

Livestock Production Practices

Sheep Management

Introduction

Proper management of sheep involves the following practices:

1. Selection and Breeding

Selection means choosing and keeping individual animals with desirable qualities, while culling those with poor characteristics. Such desirable qualities are:

- (a) Age - young animals are selected.
- (b) Fertility and regularity in breeding.
- (c) Wool and mutton quality.
- (d) Fast growth and early maturity.
- (e) Conformity to ideal breed characters.
- (f) Health (freedom from/and ability to resist diseases.)
- (g) Good mothering ability.
- (h) Freedom from physical deformities.

The following points must be taken into consideration when breeding sheep.

- (a) Puberty (age) (sexual maturity) is 5-7 months, although ewes are slower than rams.
- (b) Age at mating should be 12 months.
- (c) Oestrus (heat) period and cycle. Ewes come on heat during specific seasons of the year, unlike other farm animals. This lasts for 20-40 hours (average 30) and recurs 14-21 days later if no insemination occurs. It is stimulated by the presence of a ram. It is important that ewes are mated to rams at the peak time when on heat.
- (d) Preparation for mating includes:

- (i) Examining and trimming long hooves of mating ewes.
- (ii) Removal or shearing of wool around the vulva and anus of ewes (crutching) and on the belly and prepuce of rams (tugging). This is to facilitate easy mating and to minimize chances of infection during mating.
- (iii) Raddling is marking of rams on the breast with coloured paste. This is to make it easy to detect and identify the actively mating rams.
- (e) Mating ratio is 1:35-50 ewes to a mature ram depending on age, level of nutrition, health, etc.
- (f) Flushing is the practice of providing extra nutritious feed to mating ewes 2-4 weeks before mating. This stimulates ovulation and increases chances of conception.

2. Management during Gestation

Gestation is the period between conception and lambing. It lasts for about 150 days (5 months). During this period, the following management practices should be carried out:

- (a) Vaccination against entero-toxaemia (pulpy kidney and lamb dysentery).
- (b) Deworming 2-3 weeks before lambing.
- (c) Steaming up i.e. extra-feeding 1-2 months before lambing. This serves three purposes.
 - To ensure rapid growth of the foetus.

- To enable the pregnant ewe to build up body reserves in preparation for milk-production.
- For the welfare of the mother.

3. Preparation for Lambing

- (a) Removing wool from around the flanks and udders to facilitate sucking by the lamb.
- (b) Separating the pregnant ewe from the rest of the flock.

Signs of approaching lambing include the following:

- (a) Nervousness and restlessness.
- (b) Front of hips are sunken.
- (c) Tendency to isolate herself from the rest.

During actual lambing, ewes should be closely observed but with as little disturbance as possible. They usually lamb with little or no difficulty. However, in case of any problems e.g. malpresentation, assistance may be necessary.

After lambing, the following should be carried out:

- (a) Treat the umbilical cord (navel) of lamb with iodine/disinfectant.
- (b) Take away orphaned, disowned or weak lambs to a warm place to avoid chilling and give colostrum from another source. Colostrum confers some immunity against diseases.
- (c) Provide the nursing ewes with plenty of fresh, cool water and bulk feed of laxative nature to avoid digestive upsets - but don't overfeed.
- (d) Frequently examine the udder of nursing ewes for possible mastitic infection and take necessary action.
- (e) Maintain nursing ewes on very high level of nutrition e.g. high quality pasture and/or concentrate supplementary feeds. This is because lambs feed entirely on the ram's milk 4-6 months.

4. Weaning

Weaning of lambs is closely tied up with their mothers' milk supply. This declines

quite considerably after 4-5 months. Lambs are, therefore, weaned at the end of the 5th month of lactation. They should then be put on fresh and lush pastures for good growth and to minimise worm infestation.

