Dairy production Level

NTQF Level -II

Learning Guide 44

Unit of Competence: Assist dairy animal breeding procedure

Module Title: Assisting dairy animal breeding procedure

LG Code: AGR APR2 M12 L02 LG 44
TTLM Code: AGR APR2 TTLM 0919v1

LO 2: Select dairy animal for breeding

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

➢ Determining selection criteria and methods of dairy animal.
➢ Establishing culling and replacement practices to maintain the appropriate size and ratios of dairy animals.
➢ Checking and monitoring selected dairy animals.

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 –

➢ Determine selection criteria and selection methods of dairy animal.
➢ Establish culling and replacement practices to maintain the appropriate size and ratios of dairy animals.
➢ Check and monitoring selected dairy animals.

Learning Instructions:

1. Read the specific objectives of this Learning Guide 44.
2. Follow the instructions described in number 1 to 5.
3. Read the information written in the "Information Sheet (**1, 2 and 3**) in page **2, 8 and 11** respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the **"Self-check 1, Self-check 2 and Self-check 3"** in page**, 7, 10 and 12** respectively.
6. If you earned a satisfactory evaluation proceed to "Operation Sheet 1 and 2 in page 17 and 3 and 4 in page 18 respectively.
7. Do the "LAP test" in page 19 (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work.

Information sheet-1	Determining selection criteria of methods of selecting dairy animal.

Selection a processes in which a certain individual in a population are preferred to other for production of next generations. Selection is the tools in the hand of breeder to improve the performance of animal.

Selection methods

➢ Individual selection: selection can be done performances of individual basis
➢ Pedigree selection: selection on the basis of performances of the ancestors
➢ Progeny selection: selection of individual on the basis of the average performance of their progeny
➢ Family selection: family represents a group of animal having common genetic relationship.
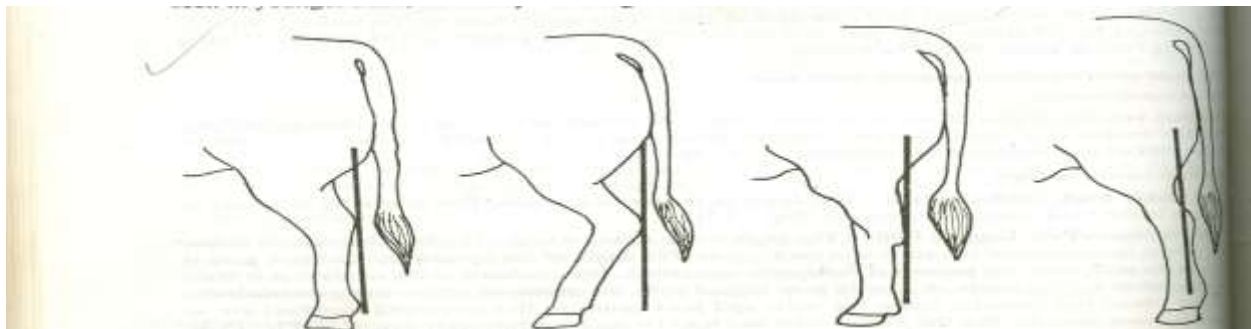
Selection of breeding cows

Factors to be considered during selection of dams

➢ Age : young animals, longer productive life,& not parturited more than 3 time
➢ Level of performance: animal highest production level
➢ Temperament or behavior :
➢ Physical appearance
➢ Health status: normal free from any disease
➢ Milk production records
➢ Pedigree: the relationship
➢ Adaptability: animals adapted to the prevailing climate condition
➢ Prolificacy : ability to give birth to many off spring

Bull can be selected based on general and special physical examination.

1. **General physical examination of bull:** This is based on general body condition, feeding condition sense organ etc.

2. **Special physical examination:** this focus on reproductive organ
   - ✓ The scrotum checked for size, symmetry, circumference, elasticity
   - ✓ Palpation of prepuce and penis for deformities and infection
   - ✓ Locomotors system and body condition hook, bowling leg, sickle etc
   - ✓ Serving behavior libido, erection, mounting and dismounting etc

Normal   sicklehoock   bocow hooor   post-legged(postiness)   camped

Fig 1.leg position

Selection of breeding ewes/does

❖ **Conformation:**

Sheep and goats to be used for various purposes would have different conformations. Animals meant for milk purposes have a different conformation than animals meant for meat. Milk animals should have a larger tract and udder. They have longer, thinner necks and a wedge-shaped appearance. Meat animals, on the other hand, have a stocky appearance and tend to have a rectangular shape. There are no specialized breeds in Ethiopia and animals are generally dual-purpose breeds.

❖ **Udder**

Ewes and does should have well formed udders with good attachment and two well-

formed teats. It is important that the udder is constructed in a way that allows offspring to nurse unassisted. The external genitalia of the female should be well developed and properly structured. Vulvas which turn up at the end can cause a problem when the male is serving the female and result in poor fertility. A female that has not given birth or exhibited signs of pregnancy by 18 months of age should be culled.

❖ **Appearance:**

Only an animal which is active, alert, healthy and attractive in appearance should be considered for selection of sheep and goats for breeding purposes based on visual observation is done by looking at the appearance, conformation and presence or absence of defects in the animal.

❖ **Legs:**

Legs of sheep and goats (particularly males) should not be extremely hocked or curved. The rear (hind) legs should be wide apart and straight when viewed from behind. Poor leg conformation is usually of genetic origin and can affect mating ability of males. Muscling will be demonstrated by a thick thigh and the depth of the twist.

❖ **Teeth**

The incisor teeth on the lower jaw should perfectly meet the edge of the dental pad on the upper jaw for efficient grazing. Some sheep and goats have an overshot jaw where the upper jaw is longer than the lower while others may have an undershot jaw, in which case the upper jaw is shorter than the lower. In other cases, the teeth are deformed. Such animals, particularly males, should not be used for breeding.

