CHAPTER II
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REVIEW OF LITERATURE AND THEORETICAL FRAME

WORK

REVIEW OF LITERATURE

A review of literature related to the subject of the present study is useful for defining concepts, formulating methodology and choosing the tools of analysis of the present study.

The review of earlier studies is much use to the researcher to form the analysis in such a manner that the person who does the research may not repeat what has been done in the past. It gives a clear picture of what has to be done and what has to be avoided. The form and methods used by different authors divert the researcher to form a way for the analysis. It enables the researcher to minimize the difficulties while conducting a study.

Thus, the review of related literature is essential to make the study more effective. For the present study the review of literature has been classified under various heads such as the definitions and concepts, the characteristics, the management system, the economics, the employment pattern, problems, constraints, remedies and government programmes.
The Characteristics of Sheep and Goat Rearers

Francis D.K.Anim Points out that the ownership of livestock (cattle, Sheep and Goats) is an important social factor in the rural areas of the South Africa. Reference to the so called ‘traditional attitude’ of livestock owners abounds in state planning documents and attempts to limit stock ownership have always been intensely resisted by rural households. In particular, this refers to the use of livestock as a store of wealth and security rather than as a production resource to be sold. It is however not clear how strongly this attitude still applies in rural areas of South Africa.¹

According to Gangil and Y.P.S.Dabas the level of knowledge of livestock farmers was positively and significantly associated with age, education, land holding, herd size, production, consumption, sale, mass media exposure and extension worker’s contact while non-significant association was observed between level of knowledge and size of family of respondents. Their training needs showed positive and significant relationship with their herd size. The authors are of the

opinion that these variables should be considered at the time of organizing training programmes for livestock farmers. ²

According to the Report of Government of India, “The farming system is rainfed areas are quite diverse with a variety of crops and cropping systems, agro forestry and livestock production. Rearing of Sheep and Goats plays an important role in the economy of India in general and sustainable livelihood of poor people of rainfed agro-ecosystem in particular, because of inherent risk involved in the crop farming due to uncertainty of rainfall and occurrence of recurrent droughts. They are raised mainly for meat, milk, and skin and providing a flexible financial reserve in bad crop years for the rural people. In most of the dry lands and hill regions, livestock farming is a major player as more than 70 percent of family income is derived from livestock. Under watershed development programmes, rearing of Sheep and Goat is promoted as an income generating activity for landless and poor people, because increasing income of poor has an immediate and direct impact on poverty.” ³

Shelander Kumar and Khem Chand mentioned that goat is unique among other ruminants by virtue of its small size, sustenance on low grade, high cellulose and top feed which is usually left unutilized by the other livestock species and for converting such roughages into high quality protein food (milk and meat). Forty percent of rural population especially the economically and socially backward classes, maintain goats for assured income. Therefore, it provides security to the weaker section of rural population. The goat enterprise is primarily in the hands of weaker sections or rural population. This system of goat production is carried on by uneducated and poor, and there are very few regulated markets for livestock; hence major portion of profit is taken to be away by middlemen and marketers.4

Gopal Lal Jain denoted that rearing of sheep, goats and pig is almost exclusively in the hands of weaker sections of the rural community having small or no land holdings. Several groups of nomadic people are engaged in raising sheep. Introduction of exotic superior inheritance into the indigenous stock can bring about

significant improvement in production evening in the very first
generation. But along with genetic improvement in stock, modern
technology of husbandry concerning feeding, watering, housing,
health cover etc., must also be ensured.  

Management System of Sheep and Goat Rearing

Randy Sell explained that Good quality breeding stock is
necessary to maintain a profitable Angora goat herd. While
environment plays an important role in the quantity of mohair
produced, genetics is the single most important factor determining
quality. The price discounts for poor quality mohair are substantial.
There are limited supplies of breeding stock in Iowa, Michigan, and
Minnesota, and a much greater supply in the southwestern United
States.  