5. Routine Management

This includes the following:

- (a) *Age-grouping*: This is putting together lambs of about the same age for ease of feeding, avoiding bullying hence easing effectiveness of other practices e.g. drenching, vaccination, etc.
- (b) *Castration*: Is the practice of rendering the reproductive organs of the male lambs non-functional. Lambs that are not intended for breeding are castrated at the age of 3-4 weeks. It is done for the following reasons:
 - (i) It encourages fast growth and fattening.
 - (ii) Improves mutton quality.
 - (iii) It controls breeding i.e. it avoids random mating.

There are three methods of castrating lambs.

- (i) Elastrator and rubber-ring method.
 - (ii) Burdizzo method.
 - (iii) Open method.
- (c) *Docking*: This is the removal (cutting off) of tails during the first week after birth.

Docking is done in order to:

- (i) Encourage even distribution of body fat.
 - (ii) Facilitate easy mating later in adult life.
 - (iii) Minimise fouling of the wool with faeces.
 - (iv) Reduce incidences of blowfly infestation. Docking is best done using a sharp sterile knife or scalpel or by use of elastrator and rubber ring.
- (d) *Drenching/dosing*: This is the giving or administering of drugs orally to

- animals of all ages. The drugs administered are usually against internal parasites e.g. roundworms, tapeworms, liver, flukes, etc.
- (e) **Vaccination/immunisation:** is the administration of vaccines into the animal's body through injection. Its purpose is to confer immunity or resistance against entero-toxaemia and lamb dysentery.
 - (f) **Dipping/spraying:** This is the treatment of animals (of all ages) with acaricidal wash to kill external parasites e.g. ticks, fleas, lice, mites, etc.
 - (g) **Foot care:** This involves occasional trimming of over-grown hooves in both lambs and adult sheep. The main reason for foot-trimming is to reduce the chances of foot-rot and foot abscesses. It is done with either a sharp knife or hoof-trimmer or clipper.
 - (h) **Shearing:** Removal or cutting of wool from sheep. It is preferably done when the weather is dry to avoid fouling the wool with mud and other dirt. It should also be carried out on a clean dry floor.
 - (i) **Housing:** Sheep in the tropical and sub-tropical climates do not require elaborate housing structures. They are normally kept in fenced paddocks (to protect them against predators at night) under some shelter or shed during harsh weather conditions. Disowned or orphaned lambs should be housed in warm pens with dry beddings during the early stages of their lives.

Goat Management

1. Selection and Breeding

This is largely based on whether the goats are reared for meat or for milk.

2. Breeding Cycle

- (a) Puberty age is 6-8 months.
- (b) Best time of mating buck to doe is 12 months of age and mating ratio is

1:30-50, depending on level of husbandry.

- (c) Oestrus cycle is variable. Heat period lasts for 24-36 hours. Gestation period takes about 147 days.

3. Nutrition

Feeding requirements are generally and adequately met by browsing on young and green vegetation. However, to improve growth and level of milk production, it is advisable to supplement their feeding with feeds like napier grass, lucerne, sweet potato vines and concentrates e.g. maize bran and mineral supplements. It is essential to provide cool fresh water in plenty.

- **Flushing:** This is done 2-4 weeks before mating.
- **Steaming up:** This is done one month before kidding. Give $\frac{1}{2}$ kg. of concentrate, 4 kg. of green forage and 1 kg. of hay per day.
- **Feeding of milking goat:** Give a little amount of concentrates containing 80% carbohydrate, 19% protein and 10% salt in addition to high quality forage.

4. Housing

On high altitudes, warm but well-ventilated housing structures may be provided communally. Such structures should be protected from draughts. It should be free draining to avoid wet conditions. Floor space should be 2.5m² per adult goat.

5. Routine Management

- (a) **Foot care:** Goats reared under range conditions should occasionally have their hooves trimmed as they tend to be overgrown. This predispose the animals to diseases.
- (b) **Milking:** This is done twice a day. Care must be taken to make sure that goat's hairs do not fall into the milk and that the billy goat is far from the milking area. This is to avoid imparting an undesirable smell in milk.
- (c) **Disbudding:** Is done to prevent the growth of horns and hence avoid damage and injuries. This can be done

at 4-7 days of age using caustic stick (pencil or paste).

