4.14 Trimming of hooves, castration, docking and dehorning

Twice a year hooves should be trimmed using a special pair of scissors (Photographs 22 and 23). Trimming takes place immediately after lambing and later at least two months before the next lambing. A permanent foot bath should be constructed (Figure 24) to treat the feet of the sheep.

22. Dehorning wire (left), hand shears (right) and hoof trimming scissors (middle)

24. Electricshearing machine
24. Electric shearing machine

Castration of males is carried out before the lambs are 6 weeks of age using the elastrators, the knife or the Burdizzo method. However, castration is not recommended under intensive conditions of fattening where slaughtering takes place a relatively short time before sexual maturity. Castration reduces the rate of gain and feed efficiency and the carcass contains more fat compared to intact male lambs. Moreover, in most countries of the Near East, slaughter animals with intact testicles are preferred.

Docking of the tail should take place during the first days of life (2-4) using a knife or elastrators. However, there is no definite advantage to be gained from this operation (a better quality of carcass of males is claimed) since losses of lambs may occur from shock or infection. If instruments for docking and castration are not used properly and strict sanitation is not observed, loss of weight and condition, and death may occur.

There is no need to dehorn lambs which are to be slaughtered. In rams kept for breeding it is better to leave the horns and cut them using a dehorning wire (Photograph 22) as the need arises.

23. Trimming of hooves
4.15 **Fleece and shearing**

In a sheep production system where the main objectives are the production of meat and milk the contribution of wool to the annual income is very small, wool being considered a by-product.

The wool yield and quality is affected by genetic and nutritional factors. Considerable breed differences in fleece characters exist mainly in the weight of the fleece and in its composition. Chronic undernutrition can reduce the growth of the wool and the thickness of the fibre. Feeding practices which do not restrict the birth weight or the early postnatal growth of lambs will help positively in the initiation and maturation of follicles. This development is necessary if maximum wool production is to be achieved. Increased feed intake results in higher quantity and quality of wool. The quality of wool is lower as a result of sudden and severe reduction in feed consumption brought about by drought, illness or lack of water. Adequate protein intake is also necessary. Infestation of sheep with ectoparasites reduces the quality, appearance and value of wool. Dipping or spraying against ectoparasites will, however, improve wool quality.

A sheep is usually shorn for the first time at about 10-15 months of age. Shearing takes place normally once a year in early spring.

Shearing of ewes and rams usually takes place after 15 March when temperatures begin to rise. Lambs should be sheared in June. Shearing can be done using either a special pair of hand shears (Photograph 7), or an electric shearing machine (Photographs 8 and 9). Combs and cutters or hand shears should be disinfected before use. A disinfectant should be applied to cuts occurring during shearing.

The wool is first cleaned by hand or dipping is scheduled a few days before shearing so that the wool is clean. Sheep are sheared by cutting the wool just above skin level using a pair of shears. Hand shears have been traditionally employed for this purpose, but the use of mechanically operated shears, particularly those powered by electricity, is becoming widespread. Machinery should be checked for damaged and worn parts and replacements, if necessary, ordered well before the scheduled shearing time. The shearing shed should be cleaned before shearing and skin cuts disinfected. Hand shears or electrical shears should also be disinfected. After shearing the animals should not be exposed to severe climatic conditions and should not be driven long distances. It is customary at shearing to separate the soiled wool and the floor sweepings from the main fleece which is preferably packed in hessian bags.
4.16 **Record keeping**

The overall efficiency of an intensive sheep operation depends on the improvement of the breeding efficiency of the flock (prolificacy, frequency of lambing, weaning percentage); proper nutrition of all animals (ewes, rams and lambs) and maintaining good health of the flock. The key to genetic improvement, balanced feeding and health control programmes is record keeping.

Productive traits such as prolificacy, milk production, growth rate, fleece weight, time and duration of the breeding season, adaptability and the results of selection or crossbreeding can best be evaluated when records are kept for each animal. The measurement of these characters demands the individual identification of all animals in the flock. The individual identification of the lambs requires the correct assignment of lambs to ewes at lambing time and the correct assignment of ewes to rams at mating time. Eartags of different types are available for individual identification. When ewe lambs or ram lambs have been selected to join the breeding flock larger eartags may be used. The simultaneous identification by tattooing the inside of the ear will help to keep the identification of the individual when eartags are lost.

Various books are kept on the farm for record keeping purposes:

- **Mating book.** The following data is recorded: ewe number, first, second, third service, date of service and sire.
- **Lambing book** should record: ewe number, lambing date, lamb number, sex of lambs, birth weight, sire, weaning weight, age at weaning and liveweight of lambs at 105 days.