Prof. James Gunston denotes about the management of a ewe
flock and lambs is more a matter of experience and common sense
than anything else, and most men, and some women, are capable of
becoming good shepherds if they like sheep. Those who dislike sheep

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Newdelhi-110 026.
6 Randy Sell, Alternative Agriculture Series, Number 7, January 1993, Department of Economics,
North Dakota State University, http://www.ansi.okstate.edu
will never become good shepherds, even although they may perform
the duties quite well in order to get a living. Sheep on arable land in
winter need careful shepherds to avoid lameness and illness. Shelter
must be given through the winter months by attaching a cloth to
hurdles. They include good shepherding intelligent breeding,
adequate food and water, the control of disease, the right preparation
of sheep and lambs for the market to be catered for, the control of
costs of production, and the use of modern methods of growing grass
and fodder crops. 7

Sufficient foods of the right kinds and at the right times is,
therefore, the key to success in sheep – breeding. It is of no advantage
to buy sheep of the right type and pedigree and then to keep they
short of food. It is true that much of the pedigree goes in at the month.
The importance of providing shelter from cold winds and this is of
particular importance when the root and green crops are cold and wet.
Sheep that have a lot of such fodder and are also exposed to cold,
biting winds are unlikely to thrive, as they should. Mortality rates are
higher in lowland flocks than in hill flocks. This is no doubt due to

7 James Gunston, “Profit from Sheep”, 1961, Land Books Ltd., 178-202, Great Portland Street,
the different in the mode of life. The one gets too much food and not enough exercise, while the other gets enough food but has to go in search of it. The latter will be much leaner but with ample muscle to give the best condition for lambing.

Sastry. N.S.R. and C.K. Thomasin explained in their article that usually sheep does not require any special exercising, apart from letting out for grazing. Stall-fed Sheep and Goats should be allowed to roam about in open paddock once or twice a day. However, special care has to be taken of pregnant ewes and breeding rams.²

Lack of exercise during pregnancy is a contributing factor to lambing difficulties, including lambing paralysis; more so in case of stall-fed sheep confined to yards for long periods – as in rainy season. One way of making sheep move about is to keep water troughs away from feed managers and or feeding concentrates in the open area. Shearing is removing wool from quickly, completely, easily and with minimum discomfort to sheep and operator.

Schedule of Day-to-Day Operations on sheep (for mutton and wool) and Goat (meat) Farm are as follows:

**DAY-TO-DAY OPERATIONS ON SHEEP AND GOAT REARING**

<table>
<thead>
<tr>
<th>Approx. Time (hrs)</th>
<th>Farm Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>07.00</td>
<td>Training sheep/goats to grazing lands during summer months. This should be done at around 9.00 hrs. during winter months. Other farm operations can also be started at this hour. Observe and isolate sick sheep before letting them out. During breeding season, leave marked rams also with the ewe flock for grazing. Nursing mothers should be retained in pens along with their lambs.</td>
</tr>
<tr>
<td>08.00</td>
<td>Feeding half of daily concentrate ration to nursing ewes and fattening or market lambs. Arrange for watering sheep on grazing lands.</td>
</tr>
<tr>
<td>8.30</td>
<td>Feed chopped green or dry fodder to penned sheep, i.e., nursing ewes and market lambs. Cleaning of all sheds and disposal/conservation of manure</td>
</tr>
<tr>
<td>9.00-15.00</td>
<td>Special jobs of sheep farms should be carried out during this period. Shearing, vaccination of sheep, dehorning, identification of wearing lambs, weighing of market/fat lambs daily posting of data in sheep farm record; buying and selling of market lambs; initial grading and bailing of wool; marketing wool; training and fitting sheep for shows.</td>
</tr>
<tr>
<td>16.00</td>
<td>Turning sheep out of grazing fields, i.e. into pens. Feeding the other half of the daily concentrate ration to nursing ewes and fattening lambs.</td>
</tr>
</tbody>
</table>

S. Chandra⁹ expressed that, there are three kinds of goat keeping systems, finding mainly on the number of animal kept viz.

- **Substance**
- **Extensive and**
- **Intensive**

Those having small number of animals and managing to use (feed) whatever (crop/house hold resistance) can only become available are classified as substance category. Under extensive production systems, ruminants are allowed to graze and browser large

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areas of marginal nature, suitable for any agricultural use mostly due
to limitation rainfall/water. Under the intensive system of goat/sheep
husbandry, animals are not allowed to forage for themselves but are
confined. Under commercial farming, sheep flocks are main faired
very intensively, viz., with a nice housing, feeding and artificial
rearing technology with high fertility breeds. This is done on a limited
size of land holding with meat production as primarily activity for
commercial success.

Sheep breeds are generally classified as medium wool, long
wool and fine wool. Of the mediums wool breeds the Hampshire,
Shropshire, souttlown Suffolk oxford, and Dorsed all originated in
England. The Cheviot and Black Faced Highland originated in
Scotland. Theh panama Columbia and Targhee were developed in the
United stated and the corriedate in New Zealand. After world war two
such large breeds as the Sufflok and Hampshire increased in
popularity at the expense of the smaller breeds.

