Sheep and Goats Farming in India: A Study of Managerial Techniques

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Abstract:

Sheep and goats are reared in diverse environments, ranging from temperate to tropical climates. In India, over 70% of the small ruminant population is located in the arid and semi-arid zones of the western and southern peninsular regions. Every climatic zone demands specific design and construction standards for ideal livestock housing. The fundamental prerequisite for adequate shelter is that it should be easily adaptable for the animals' welfare while offering security against predators and theft. Furthermore, housing must buffer animals from extreme weather to minimize stress, thereby enabling optimal growth, health, and reproductive performance. Animals primarily require protection from extreme ambient temperatures, humidity, direct solar radiation, high winds, and rainfall. Additionally, appropriate housing and environment facilitate efficient breeding management and ensures organized feed and watering. Ultimately, they satisfy the biological needs of the animals while remaining cost-effective.

Keywords: Sheep, Goat, Housing, Management

Introduction:

In India, sheep and goat farming is a vital part of the rural economy, providing livelihoods to a significant portion of the population. The management of these animals involves various practices to ensure their health, productivity and sustainability. Research studies have shown that, global warming poses a greater threat to grazing and mixed farming livestock systems than to industrialized operations. This increased vulnerability stems from the adverse effects of decreased rainfall and frequent droughts on crop and pasture yields, as well as the direct impact of intense heat and solar radiation on the animals (Nardone et al., 2010). These altering climatic conditions necessitate appropriate housing solutions to enhance the productive capacity of small ruminants. However, the majority of farmers in the Indian context are marginal or resource-poor, relying on small flock sizes for their economic security (Nagpal et al., 2005). Consequently, housing for these animals tends to be simple rather than elaborate. While various traditional housing systems have evolved over time, it is crucial to re-evaluate them in the context of climate change and the evolving production methods adopted by progressive farmers.

Objective

To identify key management strategies followed in sheep and goats rearing.

Data and Methodology

The data is based on the secondary sources, such as books, journals, research projects, Reports of the Department of Animal Husbandry, Government of India and Andhra Pradesh and online sources.

Discussion

To select a site for Sheep and Goats Farm, due consideration should be given to the following points.

• Drainage: The area should be slightly sloped for effective drainage.

• Wind direction: Animal houses should be partially or totally protected from the direction of strong winds depending on the wind intensity of the area.

• Climatic factors: Such as temperature and rainfall.

Facilities for Sheep and Goats

Essential sheep and goat facilities differ according to the system of management and climatic conditions. In modern production systems, where large flocks of sheep or goats are raised and managed, adequate facilities to handle them are essential for efficient management. Some of these facilities are:

- Fences
- Handling pens
- Housing (house/barn – different kinds of buildings)
- Dipping vats/spraying area
- Isolation ward for sick animals
- Manure disposal pit (away from the house), and
- Equipment (feeding and watering troughs, etc.)

1. **Fences**

Fences are important not only to protect animals against predators or theft but also to isolate them from other animals. Fences may be constructed from locally available materials with considerations for cost and durability. Materials resistant against termites are most durable. Alternatively, wooden posts of treated eucalyptus may be used. Barbed wire is commonly used but can damage the skin when animals try to squeeze through an opening. Fences require regular supervision and maintenance. In some instances trees or bushes may be grown and fashioned into a live fence.

2. **Handling pens**

Sheep and goats need to be handled, either in groups or individually, for vaccination, treatment, mating, weighing, etc. Handling pens are useful in reducing injury and stress on both animals and workers. An ideal lay out for a handling pen includes a receiving pen, forcing pen, crush, sorting gate, foot bath, dip or spray race (long and narrow passage wide enough for only one sheep or goat), draining pens and a holding pen. In particular, the receiving pen should match the number of animals expected to be handled at one time. Under the current smallholder conditions of Ethiopia, one handling pen per village may serve the purpose as long as complications with disease transmissions are minimal.

3. Housing

The type of housing varies with the production system, the objective of raising sheep and goats and perhaps tradition. Housing can range from very simple structures made of a roof and partial walls to complex structures fitted with automatic feeders and water givers. Animals may be kept either in an area within the family home or in a separate animal shed. A separate house for sheep and goats with a raised wooden floor 30 cm above the ground level is observed in some areas (Konso). The animal shed may be located outside the homestead or it may be adjacent or attached to the family home.

Despite variation in types, the common purposes of housing are to:

- ❖ Protect animals from climatic stress (extreme heat, cold, rain, wind, etc.), thus creating an environment suitable for the animals' physiological state.
- ❖ Provide protection against loss prompted by predators and theft.
- ❖ Make management easier and save labour.

Design of sheep and goat housing:

Having an appropriate design for sheep and goat housing is crucial prior to construction. The design must include floor plan, walls, roofing and other additional facilities.

Floor plan

The space requirement of the animals to be housed influences the design of the floor. Table 1 presents the suggested requirements for different classes of sheep and goats. Space requirements vary depending on whether animals are kept in individual or group pens. The space requirement also varies with the size of the animals, i.e., larger animals require larger space than smaller ones.

Table-1: Requirement of space for sheep and goats housing.

	Space (m^2 /animal)			
Type of housing	**Breeding female**	**Breeding male**	**Young stock**	**Additional**
Permanent confinement (zero grazing)	1.2	2.0	0.8	Exercise yard, feed racks and watering trough
Night housing and day time grazing	0.8	1.5	0.5	

Floor design is particularly important in wet climatic conditions, where dung and urine on a damp floor make ideal conditions for the multiplication of disease-causing organisms. In particular, kids and lambs are

very susceptible to pneumonia and it is wise to avoid damp and poorly ventilated houses.

