: Water Requirement's of Draft Animals

<b>Animal</b>	<b>Litters per day</b>
<b>Oxen</b>	10-30 rainy season 15-40 dry season
<b>Horse</b>	30-50
<b>Donkey</b>	10-20
<b>Mule</b>	15-30

Working animals should have access to water at least three times per day--morning, noon, and night. Horses and some cattle engaged in heavy work may need a short drink every two or three hours. Zebu cattle, donkeys and mules can work for longer periods without drinks but still should be offered water during the mid-day resting/grazing period. A heated animal should never be allowed free access to water

Some animals will drink too much water in the evening. This may prevent them from eating their concentrate feeds. They should not be allowed to drink freely until after feeding. A small drink maybe given before food is offered





<b>Self-Check -2</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Which one is the character of draft animal not fed enough feed?(2pt)
  - A. chronic fatigue,
  - B. Store excess fat
  - C. Lose the ability to work
  - D. Susceptible to disease
  
2. The reason for grazing draft animals need supplemental feeding (1pt)
  - A. Because of limited grazing time
  - B. Limited forages availability
  - C. To increase energy intake
  - D. Prevent protein, vitamin-and mineral deficiencies
  - E. All
  
3. One is not concentrate feed (2pts)
  - A. Grain seeds
  - B. Mill by products
  - C. Straw
  - D. Oil cakes

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**  
**Answer Sheet**

Score = _____
Rating: _____

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

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

**Short Answer**

1. -----
2. -----
3. -----
4. -----  
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<b>Information Sheet 3</b>	<b>Interpreting and confirming with management the Works to be undertaken</b>
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Before attempting to determine the kind and number of animals required for any particular farm, animal owners should be familiar with the concepts of pulling (draft) capacity and power. They should also consider the working characteristics of draft animals

Animals vary not only in their ability to pull loads, but also in the number of hours they will work. Oxen will pull between one-seventh and one-tenth of their weight for 4-5 hours per day. Donkeys will pull about one-fifth of their weight for 3-4 hours. Bulls worked longer when the load was decreased slightly and the work done in two sessions, 2 to 3 hours in the morning and 2-3 hours in late afternoon. Donkeys refused to work beyond 3-4 hours regardless of how the work was distributed and in spite of a reduction in the size of the load.

By having this information, it is possible to determine the kind and number of draft animals needed to power various field operations



<b>Self-Check -3</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. How many percent of their body weight the oxen can pull the load?(3pts)

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

**Answer Sheet**

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

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

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

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

**Short Answer Questions**

1. \_\_\_\_\_

<b>Information Sheet 4</b>	<b>Selecting, checking, maintaining and using Suitable materials, tools and equipments</b>
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#### 4.1. Selecting Tools and equipments

There are different kinds of tools and equipments according to their uses and their selection as the requirements

##### Essential components of animal draught and the equipment

Anything drawn by animals has 5 essential components:

- ❖ The animal/s (power source)
- ❖ The harness (what is on the animals to enable them to pull)
- ❖ The hitch (connection between harness and implement)
- ❖ The implement (includes carts)
- ❖ The work (in the case of carts, this is the load they take).

Each one of these has an effect on the functioning of the others. Bad design in one can have an adverse effect on the efficiency of every other component.

##### 3.1.1. Selecting tools and Equipments for transport

###### 1. Sledges

Sledge is the most simple load vehicle made out of a Y-shaped tree branch which attached to the animal by a trek chain.

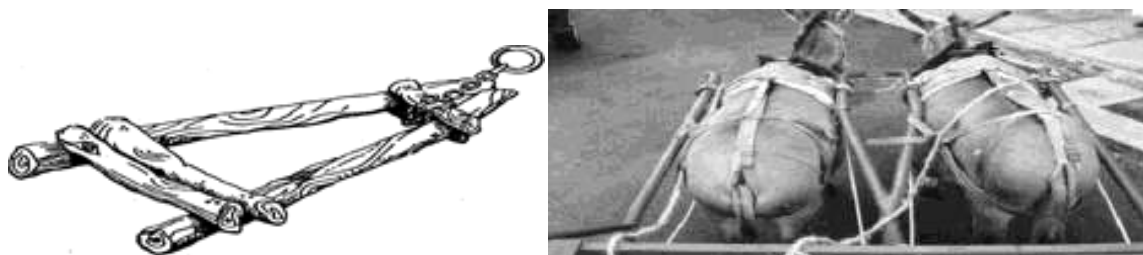


Fig1: Simple wooden sledge

###### 3. Cart

Carts are two-wheeled vehicles, which can be small and light, pulled by one equine, or may carry over one ton and be hitched to a team of donkeys.