The long wool breeds including the Cotswold, Lincoln,
Leicester, Romney, were all developed in England and in addition to
mutton produce wool of unusually long fiber length that is suitable for urge and coarse fabrics. \(^{10}\)

Dr. N. Balaraman explained that domestic sheep present a huge variability regarding their size, shape nature of coat cover, nature of appendages like horns, tail and ears, productive traits and their adaptability to varying environmental conditions. Based on the tail type, four chief categories are recognized: long tailed, short tailed, fat tailed and fat rumped. Inter crossing among these types have resulted in further variabilities possessing varying degrees of these type characters. The long tailed sheep in Europe are wool type. These sheep are by and large docked on management considerations and upkeep of good quality wool production. Based on the type of hair coat, sheep are classified as woolly type which are found in the temperate and sub-tropical zones, producing fine or coarse wool, the hairy type, found in the tropics producing chiefly meat and the fur type which are found in the countries of Central Asia, producing coarse wool suitable for carpet making. All the same, sheep are

\(^{10}\) Ibid. p.165.
known for their multi-purpose utility providing meat, wool, fur, hairs, skins, milk and manure.\textsuperscript{11}

\textit{Economics of Sheep and Goat Rearing}

James Gunston explained that where money is scarce a gift of livestock is normally the best arrangement. Agreement by word of mouth is normally acceptable among farmers of a district, especially if several know the exact arrangement made. Among of capital available is mostly the limiting factor in deciding the kind of sheep, within the breed selected, with which to make a stat. The best sheep of the right breed are sure to be too expensive to buy in number for even a small flock. Even a small flock would take too large a sum of money for most beginners.\textsuperscript{12}

Nilakantha Rat mentioned that the shepherd can sell 6 male lambs and 1 ewe-lamb in the very first year, and 7 male lambs 3 ewe-lambs and 4 ewes in every one of the succeeding four years. At the prices of Rs.350 a male lamb, Rs.300 a ewe-lamb, and Rs.450 a ewe, the gross value of sale of animals essentially for meat will be Rs.2,400 in the first years and Rs.4,850 in every succeeding year.

\textsuperscript{11} Balaraman, N, Dr... “Housing and Management of Sheep”, Marian Publication, Madurai, 2002, p.60.
\textsuperscript{12} James Gunston, op, cit., p. 62.
While the income from goat keeping is not very large, it is quite clear it is a more economic enterprise in rural Maharashtra than keeping sheep. This is so despite the fact that the input cost of purchased fodder is much higher in the case of goats than sheep (almost twice a high) and no account has been taken of any income from the sale of goat’s dropping.

The greater profitability of goats than sheep under prevailing conditions in the state is mainly due to two reasons: (a) the number of kids born per goat on an average is greater than per sheep and (b) the value of output per goat from milk is higher than the value of wool and folding per sheep.  

A.K. Misra et.al. explained that small ruminants are essential component of rainfed farming systems in semi-arid India. Two models of sheep rearing, lamb fattening and breed multiplication were promoted as a source of income generation and self employment for the poor and landless households in clusters of two/three selected villages in Mahabubnagar and Anantapur districts of Andhra Pradesh and Tumkur district of Karnataka, India. Salaha Samithi facilitated

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implementation and monitoring of intervention. The core principle of the process was active, decision making involvement of people at all stages of technological development with technical input and facilitation by project staff. Exposure visits and dialogue are used as a guiding principle, involving open discussion among farmers, NGO workers and researchers.\textsuperscript{14}

It is noticed from the Department Report that, Growth in human population, increase in urbanisation, rising domestic incomes and changing lifestyles have led to increased demand for livestock products. This means the animal husbandry sector has a high potential for growth, which can provide the much-needed gainful employment for the rural poor and youth and can become the basis for the necessary invigoration of rural economy without which sustainable aggregate growth is not possible. This will also contribute too many other social spin offs like slowdown of rural-urban migration, the empowerment of women and protection of the environment. Livestock, in short, can contribute significantly to achieving the

\textsuperscript{14} Misra, A.K., “Improving the Livelihood of Landless and Marginal Farmers through Sheep Rearing in Rainfed Agro-eco System of India”, Live Stock Research for Rural Development, 2006. p.120.
Millennium Development Goals of eradicating extreme poverty and hunger. \textsuperscript{15}