- (d) Disease and parasite control: Routine vaccination and drenching as well as dipping should be carried out to control diseases and parasites (both internal and external) respectively.

Pig Management

1. Selection of Breeding Stock

The following factors are considered in selecting breeding stock:

- Growth rate and weight gains.
- High fertility and regular breeding.
- Good health, i.e. freedom from diseases and physical deformities.
- Number of teats e.g. minimum of 12 in a gilt.
- Strong legs and well-developed hams.
- Good mothering ability.
- Adequately long body and strong top line (uniform curve).

2. Breeding

- Gilts reach puberty at 6-8 months.
- Best mating time is 12 months old when weighing 100-120kg.
- Sows are served (mated to boars) 3-4 days after their piglets are weaned.
- Oestrus period lasts 2-3 days and recurs 18-24 days if no conception occurs.

Signs of heat are:

- General restlessness and loss of appetite.
 - Swollen vulva.
 - Tendency to mount and accept to be mounted by others.
 - Stands still when pressure is applied on her back.
 - Discharge of a colourless, slimy mucus through the vulva.
- (e) Gestation period lasts for 115 days (3 months, 3 weeks and 3 days).
- Plenty of exercise required.
 - Feeding:
 - 1st month - 3-3.5 kg of sow- and weaner meal daily.

2nd month - 1.5-2.0kg. of the same meal plus bulk feed to aid digestion.

3rd month - "Steaming up" with 3-4 kg. sow- and weaner per week.

N.B. Over-feeding should be discouraged at this stage to avoid over-stocking of the udder with milk or over-fatness which leads to difficult birth.

3. Preparations before Farrowing

- Steaming up is done one month before farrowing.
- Deworming two weeks to farrowing.
- The sow is taken to the farrowing pen one week before farrowing.
- It is fed with light laxative diet and clean cool water.
- Nesting material is provided. Dry grass or straw is used.
- Washing the sow to remove dirt and eggs' worm.

4. Farrowing

This is a term used to refer to giving birth to piglets. Normally pigs farrow without any assistance.

5. Care after Farrowing

- Provide bran mash in warm water to stimulate milk secretion.
- Feed sow and weaner at 2-3kg for the sow plus 0.25kg of the same feed per piglet being suckled.
- Clip the sharp teeth of piglets to avoid injury to the mother's teats.

6. Nutrition in Pigs

Pigs are monogastric animals. They cannot digest fibrous feeds unless such feeds are cooked. They require a small amount of fibre to facilitate digestion (peristalsis.) Diets of pigs at different stages of growth consist of the following:

- Creep feed: This is introduced ten days after birth in form of pellets or mash. It is highly nutritious (containing upto 16%-18% protein).
- Sow-and-weaner meal: This is a ra-

tion of all breeding stock i.e. gilts, sows, boars and weaners. It contains upto 14% protein.

- (c) Finisher or fatterer meal: This meal contains 10%-12% protein and it is fed to fattening pigs before they reach market or slaughter body weight. It is also important to note that pigs cannot synthesis proteins and vitamins. They must, therefore, be supplied with vitamins (especially vitamins A and D) in their rations. They must also be provided with mineral supplements - particularly calcium, phosphorus, iron and copper.

7. Pig Housing

Pigs are very sensitive to climatic and weather changes and their housing needs special attention.

A pig house should be:

- (a) sited on a well-drained ground,
- (b) well-ventilated but free from draughts,
- (c) rain-proof or leak-proof,
- (d) with adequate floor-space to avoid overcrowding,
- (e) easy to clean.

It should provide separate farrowing, rearing and fattening pens.

A farrowing pen should provide for a creep area to:

- (i) protect piglets from being crushed or laid on by their mother,
- (ii) prevent the sow from eating the creep feed,
- (iii) provide warm beddings for the piglets to avoid chilling.