The floor should be sloped, porous or slatted for water drainage. A minimum floor slope of 5% is recommended; that is, for every 1 m there should be a fall of 5 cm. Houses with raised, slatted floors have a number of advantages including keeping the floor clean and dry. Ventilation is good and dung and urine drop through the floor, preventing build-up and reducing risk of disease spreading. The spaces between slats need to be big enough to allow manure to drop easily, but small enough to prevent feet from passing through. A spacing of 1.5 cm is optimal for adult sheep (slightly narrower for goats). For young lambs, 1.3 cm is sufficient.

In some cases, mobile wooden slats are placed on floors providing the advantage of easy cleaning. Where slatted floors cannot be constructed and concrete or earthen floors are used, it is important to control temperature of the floor and avoid muddiness. In such cases, bedding materials may be used. Straw or wood shavings or any material that can absorb moisture can be used for this purpose. Floors may be made up of stones or bricks. With all floors, ease of manure removal and disposal must be given attention.

Table 2: Recommended Floor Space Requirements for Sheep & Goats (Indian Conditions)

Age Group	Covered Space (sq. m.)	Open Space (sq. m.)
Up to 3 months	0.2-0.25	0.4-0.5
3 months – 6 months	0.5-0.75	1.0-1.5
6 months – 12 months	0.75-1.0	1.5-2.0
Adult Animal	1.5	3.0
Male, Pregnant or Lactating Ewe/Doe	1.5-2.0	3.0-4.0

Table 3: Feeding and Watering Space Requirement (BIS Standard):

Type of animal	Space per animal (cm)	Width of manger/water trough (cm)	Depth of manger/water trough (cm)	Height of inner wall of manger/water trough (cm)
Sheep & Goat	40-50	50	30	35
Kid/Lamb	30-35	50	20	25

Roof:

Roof is important as it protects animals against the sun and rain. The under-surface of the roof should remain cool and watertight. To ensure adequate ventilation, the height of the roof and the design should be considered. A high roof encourages air movement but is more likely to be damaged by strong winds.

In some cases a design with a chimney or roof vent would be useful to assist ventilation and remove ammonia that

is likely to accumulate. The materials are used for construction of a roof in different locations are: Iron sheet ,Grass/bushes, Wood, Stone/brick and Earth.The majority of houses have roofing made of grass/bushes.

Walls

In warm climates walls are partially open to allow movement of air through the house. In some cases, however, complete walling is needed to keep out predators.

Ventilation is important to remove heat, moisture and pollutants so that animals stay cool, dry and clean. Outer walls protect the animals from external influences while separation walls within the house prevent animals getting mixed up. Attention needs to be given to construction of pens within the house. Pens serve as a means of controlling animals and for management purposes, such as controlling breeding. Areas for lambing/kidding and isolation of sick animals should be included. It is always wise to keep in mind the possibility of expansion when building houses for sheep and goats. An appropriate flock development plan has to be made to anticipate future construction needs.

4. Additional facilities

Dipping vat

Mobile dip vats have replaced the conventional dip vats made of concrete. Several years of effort to introduce dipping vats into tropical countries have had limited success, the major problem being maintaining the vats. Mobile dip vats made of plastic are meant to overcome the shortcomings of conventional, permanently placed dip vats. The size of plastic, mobile dip vats could vary according to flock sizes.

Feeding troughs and hay racks

Feed troughs for concentrate and hay racks for forage feeding are required where these practices are conducted. The size of racks and troughs is determined by the body size of sheep and goats and by number of animals. Approximately 30 to 40 cm per animal space is the minimum. Movable troughs are usually 2 to 4 m long. Fodder should not be put on the ground for sheep and goats. A feeding rack can be made from wood or other locally available material such as bamboo. The rack should be high enough to prevent adult sheep and goats from putting their heads in it and from jumping into the rack. The bottom should be above normal head height.

It should be noted that the feeding behavior of goats is different from that of sheep and a barrier is needed to prevent animals from jumping into the trough. In a system called ‘tombstone or keyhole barrier’, each animal puts its head through an individual wooden barrier to eat without being able to push its body into the trough. Suggested dimensions for a concentrate trough are a width of 30 cm with a depth of 15 cm, with the trough standing on 15 cm legs.

In general, troughs placed directly on the ground are not desirable because mud or soil can get into the trough, and sheep and goats are tempted to put their feet in. When

only a limited amount of supplementary feed is given, it is essential that the trough is long enough to allow all animals to eat at once. Some troughs are fitted with a yoke to restrain animals during the short period of supplementary feeding. Such structures allow individual recording of the amount of concentrate consumed by each animal.

Watering trough

The need for watering troughs depends on the size of the flock. For small flocks, water tight tins, buckets or bowls can be adequate. Any type of watering trough used should be easy to clean.

Conclusion

In India, essential sheep and goats facilities differ according to the system of management and climatic conditions. In modern production systems, where large flocks of sheep or goats are raised and managed, facilities to handle sheep and goats are essential for efficient management. Housing and shelter are very important aspect of animal management and welfare. It directly hampers animal production and performance under different climatic conditions. Under Indian scenario sheep and goats contribute to the livelihood of small, landless and marginal farmers. Keeping in view their financial condition there is a need to devise certain shelter modifications which are cheap, easily available and fit suitably in a particular geographical condition. Certain significant shelters were devised by our scientists working at CIRG, CSWRI such as raised slatted floor system for coastal areas keeping in view of humid conditions there. Researches on modification of shelter are still going on and scientists are exploring more improvements in this area.

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