S. Arunachalam, M. Thiagarajan and V Ramesh in their study revealed that the goat farming structure denoted the combination of goat kept by the livestock farmers on their farm. In Tamil Nadu different combination of goat farming structure is being noticed and its incomes are varied depends upon the combination, which induced. To find out the different goat farming structure existing in Tamil Nadu and its income per cattle unit, and the predominant goat farming structure the study was undertaken by them. They explained that how each one of the goat farming structure under the different agro climatic regions brings about varying levels of income, in accordance with the local condition taken for instance, the higher income of Rs.7609.64 was observed in high rainfall region followed by Rs.2769.19 in North-west region. The least income of Rs.259.89 was observed in South region. \textsuperscript{16}

According to Dr. Ambastha C.K. and V. Bakthavachalam the amount of Loan is usually the amount of loan is not fixed. It depends

\textsuperscript{15} Department Report, Ministry of Animal Husbandry, Government of India, \url{http://www.ingov.co.in}

on the genuine requirements of the farmer. However in the case of small, marginal farmers and landless agricultural labourers, each of them may be granted a term loan of Rs.5,000 for purchase of a unit of 20 sheep and one ram and construction of shed as well as working capital loan of Rs.1,000 for purchase of feed and fodder during initial period wherever necessary. The term and working capital loans can be even combined as one single term loan. The amount should be released directly to the seller of the livestock and feed and the shed construction cost should be released to the borrower in appropriate installments based on the progress of the work.  

Sathe, B.S. observed that Bank credit is available to small farmers for goat development. Unit size of 10+1 is common but larger units can also be considered. Capital investment includes purchase price of breeding goats, and cost of shed and equipment. The loan is given after deducting government subsidy or margin money given by the farmers. No mortgage of land is required up to a loan of Rs.10,000. Interest rate range from 11.5 percent to 20 percent. The loan is repaid in 5-6 years. Healthy animals of one year of age are preferred. Identification, vaccination and insurance of

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17 Ambastha C.K. and V. Bakthavachalam, op. cit p,338.
animals are insisted. On-going monitoring and evaluation studies on project done by banks. Efforts are needed to improve availability of good quality breeding stocks, grazing resources, better health control measures, marketing facilities and improvement of livestock markets and slaughter houses.\textsuperscript{18}

Pal U.K. and M.K. Agnihotri observed that the cross breeding experiments indicate that cross breeds of sannen with Beetal show an improvement of 215 per cent over the indigenous breed in milk production. Nearly half of the crossbred gene types generated have attained the target if 300 Kgs milk in a lactation period of 150 days, Goat is primarily a milk producer. One or two Goats will supply sufficient milk for a family through out the years and can be maintained is small quartes it would be uneconomical to keep a cow for large scale milk production. Both production and consumption of goat milk vary due to breed season, stage of lactation, plane of nutrition, health, and management of goats.\textsuperscript{19}

Dr. C.K. Ambastha, V. Bakthavachalam denotes that another source of income is lambs and culled animals, which are sold for

\textsuperscript{18} Sathe, B.S., "Credit Support to Small Farmers for Goat Farming in India". National Bank for Agricultural and Rural Development, Bombay, p.439.
meat. The male lambs are sold at the age of 9 to 10 months when they
weight about 18 to 20 Kgs. The female lambs are reared and added to
the main flock for breeding. Usually 20 to 25 per cent of non-
breeding or unhealthy adult ewes are culled and sold for meat every
year. The matured sheep of exotic breed weighs around 50 to 70 Kgs
whereas; the weight of indigenous breeds of sheep varies from 20 to
30 kgs (in peninsular and eastern regions) 30 to 40 Kgs (in northern
hilly, north western and central regions). In the rural areas, the
droppings of sheep is considered to be very good manure. Therefore,
the farmers practice folding and penning of sheep in cultivable land.
In return the sheep owner gets either cash or kind in the form of
grains at the predetermined.

They also mentioned about the marketing that proper marketing
of the products is essential to ensure sufficient return to the
shepherds. Efforts are now being made to organize marketing of the
sheep and sheep products through cooperative societies, Wool
Development Corporations, Animal Husbandry and Sheep
Development Departments in some states.²⁰

They also explained that the goats grow fast and attain 18 to 20 kgs. Weight at the age of 8 to 9 months. Body weight, however, differs from breed to breed. Good breed of goat attains 75 kgs. of live weight on maturity. On an average 10 to 11 kgs. of dressed meat is produced by indigenous goat at the age 8 to 9 months. The specialized milk goat produces on average 3 to 4 kgs. of milk per day. Goat milk contains fat ranging from 3.5 to 5.0 per cent.