8. Raising Young Stock

- (a) At ten days old piglets are introduced to creep feed in the creep area of the farrowing house.
- (b) Piglets are given iron supplement by injection or as feed additive to guard against anaemia.
- (c) Routine management practices include:
 - (i) Castration by open method at three weeks old.
 - (ii) Vaccination against prevalent

diseases in an area.

- (iii) Identification by ear notching or tattooing at three weeks old.
- (iv) Regular deworming against parasites.
- (d) Weaning: Piglets are weaned (stopped from suckling and separated from their mothers) at eight weeks old. At this stage they weigh about 16-18 kg. live-weight.

After weaning, young pigs are called fatteners or finishers. They are given pig finisher feed until they attain 25-30 kg. for porkers or 60-65 kg. for baconers.

Rabbit Management

Selection and Breeding

Factors considered in selecting breeding stock

- (a) Good body size and shape.
- (b) Performance in terms of breeding efficiency and growth rates as shown by records.

Selected individuals can be bred (mated) at the age of 5-7 months. The signs that show that a doe is on heat and ready for mating are:

- (a) Restlessness.
- (b) Genitals become swollen or inflamed.
- (c) She rubs against the hutch walls and food containers.
- (d) She tries to contact another rabbit in the adjacent hutch.
- (e) She throws herself on her side.

Once these signs are observed the doe is put into the buck's hutch and not the other way round as this disturbs the psychology of the buck. The doe should be mated again 14 days after the first mating to heighten the chances of conception.

The gestation period in rabbits is about 30-32 days. During this period, she should be kept in her box, provided with soft and materials (e.g. soft dry straw) with which to make a nest.

A few days before kindling (giving birth)

she will go off food and tends to line her nest using fur pulled from the belly and breasts areas of her body.

It is important to maintain her on a high level of feeding and provide cool fresh water as little disturbance as possible.

Rabbits are litter-bearing animals. They give birth to 8-10 baby-rabbits per litter. With good management, a doe can have upto five litters per year, but it is reasonable to aim at four litters.

Weaning

Baby-rabbits are weaned about eight weeks after birth and the mother usually mates again with the buck one week before weaning. The mother is removed gently to another hutch leaving the litter in their birth nest.

The litters should be fed with soft, green, fresh feeds and some concentrates to start them off.

Feeding Rabbits

Rabbits are herbivores. They feed on a wide variety of food which include greens e.g. grass, sweet potato vines, napier grass, kales, lucerne, cowpeas, pigweed, ground-nuts vines, carrots, turnips, cassava tubers, etc. It is good management practice to supplement these with concentrates to provide them with high level carbohydrates and proteins.

During nursing time, the mothers should be kept on very high level of nutrition with concentrates and mineral supplements to meet the milk demand for her litter.

N.B. Do not feed irish potato or tomato vines to rabbits. These plants have an alkaloid-solanine which is highly poisonous to rabbits.

Housing

A rabbit house should be a simple structure depending on the climatic conditions of a particular place, but must have the following features:

- (a) Should be sited on well-drained ground.
- (b) Should be well protected from direct wind (draughts), rain and strong heat

of the sun.

- (c) Should be protected against predators e.g. thieves, dogs and cats.

A hutch should measure about 120cm x 60cm x 60cm with half of it being the feeding resting area. Grazing hutches are larger and may measure 2m long, 1m broad and 75 - 90cm high. Half of the floor area should be made of wire mesh netting to allow grazing while the rest should be of timber and solid walls for sleeping in.

Diseases and Pest Control

These are effectively controlled through:

- (a) Thorough cleanliness of hutches, feeding equipment and feed and water.
- (b) Disinfection of cages or boxes, water and feed troughs after thorough washing.
- (c) Isolation and treatment of sick rabbits as soon as they are noticed.

Donkey Management

A donkey is an extremely hardy animal used almost universally as a beast of burden. It provides an efficient and economical animal power source by carrying loads on its back and pulling carts.