Fig 2. Undershot (left and overshot (right) jaw

Selection of the ram/buck for breeding purposes

➤ Health history, physical fitness, particularly of feet and legs, eyesight, etc.

➤ Pedigree, i.e., ensuring the sire is free from known hereditary defects.

➤ Evaluating the smoothness of the hair coat for evidence of malnutrition or chronic infection.

➤ Body condition scoring and noting of the score.

➤ Checking for and noting any defects that could interfere with the breeding process.

➤ A thorough examination of the scrotum, palpation of testicles, and examination of sheath and penis

Testes: Male sheep and goats selected for breeding should have two large, well-formed, functional, equal sized testicles in a single scrotum (some breeds normally may have a split scrotum). Sperm production is related to the size (circumference and length) of the testicles. More semen is produced by males with greater scrotal circumference. Avoid selecting males that show overly pendulous testicles. Males with very hard, small, unbalanced testes and those with scars, bumps and lumps should not be selected for breeding

Scrotal circumference and diameter

The scrotal circumference can be measured with a specially designed tape or with any other measuring tape or even a cord whose length can be compared with a ruler. The circumference is measured at the widest part of the scrotum with both testes held at the same level. A male with large testicular size at a given age is likely to produce better quality semen.

Fig.3. Scrotal circumference and diameter.(Adabted from ESGPIP,2009)

Single versus split scrotum:

This could be breed-specific as in Somali goats. Some breeders consider the split scrotum as an undesirable trait and select against it. However, the important thing is to check if equal-sized testicles are present and sperm production is normal.

a. Single scrotum   b. Partially split scrotum   c. Split scrotum

Fig.4. Single versus split scrotum (Adapted from ESGPIP,2009)

Self-Check -1	**Written Test**

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the Factors to be considered during selection of dams (5 points)
2. Write Selection methods dairy animals (5 points)

Note: **Satisfactory rating - 10points   Unsatisfactory - below 10 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____   Date: _____

1. _____

   _____

   _____

   _____

2. _____

   _____

   _____

   _____

Information sheet-2	**Establishing culling and replacement practices to maintain the appropriate size and ratios of dairy animals.**

Culling: It is the process of removing unproductive animals (old dairy animals with poor mothering abilities, poor reproductive performance, and animals with chronic sicknesses) from the flock or herd. It is the removal dairy animal from the main herd due sale, slaughter or death.

Reasons culling dairy animals

- ☞ Poor production
- ☞ Very poor reproductive ability
- ☞ With sterility problem and breeding
- ☞ Very poor condition
- ☞ Stunted growth
- ☞ Suffering from incurable illness or diseases animal found to be positive serious infection tuberculoses, brucellosis

Replacement of practice

Rearing replacement heifers has not always been seen as a fundamental part of the dairying enterprise but, when correctly planned and when specific feeding programmers have been used overall improvement in herd longevity and farm profitability results. Feeding and managing replacement heifers must be given as much priority as dealing with the milking cow. Rearing heifers must be seen as an investment in to morrows profit generators. The progress of the herd depends largely on the way in which heifers are raised for replacement purposes. A sound herd cannot be establishment by the continual purchased of new heifers of whose history not much is known. The costs are relatively low when compared with prices at which heifers are sold.

The ultimate aim of dairy heifer rearing is to produce well developed heifers able to express full yield potential at the desired calving age, with minimum costs, losses and health problems, and with the potential to milk for at least 6 lactations.

Rearing replacement heifers allows for: -

 ➢ Replacement of culled cows
 ➢ Increase in herd size
 ➢ Introduction of new blood lines
 ➢ Increase of genetic base
 ➢ Improvement of disease control

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the reasons culling dairy animals (5 points)

Note: **Satisfactory rating – 5 points   Unsatisfactory – below 5 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____   Date: _____

1._____

_____

_____

_____

_____

_____

_____

_____

Information sheet-3	Checking and monitoring selected dairy animals

When selecting dairy cattle to be used for certain mating in a breeding program a breeder usually rates a bull on the basis of milk production of the dam of the bull type and pedigree. In determining the overall value of the animal the importance attached to each trait depends on the breeders experience and what he is trying to accomplish.

> ➢ Provision of feed based on requirement
> ➢ Regular health checking
> ➢ Segregation ward for sick breed animals
> ➢ Ringing the bull
> ➢ Keeping the body condition

Self-Check -3	Written Test

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Checking and monitoring selected dairy animals (5 points)

Note: **Satisfactory rating – 5 points   Unsatisfactory – below 5 points**
You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____   Date: _____

1._____

_____

_____

_____

_____

_____

_____

_____

Reference

Commercial Goat Farming, Bhagat Raj Gautam, Panch pokhari Publishing House Robinson, J. J. 1982. Pregnancy.pg. 114-116 Inl. E. Coop (ed.) Sheep and Goat Production, vol. C1, Elsevier Scientific Pub. Co.: Amsterdam, Netherlands.

Hoaglund, C. M., V. M. Thomas, M. K. Petersen, and R. W. Kott. 1992. Effects of supplemental protein source and metabolizable energy intake on nutritional status in pregnant ewes. J AnimSci70:273.

Solaiman, S.G., Goat Science and Production, BlackWell Publication, 1st edition

Sikosana, J.L.N., &Senda, T.S., Goat Farming As a Business: a farmer's manual to successful goat production and marketing, Department of Agricultural Research and Extension, Metopes Research Station

Goat Production Handbook 2015, Mdukatshani, Heifer International-South Africa and KwaZulu-Natal Department of Agriculture and Rural Development