Parthasarathy, P.B. mentioned that rearing of Sheep and Goat requires less capital and is more appropriate to our economy where capital is dear. On an average, each small ruminant provides a net return of about Rs.120. This also provides employment to family members which will improve their standard of living. Further, this type of enterprises will not demand much of special skills and can be managed easily by the personnel available in the rural areas and even if some skills are to be imparted that could be done without much cost. Small ruminants do not need expensive buildings to house them; flock can be multiplied easily since the foundation stock is relatively cheaper. Grazing is easy without much difficulty and Sheep and Goat dung is valuable manure particularly to marginal and small farmers. Large scale rearing of these small ruminants also provides inputs to
consumer industries such as leather, meat processing, blanket weaving etc. They also provide employment without adversely affecting the main occupation i.e. agriculture.\textsuperscript{21}

According to Vijay Paul Sharma\textsuperscript{22} in the case of milk production, reliable data on meat products are hardly available. There are large disparities in meat production estimates. According to some estimates total meat production in the country has increased from 850 thousand tones in 1981 to 4,694 thousand tones in 2000 while, as per estimates given by the Ministry of Food Processing Industries total meat production in the country in 2000 was 5,875 thousand tones and increased to nearly 6,072 thousand tones in 2002 (Government of India, 2003). Therefore, there is a need to improve the livestock statistics (both in terms of quality timeliness) in general and meat and meat products in particular

As per the Department Report, the budget estimate for 2004-05 was Rs.164.48 crores, which included a plan outlay of Rs.28.88 crores and non-plan outlay of Rs.135.60 crores while the revised estimate was Rs.152.22 crores, which included a plan expenditure of

\textsuperscript{21} Parthasarathy, P, "Crop Live-stock Economies in the Semi Arid Tropics", Patenerchu 502324, AP, India pp.68-70.

Rs.36.33 crores and non-plan expenditure of Rs.115.89 crores. The total outlay of funds for Animal Husbandry Department in the Budget 2005-06 is Rs.165.87 crores.  

A small ruminant has an important place in the livestock economy of India. Its share in livestock population was 16.12 per cent in 1951 which increased to 23.00 per cent in 1987. Goat population of India has also increased from 47.14 millions in 1951 to 116.67 millions in 1992. The overall rate increase between 1951 and 1992 was about 3.69 per annum.

*Employment Pattern of Sheep and Goat Rearing*

Animal Husbandry Department Report states that Livestock plays a vital role in rural life and economy even today. It provides productive employment especially self-employment and the most valuable supplementary income to the vast majority of rural households, majority of whom are small and marginal farmers and landless labourers.

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Most of the rural poor are engaged in non-crop farming activities. Livestock rearing has helped the rural poor through remunerative self-employment, as reflected from the reduction in percentage of the people below the poverty line from 52 to 37 per cent (1979-85).

Sharma B.R. and Ramesh Chand\textsuperscript{26} found that the causes of unemployment that Agriculture and allied activities provide employment to about 80 per cent of the total rural workforce. Within this sector, crop production continues to be the dominant activity, which is estimated to absorb 70 per cent of the total rural labour force. Due to the nature of crop production processes and heavy dependence on crop production activity, seasonal unemployment and underemployment are the serious problems faced by those dependent on agriculture sector for their livelihood.

Madhav Godbole in his book noted that, The Commission has estimated that with the measures the contribution of animal husbandry sector to the total state income which currently stands at 7.8 per cent and to the income from primary sector in the state which currently

stands at 32.5 per cent can be stepped up substantially aspect from providing avenues for gainful employment in the rural areas in general and drought-prone areas in particular.\textsuperscript{27}

Taneja V.K in his study explained that, Livestock provide employment to a large majority of rural poor. While a large number of small and marginal farmers and landless labourers particularly the women are getting part-time employment throughout the year, no reliable information about the employment potential of such an important sector economy is available. Around 73 per cent of rural households depends on livestock rearing or supplementary income to the small and land less farmers. The labour investment in livestock rearing in small land holding farmers compared with 27 per cent in crop farming. Women constituted 71 per cent of force in livestock farming and with 33 per cent in crop farming. Livestock and poultry sector of animals and processing (livestock products) offers a great potential for providing full and part employment, especially for women.\textsuperscript{28}