**Fig 2: carts**

#### 4. Wagons

Wagons are four-wheeled vehicles with a higher weight capacity than carts (*figure 3*). They are best suited to tarred and level roads and to areas where the increased load capacity is cost-effective



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**Fig 3: Wagons**

#### 4.1.2. Yokes and harnesses

**Harness:** - the equipment links the draft animal to the carts, wagons or implements to transmit power of its work load. These are breast band, collar, bit, bridle, rein (line), girth, trace, saddle beech.

**Breast straps (bands):** - are the materials which made from leather, synthetic webbing, or industrial webbing, belting and tyre webbing that Horses, mules and donkeys pull best from their chest and shoulder. It is a strap positioned across the breast and supported by one or two straps; the first one passes over the withers and the second one over the back. Its width is about 6cm

**Breech:** - the strap that passes around the hindquarters of the harnessed animal and transmits a reverse draught to the cart. Used for braking and reversing.

**Collar harness:** - a padded collar positioned around the neck; traction is transferred from the shoulders through rigid hames and traces.

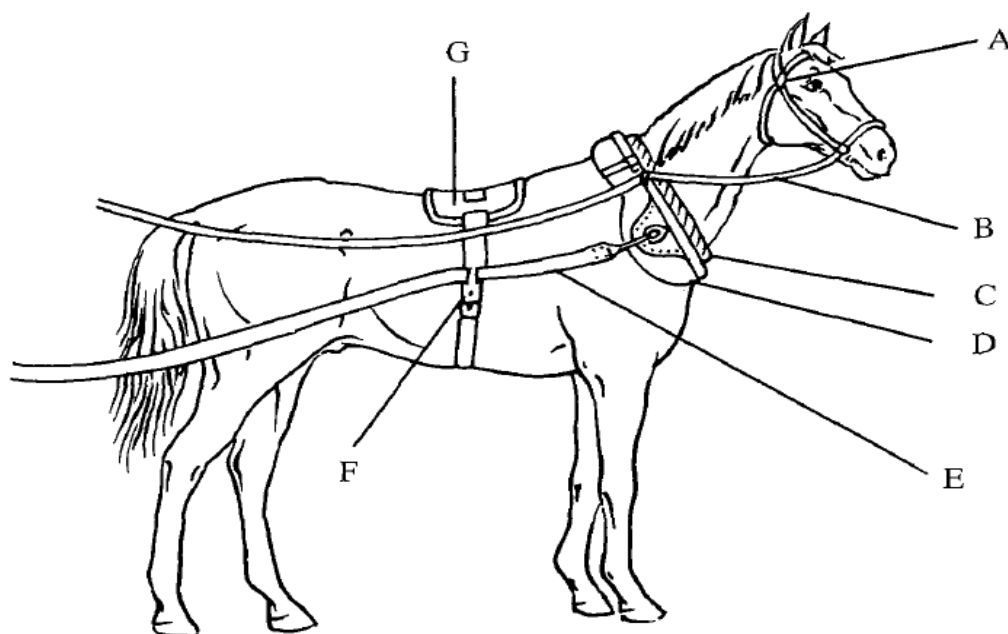
**Trace:** - the chains or ropes used to transmit the draft force from the collar or breast-band harness to the work load.