Breeding

A female donkey is sexually mature and can be bred (mated) to a male at 3-4 years of age. Gestation period is about 362 days. Pregnant donkeys should be fed well, through good grazing, supplemented with hay and some concentrates. She should not be subjected to work for the last two months of pregnancy and until the foal is weaned (about three months later).

Feeding

Donkeys, are good foragers - do quite reasonably well on poor grazing. However, during dry conditions, they should be fed on greens e.g. cabbages, carrots, hay and maize trash after shelling, with plenty of water.

Working Conditions

It is important that donkeys are not overloaded and carts should be harnessed in

such a way that the weight is distributed over the neck, back, shoulders and chest instead of just on the neck alone. Ropes should not be used for harnessing unless there is some cushioning between the ropes and the animal's body. It's also important to use a cart with a hand-brake to assist in slowing down movement and also holding the cart stationary.

Foot Care

This is the most important aspect of donkey management. They should be regularly trimmed and cleaned (remove small stones accumulating in the frog) to avoid incidence of foot-injury, rot and foot abscesses. The most suitable tool for foot-trimming is a saw-toothed knife and hoof clipper.

Apart from being a health hazard, overgrown hooves lead to lameness and extreme pain and discomfort to the animals.

Housing

Donkeys are never housed. They are kept within fenced paddocks or enclosures with some shelters only at night. During the day, they are grazed freely or are tethered in some selected spots.

Camel Management

A camel is perhaps the hardiest of all domesticated animals. It is mainly used as a means of transport; carrying luggage and other loads in arid and semi-arid areas of Kenya. It has also been used for leisure riding in some of the recreational and tourist spots.

The animal is best adapted to dry areas because of its ability to travel for long distances with little or no water for considerable periods and to survive browsing on poor vegetation. However, one of its main requirements is good amount of water supply and mineral (salts) supplementation.

Breeding

The females become sexually mature and ready for breeding at the age of four to five years old, but the males attain this stage at

about six years. During the breeding season, the mating ratio should be one male to about 50-60 females, depending on the health, feeding level and physical conditions of the males.

After successful mating, the gestation period is about 13 months and the female gives birth to one young one at a time.

Routine Management

As these animals are very hardy, very little routine care is given to them except for occasional foot care due to much trekking and protection against the prevalent diseases and parasites in particular areas. No housing structures are required except for some simple enclosures to prevent the animals from straying. The young ones are entirely taken care of by their mothers; suckling until they are able to feed on their own. However, in areas with very harsh weather conditions, some shelter should be provided to protect the animals from the severity of weather.

Bee Management

Bees are insects which live in very well organised colonies. Each colony consists of:

- (a) Queens - fertile females that breed to ensure the continuity of the species.
- (b) Drones - fertile males that mate with the queen for reproduction process.
- (c) Workers - non-fertile or sterile females that maintain the colony.

Duties of Workers

- (a) They rear and nurse the brood (eggs, larvae and pupae), queen and the drone.
- (b) They collect nectar and make honey.
- (c) They make the honey combs.
- (d) They ventilate and protect the hive.

Importance of Bees

Bees collect nectar from flowering plants which they convert into honey - a nutritious product used by man as food. They are also useful in cross pollination of crops and other flowering plants.

Bees usually live in the wild but can be collected or induced into properly constructed beehives from which honey is harvested, processed and consumed as food. It is rich in sugar (carbohydrates), proteins and vitamins as well as other toning or medicinal effects. They produce wax which is used for making candles.

Routine Management

The siting of beehives should be done very carefully, taking into consideration, the following:

- (a) Nearness or accessibility to nectar or flower-producing vegetation. This will enable the bees to get the nectar easily.
- (b) Areas with shade. Bees are sensitive to the sun's heat and require some shade to protect them.
- (c) Safe distance from human residence and other livestock. Bees are stinging insects and can be a hazard to humans or other animals.
- (d) Nearness to a source of water for use in their nutrition.
- (e) A good distance from source of noise and other disturbances.
- (f) Safety from predators, e.g. honey-badgers, ants (safari ants), birds and other parasites e.g. wax moths.