All the progeny and production records are transferred to an individual sheep record card on which milk production, fat content of milk and lactation period are recorded.

- **Veterinary diary.** This is a diary in which all cases of death, disease and treatment of animals are recorded daily. Date of vaccination, dipping and veterinary diagnostic tests are also included. Specimens for laboratory diagnosis (rectal swabs, milk, blood, placenta and embryo) and the veterinary results are also recorded.

- **Mortality book.** All dead animals are recorded together with the results of the post-mortem examinations.

- **Records of feeding.** The rationing of each category of ewe (dry, lactating, pregnant, ewe lambs and fattening lambs) is recorded on special forms so that personnel responsible for the feeding of the animals is aware of any changes in the rations (quantity and type of roughage or of concentrate mixture).

- **Milk records.** The individual milk yield of ewes is recorded on special forms once monthly after weaning until the end of the lactation.

Records must be used effectively if they are to repay the trouble and expense of keeping them. They can help, for example, in the selection of replacements, the culling of unproductive animals and identification of health problems in the flock.

4.17 **Feeding of the ewe**

Feeding, in most intensive production systems, is responsible for over 50 percent of the total production costs. It constitutes therefore the most important factor governing the success of any intensive operation. Rations must be formulated which support optimum production, and are efficient and economical to feed. Energy intake is the most important factor in production. In practice the nutrient requirements are based on the performance of a group of animals. Feed allowance therefore must be adequate for all animals. It is also not possible to have one ration for each class of animal. Farmers may have one or two concentrate mixtures or supplements and offer different proportions of concentrates to roughage and/or roughage of varying quality, under different situations.
When ewes lamb once each year the time between weaning and mating should enable ewes to be brought up and maintained in good body condition for mating. More frequent lambing, or when ewes are milked by hand, may require the use of concentrate feeds or good quality roughage for such practices. Usually the onset of oestrus is delayed when ewes are lactating. Milking of first lambing ewes is stopped earlier than older ewes even at higher milk yields, because the onset of oestrus in this class of ewes is delayed. The condition of the ewe at mating has an important influence on the number of lambs born. There is a static effect of body size with heavier ewes producing more lambs and a smaller dynamic effect of improving body condition in ewes of similar weight.

**Flushing** is the practice of improving ewe body condition prior to mating by increasing the plane of nutrition. Flushing is usually accomplished by providing animals with fresh pasture, good quality hay or up to 0.25 kg concentrates per day. This feeding begins 2-3 weeks before breeding and continues through the mating season. Flushing is generally not profitable when supplemental feed is fed to ewes in normal body condition. Excessively fat ewes or those in very poor condition will perform at a reduced rate compared to ewes in normal body condition. The shepherd or the manager of the sheep flock usually is in a better position to judge the body condition of the ewes and decide whether flushing is necessary.

**Pregnancy** adds to the nutritional requirements of the ewes. After the ewes are mated and pregnancy is established it is sufficient to feed them for maintenance until the third month of pregnancy. Thereafter, and until lambing, the requirements increase because of the additional requirements of the lamb(s), udder growth and initiation of milk secretion. Pregnant ewes are fed separately from dry ewes. The plane of nutrition is gradually increased after the third month of pregnancy so that at six weeks before lambing the ewes are offered the full diet until lambing. It is advisable that changes of diet during this critical period are avoided. Grazing for 1-2 hours daily is necessary even if feed is not available in adequate quantities. Dry roughage should be offered first in the barn, before turning the ewes out for grazing. Roughage should always be offered first followed by the concentrate mixture. Usually diets of higher energy concentration (good quality roughage and concentrates) and of good palatability are fed.

Appetite declines at the latter stage of pregnancy and during this period the ewe may suffer a severe negative energy balance and pregnancy toxaemia may result. It is also advisable during the last stages of pregnancy for diets to be given similar to those used immediately after lambing, to avoid sudden changes of diet. The level of different nutrients in late pregnancy depends on the liveweight of the ewe, the number of foetuses and the type of feedstuffs used in the formulation of the diets.

Maintaining the required plane of nutrition in early lactation is important to increase total milk yield. There is no effect of the level of feeding during the last stages of pregnancy on the milk yield of the ewes unless the feed deficit is very large. Single bearing ewes only suffer from underfeeding when extreme weather conditions (drought) lead to a prolonged period of semi-starvation. Under good conditions undernutrition is likely to be evident in ewes carrying more than one lamb. Milk production can be severely affected by the level of feeding after lambing. The intake of ewes immediately after lambing is low and increases gradually. However, maximum feed intake does not occur until after peak milk yield and animals with high milk yields are in negative energy balance. For this reason diets high in energy concentrates are fed during this period. Better nutrition in early lactation will result in higher peak milk yield which is highly correlated with total lactation milk yield.