**Bridles:** - straps around head of an animal to which reins are attached for controlling head.

**Saddle:** - wide strap across equine back for taking load.

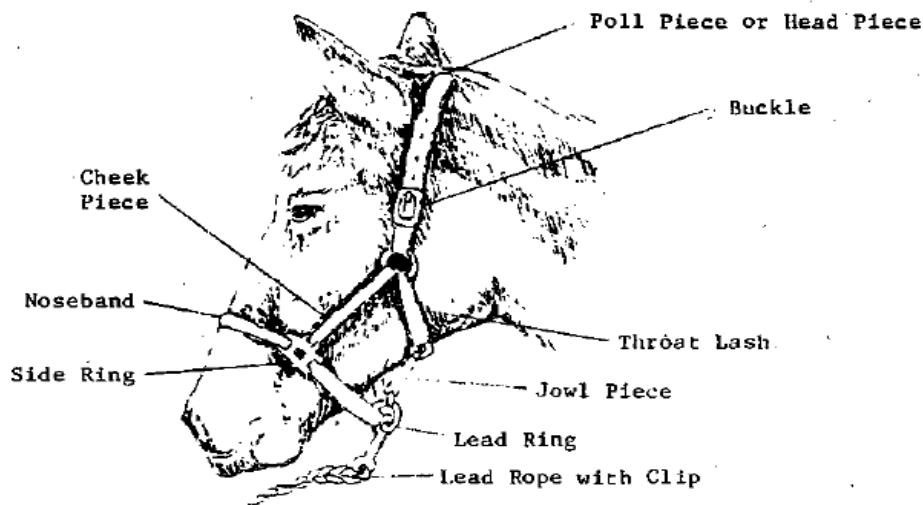
**Swingle:** - a wooden pole to which the traces attach at each end and the work load attaches at the centre. This allows the harness to move with the shoulders, so reducing rubbing

**Yokes:** - strong bar, usually made of wood, which an animal can push against in order to pull an implement. Trek chains are attached between the yokes and the implement to be pulled.

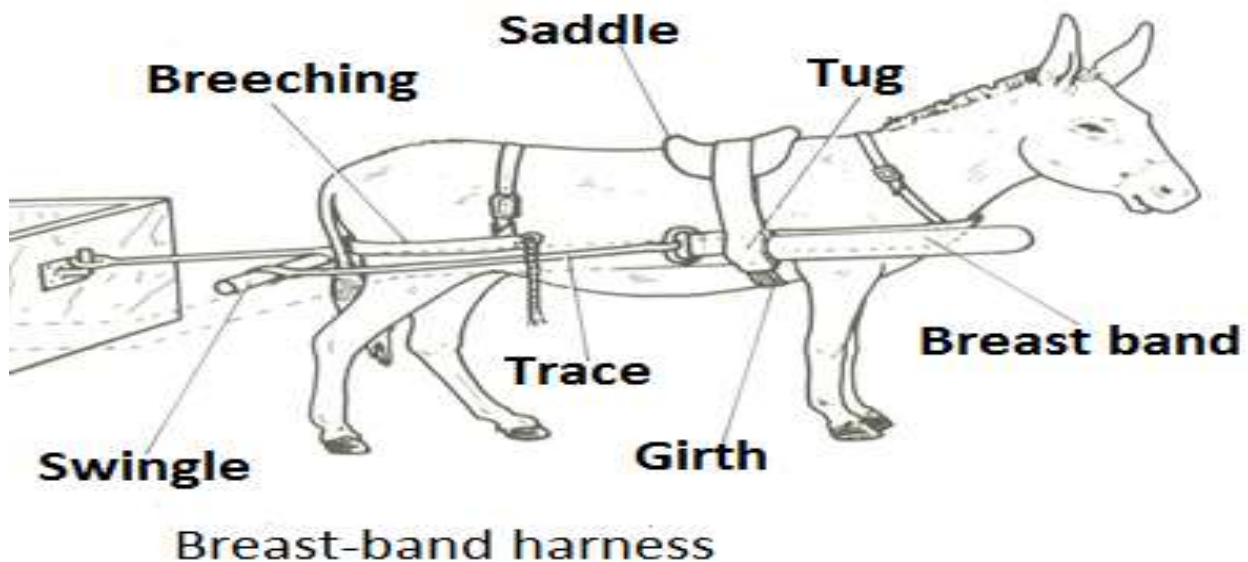
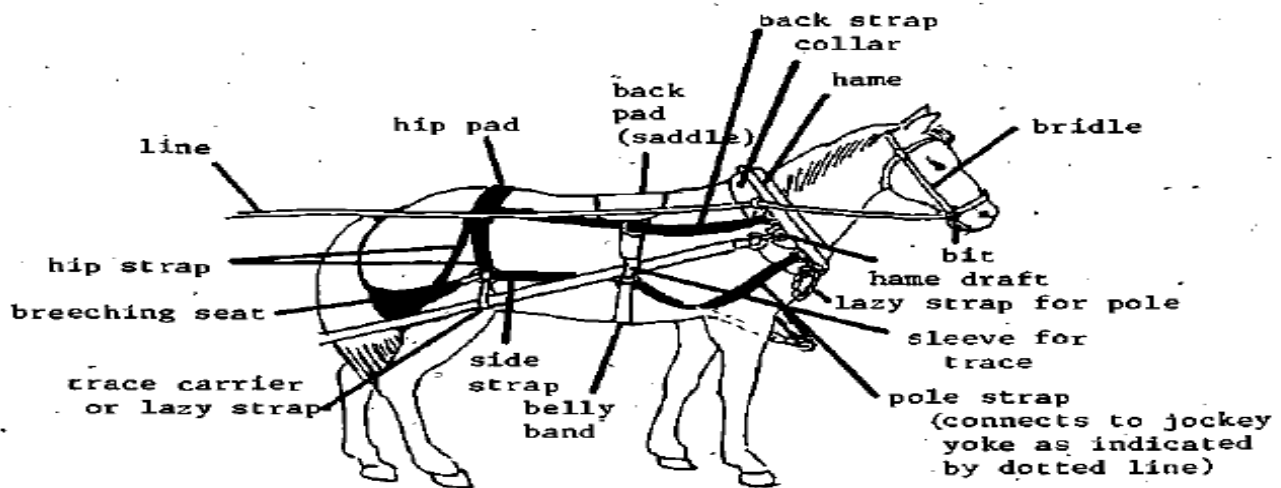