\textsuperscript{27} Madhav Godbole "Rural Employment Strategy Development", 1990, Himalaya publishing house, New Delhi, pp.174-176.
John Christy R. and M. Thirunavukarasu in their research work mentioned about the female participation-livestock rearing. In India about 80 per cent of the female population (1998) lives in the rural areas and 80 per cent rural women work in agriculture and allied activities. Having been highly, employed in livestock rearing activities in Indian social system. Most of the animal husbandry activities like bringing fodder from field, chaffing the fodder, preparing feed for animals, offering water to them, protecting them from ticks and lice, cleaning animals and sheds, preparation of dung cakes, milking ghee-making and marketing of produce are performed by women. 29

Tomar A.K.S. referred in his study about the Role of women and Children. The women in livestock farming are involved in operations like, feeding, breeding, management, health care and marketing of animals including green-fodder production. They also perform various income-generating activities like collecting cow dung, firewood, honey etc. The actual farm operations and participation of women vary with place, system of production and socio-economic

status. The rural women play a significant role in agriculture, animal husbandry and are on the forefront of food-production activities. This is in addition to their daily routine of managing the household.

Around 73 per cent of the rural households own one or more kinds of livestock, which contribute 15% - 20% of the household income. Concentration of livestock in general and small ruminants in particular is with poorer sections of the society who do not have enough money to spend on reasonable inputs to exploit potential of these species. The activities like feeding of animal care of new born and sick animals, milking and cleaning is generally done by women. In case of small ruminants the workload however is especially shared by men and women. Women in general, lack awareness about the advantage of artificial breeding, feeds and feeding and management procedures, which can increase animal productivity. 30

Thakur D.R., D.C.Thakur and D.S.Thakur in their study mentioned that human labour forms the major factor for raising Sheep and Goat (Sheep and Goats) flocks. It has been observed that sheep rearing in the State of Himachal Pradesh is totally manual. The

pattern of labour-use by the sampled shepherds is that the peak labour months were April, May, September and October during which about 50 labour units (days) were required, whereas in the remaining months 10-15 labour units were required each month. The total labour unit throughout the year came out to be 308 days and the total expenditure was found to be Rs. 4,620. The total human days employed on different sizes of flock ranged from 182 labour units (days) on small, 329 labour units for large categories. On the other hand, total expenditure on labour throughout the year varied from Rs. 2,730, Rs. 5,985 and Rs. 8,565 on small, medium and large flock size respectively.

It can be concluded from the above statement that there are four months in a year viz., April, May, September and October during which more units of human labour are required. Thus, sheep rising also exhibits the seasonal fluctuations in the employment pattern.  

Problems and Constraints of Sheep and Goat Rearing

S. Chandra noted that under the present day constrains in relation to the availability of grazing lands conversion of forest and pasture lands in to cultivated areas, etc., the scale of profitable sheep

production has become small. Subsidiary farming makes sheep dependent on crop production activity and makes intensive use of stubble and crop residues, returning dung and urine to the land as the bye product.  

James Gunston explained that disease can be introduced on to clean farms in many ways, including through purchased sheep or dry fodder, by gazing hired land elsewhere, by going among other flocks and handling sheep at sales, by dirty lorries for transport, by letting other sheep men and their dogs go among the home flock, through stray dogs or sheep coming on to the farm, and from the pollution of streams that run through or border the grazing ground. There are also other less obvious causes, one of them being uncooked swill and waste, where pigs and poultry are kept as well as sheep.

Acharya R.M. explained that Major problems in development have been non-availability of organized breeding facilities except to a limited extend in case of sheep shrinkage of natural grazing / browsing resources and non-availability of delivery system for prophylactic and treatment important diseases.

32 Chandra S., op. cit., p. 156.
33 James Gunston, op. cit., p. 79.
S. Chandra also denoted that the controversy over Sheep and Goat arises in relation to the damage that they are accused of inflicted as discriminate grazers. Indeed goat is a browser and not a grazer, that is, it would rather go up to eat than drawn to grass, through their herbivorous preference are practically non-excitant After enough sheep do graze purpose to the ground, leaving little scope for regeneration on many grass and legume species, which thus constitutes a potential endanger to or can erode the pastoral ecology. Sheep and Goat are regarded at the same time major causes of deforestation, soil erosion, etc.\textsuperscript{35}

Randhawa M. in his study points out about the Infertility Problems in Goat. Not much of information on breeding problems of goats in this country is available. However, goats are generally considered to be comparatively free from breeding troubles. Fertility in goats is occasionally impaired by errors in feeding and management; hormonal disorders systemic and genital diseases or congenital malformations as in other farm animals.\textsuperscript{36}

\textsuperscript{35} Chandra S., op.cit. pp 151,152.
James Gunseton mentioned that many of the shepherd’s troubles come from keeping the flocks under artificial conditions of folding and feeding, etc. These commercial flocks are quite unlike their wild ancestors, and some penalty must be expected for out methods of crossing, rearing, and feeding. One of the biggest causes of disease is the high concentration of sheep on the land. This encourages the rapid build-up of disease germs and to intestinal and other worms.