The diet of ewes should gradually increase from lambing to ten days post partum when controlled ad libitum feeding is practised. The increase in energy intake during this period and until weaning is mainly achieved by increasing the concentrate component of the diet. Roughage of good quality is offered (lucerne hay or other legume hay) but the proportion of concentrates to roughage should remain between 60:40 or 70:30 to avoid
digestive disturbances. This high level of feeding continues for about one week after weaning. Milk yield is reduced immediately after weaning. The feeding of ewes ten days after weaning to the end of lactation depends on the level of milk production of the flock and the fat content of milk, the liveweight of the ewes, the desired liveweight change, and the feedstuffs available. Feeding level is adjusted at 2 or 4 week intervals. The loss of liveweight occurs during the first 50 days of lactation and is more efficiently restored during the lactating period than during the dry period. The flock may be divided into two groups according to the level of production and are fed accordingly. For each kilogramme of milk produced, with fat ranging from 6-7 percent, about 700-750 g of concentrates are fed. In mid and late lactation when milk yield is low feedstuffs of lower quality may be used.

Dry ewes have low requirements for the different nutrients, and roughages of low quality supplemented with nitrogen, phosphorus and vitamin A are adequate. Ewes in poor condition during this period must be fed extra feed to restore good body condition until mating. The requirements depend on the liveweight of the ewe and its activity during grazing. The energy cost of walking is about 2.6 Joules/kg liveweight horizontal metre and 28 Joules/kg liveweight vertical metre.

Ewes are fed roughages and concentrates either in fenceline feeders or are hand fed in hay or grain bunks. Sheep diets are balanced first for energy. Other nutrients in deficit are then supplemented.

In intensive sheep operations feeding systems are based on the concept of the determination of the nutrient requirements of the animal and the nutritive value of feeds, and then on the formulation of a ration which meets the daily requirements of the animals. However, grazing can play an important economic role in meeting part of the nutrient requirements of the sheep particularly when natural vegetation, stubble or crop residues are available over certain periods of the year. It is important to schedule breeding and weaning so as to obtain an optimum combination of the animal's nutrient requirements and forage availability and quality.

Production response of grazing animals is related to both quality and availability of feed. Sheep grazing on good quality pasture may obtain adequate levels of most nutrients, but deficiencies may be expected when grazing is inadequate and of poor quality. Supplementary feeding of low-quality roughages, mainly with nitrogen, energy, phosphorus and vitamin A, is necessary. Generally the amount and kind of supplement varies. The operator must be able to assess the condition of grazing, the condition of the sheep and be able to determine what supplements can be supplied at least cost to ensure adequate production.

Feed grade urea contains 45 percent N or 281 percent crude protein (NX 6.25). The amount of protein equivalent in 13 kg of urea plus 87 kg of maize is the same as in 100 kg of soyabean meal. Urea can be efficiently utilized in rations containing high levels of easily fermentable carbohydrates (grains, molasses), when the degradability of protein in the rumen is low and the level of protein in the diet after supplementation is not higher than 12 percent crude protein (dry matter). It is not however efficiently utilized in moderate to high roughage diets. Good mixing of urea with the other ingredients is necessary to avoid possible toxic effects.

4.18 Water intake

Water is essential to successful sheep production and producers must plan for an adequate supply of clean water when designing their sheep operations. Water quality is of great importance to sheep. Sheep will not consume adequate amounts of stagnant, poor quality water or water that has an objectionable odour. If sheep are forced to drink poor quality water, production will be greatly reduced.

Water intake increases as dry matter intake increases. Water intake is about twice the weight of the air dry feed intake. Intake of excessive nitrogenous compounds results in considerable water loss in the elimination of the nitrogen-end products. Excessive mineral intake will significantly increase water consumption.
Sheep can tolerate water containing 1 percent salt over a relatively long period of time but cannot tolerate water containing 1.5 or 2.0 percent salt. Sheep apparently can use water containing 1.3 percent salt without ill effect., but water consumption increases up to 100 percent.

Sharp increases in water requirements can be expected when environmental temperatures rise above 21° C and water intake decreases with low environmental temperatures. The temperature of the water will have a great effect on water intake during periods of extreme heat or cold. Water located in the shade will be accepted more readily on extremely hot days. Water requirements and water intake of the ewe increase greatly during late gestation and during lactation. For greatest production during these periods ewes must have an unlimited water supply available from which they can drink frequently.

Adequate watering facilities to prevent crowding and to ensure that each animal receives ample water is essential.