- |                |   |
|----------------|---|
| A: bridle      | E: trace                                    |
| B: line (rein) | F: sleeve for trace                         |
| C: hames       | G: frame for taking vertical load and guide |

Fig 3. collar harness



Leather Halter for Horses, Donkeys, Mules, or Cattle



Breast-band harness

Fig4: -Different harnessing equipments.

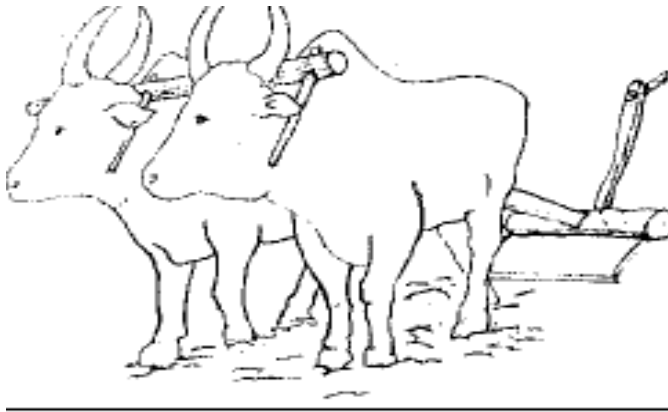


Fig 4: Yoke





<b>Self-Check -4</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List at least three transporting equipments.
2. Name the harnessing materials for horse riding by cart.

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

**Answer Sheet**

Score = _____
Rating: _____

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

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

**Short Answer Questions**



## Information sheet 5

### Select, use and maintain Suitable personal protective equipment (PPE)

This may include boots, helmet, overalls, gloves, protective eyewear, hearing protection, and respirator or face mask, and sun protection. The selection of PPE and devices to protect workers in any given hazard situation should be based on consideration of at least three factors:

- Information (yielded by the hazard assessment) on the nature and magnitude of the hazard.
- Performance data on the PPE and/or device under consideration.
- The estimated level of residual risk to which the worker will be exposed.

Use of PPE is trained to the worker in form of training program

Training programs should seek to orient learners to correct use of PPE via an optimal mix of cognitive (information-based), affective (attitudinal), and applied (laboratory practice) approaches



<b>Self-Check -5</b>	<b>Written Test</b>
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**Directions:** Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List the protective equipment equipments used in draft power
2. What are the consideration to choose the PPE

**Note: Satisfactory rating - 5 points**

**Unsatisfactory - below 5 points**

**Answer Sheet**

Score = _____
Rating: _____

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

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

**Short Answer Questions**



## List of Reference Materials

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