*Diseases:* The first lesson a beginner should learn is that a sheep’s worst enemy is another sheep. If that sheep comes from another district it is likely to be worse still, as it may introduce from outside a disease or pest not on the farm previously.

*Braxy:* Also known as Sheep Sickness, Redwater, and Bradshot. Occurs mostly on old hill pastures and other permanent grazings. Young sheep are very susceptible.

*Fluke or Liver Rot:* Caused by a small leaf-shaped organism, which enters the sheep’s digestive tract with the herbage and which then finds its way to the sheep’s liver.

*Gid (also known as Study):* Gid is caused by worm cyst in some part of the brain. The affected sheep become giddy and lose
control their limbs. They stagger about in a peculiar way, being unable to walk straight.

*Louping III (also known as Twitch, Trembles, and Jumps):* An infective paralytic disease of sheep transmitted to them by a Tick (*Ixodes ricinus*) which is present on many old hill pastures. It occurs mostly between March and June, and September and October, and all breeds of sheep are susceptible.

*Scrapie:* It is mostly found in sheep over two years old, though sometimes in younger animals. A great deal of research has been made into its causes, but little of practical value in controlling it has so far been discovered. Symptoms include deterioration of the fleece, the wool becoming loose and dead, a loss of body condition, and the animal becoming itchy and developing a kind of trotting gait.

*Foot-rot:* Where the feet get hard walking condition the horn of the hooves tends to keep dry and firm and to wear down naturally. This it cannot do on wet and soft land. Under ideal conditions for the organisms causing the rot, the disease will soon spread throughout the flock. Affected sheep go lame and, in bad cases are unable to walk or to support their weight when feeding and so kneel or lie down.
*Hoven (also known as Bloat):* This occurs in most flock where grazing or arable crops are lush and rich. Good shepherding is the best preventative, by not permitting sheep to gorge on such crops and grass especially when they are hungry or have traveled far.\(^{37}\)

Nandhi & TVS Rao explained the Goat pox and how it affects the Sheep and Goats and how it can be manage: *Goat Pox* – Capripox virus infection in Sheep and Goats significantly adds to the disease burden of the Sheep and Goats in the world. It causes significant economic losses in terms of reduced productivity and lowers the quality of wool and leather. It also hampers the international trade to a great extent.\(^{38}\)

Goat population in India is recorded to be 75.4 million which constitutes the largest population of goat in world. Goat is an important multipurpose domestic livestock species because of its contribution to the national economy through production of 280 million kgs chevron, 948 million kgs milk and 73 million kgs fresh skin. In India, chevron is the highly desired consumed meat. Besides, milk, leather and wool from goat contribute a fair proposition to the

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\(^{37}\) James Gunston, op.cit., pp.77-84.

national economy. Due to low maintenance costs, goat has been truly desired as the poor man’s cow. Goat population has always been exposed to certain health hazards, which are a source of serious setback in the breeding programme.

Lal Krishna mentioned in his research work that generally Domestic and wild ruminants are affected. Cattle, buffaloes and wild ruminants appear to be the main reservoir of infection. 39

Status of Bluetongue in India: India has a diversified population of about 204.6 million cattle, 84.2 million buffaloes, 50.8 million sheep, and 115.3 million goats. The first record of this disease was noticed in 1964 in Sheep and Goats in Maharashtra, which was only based on clinical symptoms but was successfully transmitted to other susceptible sheep. Serotypes were also identified and this was considered to the first confirmatory report of the disease. Afterwards several outbreaks were recorded in crossbred and pure bred sheep in different parts of the country and a large number of serotypes were confirmed.

The disease is seasonal and occurs during or after rainy season and needs high humidity to breed insect vector. It is thought

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that the exposure to solar irradiation appears to increase the severity of the diseases.