Feeding

Normally bees are self-sufficient in providing their food from the honey they make. However, during the dry season, their feeding should be supplemented by providing a solution (syrup) of sugar in water or giving molasses. This should be placed strategically so that it is easily accessible to the bees.

Harvesting Honey

Factors considered

- (i) *Stage of ripening:* Honey must be harvested when it is fully mature.
- (ii) *Season of the year:* Harvested at the end of the rainy season.

Procedure

- (i) Blow light smoke through the hole.

This makes bees suck honey and become engorged and docile.

- (ii) Lower the hive to the ground.
- (iii) Open the hive to expose honey combs.
- (iv) Brush the bees off the honey combs.
- (v) Cut the honey combs, leaving a small margin on the bars and keep them in a container.

Precautions when Handling Bees

- (a) Avoid excessive smoking. This kills the brood and lowers quality of honey.
- (b) Use protective clothings to avoid sting.
- (c) Protect the hive from rain water.
- (d) Use clean equipment and containers to avoid contamination of honey.
- (e) Use recommended method of extracting honey.
- (f) Use recommended type of hive e.g. Kenya top bar hive.

Fish Farming

Introduction

The rearing or keeping of fish is called fish farming and is normally carried out in specially prepared ponds.

A good fish-pond should have the following features:

- (a) Site should be on a fairly level ground with a permanent supply or source of water.
- (b) The area should have clayey soil to avoid undue drainage of water.
- (c) Water must be free from any pollutants e.g. chemicals and other wastes.
- (d) Construction should provide for:
 - (i) an inlet for fresh supply of water,
 - (ii) a spill-way channel to take off overflow or excess water,
 - (iii) an outlet to drain off the water when it is necessary to replace pond water,
 - (iv) a fence to keep off predators and other intruders.

Feeding Fish

Fish naturally feed on worms, insects and

algae in the ponds. But these sources of food must be supplemented by throwing into the pond kitchen wastes, chopped vegetable materials e.g. cabbage-leaves, cereal brans, brewers' grains, etc.

Management Practices to ensure Maximum Harvest of Fish

- (a) Control of stocking rate i.e. have the recommended population of fish in a pond at any one time.
- (b) Harvest at the correct maturity stage. This is done by using the fishing net with correct mesh sizes to avoid catching the fingerlings (immature fish).
- (c) Avoid water pollution in the ponds which may poison fish.
- (d) Ensure adequate supply of food in the pond.
- (e) Water in the ponds should be kept in motion to facilitate aeration.
- (f) Maintain appropriate depth (level) of water.
- (g) Control predators and/or thieves.
- (h) Drain and refill ponds with fresh water as necessary.

Harvesting Fish

Harvesting or extracting fish from the fish-ponds for consumption can be done using two main methods:

- (a) *Hook-and-line method.* This is slow, injures small fish and is inefficient. It is only suitable for small-scale fishing.
- (b) *Use of fishing nets.* This is the most efficient method as long as a net with the correct mesh sizes is used.

Harvesting may be done 6-8 months after the introduction of fingerlings into the fish pond.

WORK TO DO

1. Name the factors that must be considered when selecting breeding stock (ewes and rams) of sheep.
2. What management practices should be carried out on sheep to prevent incidence of foot rot,
3. Write short notes on the following as they refer to goat management:
 - (a) Tethering
 - (b) Milking
 - (c) Disbudding
 - (d) Diseases and parasite control.
4. Explain the management practices carried out on sows during gestation.
5. Name three different types of feeds given to pigs during the different stages of their growth.
6. How would one recognise signs of heat in rabbits?
7. What practices in the management of donkeys should be done to improve their working efficiency?
8. Why are camels suited to working in arid and semi-arid areas?
9.
 - (a) What factors must be considered when siting a beehive on the farm?
 - (b) State factors that determine quality of honey.
10. What management practices are carried out to ensure maximum harvest of fish from a fish pond?