The mortality and morbidity varies with the size of insect population, immune status of host animal and strain of virus. When it occurs for the first time in a flock, the mortality rates may reach up to 50-80 per cent mortality 30-60 per cent.

The control of BT and prevention of spread depends upon sound and extensive understanding of the epizootology, sensitive and reliable diagnostic tests and an understanding of epizootology requires prospective studies on a regular and long term basis, rather than reliance on the investigations undertaken during or following outbreaks of clinical disease. These studies would help in detecting new serotypes. This approach is being used as an effective tool to study the current circulation of various serotypes in animals abroad.

_Government Programmes on Sheep and Goat Rearing_

Government programmes and policies and their shortcomings: Various livestock development programmes and policies were initiated by the state and Central Government in the country. The very first programme was the key village Scheme (KVS), which aimed at
promoting artificial insemination, health care, feeds and fodder availability, etc.

Vijay Paul Sharma states in his article that the programme of crossbreeding has not been uniformly successful across different categories of frames and regions. There is urgent need to have long-term appropriate breeding policy. Shortage of quality fodder and feeds is another major constraint for India's livestock sector growth. Time sensitive and government institutions are not able to deliver in time due to financial as well as bureaucratic constraints.

Diseases remedies: Under the macro management plan the Government of India proposed a scheme 'Livestock Health & Disease Control' by amalgamating the following components of the existing schemes during 10th plan.

1. Control of Animal Disease
2. Professional Efficiency development.
3. National Project on Rinderpest Eradication.
4. Foot & Mouth Disease Control Programme (New).

To promote domestic production, India adopted an import-substitution strategy and protected the sector from external markets through means such as quantitative restrictions on imports and
exports and canalization (restricting imports and exports through government or government designated agencies). Competition within the organized sector was regulated through licensing provisions. Since early 1990s, India embarked upon liberal policy framework, which got reinforced with the signing of Uruguay Round Agreement Agriculture (URAA) in 1994. This process of globalisation is expected to bring integration of domestic markets with the world economy and increasingly stringent food safety and quality standards. 40

Nilakantha Rath 41 explained in his study that there is little scope, under present circumstances for a systematic programme to promote sheep keeping in the rural areas of Maharashtra. An organized programme for sheep rearing will depend on proven biological improvement of sheep in the region. Unfortunately, the entire thrust of research in the state during the last one and half centuries (the first efforts were made in the first half of the last century) has been in developing breeds or crossbreeds, which will yields better and greater quantities of wool. This entire work has

40 Vijay Paul Sharma, op.cit., pp.552, 548.
41 Nilakantha Rath, op.cit., pp.68,72.
come too little so far. The Deccani sheep “is neither woolly breed nor mutton breed”.

The Indo-Swiss Goat (ISG) development and fodder production programme in Rajasthan has succeeded in selecting the better performing does and their buck kids of the sirohi breed of goats that have a very high milk yielding performance, but had until recently been written off as a mediocre breed. In the special programme for the poor under IRDP and such other schemes, goats of this type in number varying from one to three can be given as loan to a household with the repayment period spread over five years. With a moratorium of six months to a year, depending upon the state of the goat whether pregnant or not. It is not necessary to insist on a unit of 10 goats, or a repayment period of less than five years.

Ambastha C.K., V. Bakthavachalam in their book state that All India Co-coordinated Research Project is being implemented in various parts of the country, National Goat Research Institute, Makhdoom (U.P.) is some of the examples to it. For improving the quality of the Indian breeds of goat the buck or semen from renowned dairy goat breeds, such as Sannen or Alpine for improving milk yield, Anglo Nubian for meat as well as Angora, Chegu, Chiangthang or
Pondoskoyga for improving fibre quality and quantity production are being used in All India Co-coordinated Research Project on Goats for milk, meat and fibre.  

Ponnusamy, K. Ambasankar and N.Thenmathi explained that, Non-availability of shepherds, poor nutrition, poor health management and local breeds are the critical reasons for low productivity. Technological intervention s like facilitation for rearing Sheep and Goat through pasture development, training and management practices on fodder trees and pasture grass cultivation and training and verification trial on control of diseases and health management are planned for implementation.

Global Phenomena on Sheep and Goat Rearing

Acharya R.M points out that in 1984 China is at the top with 82 million goats. The increase in goat population in China is 32.0 per cent larger than 16.3 per cent in the world and much larger than 13.6 per cent in India.

Randhawa M.S denotes that all varieties of domestic sheep have descended from three species of Ovis found wild in the

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mountainous regions of Asia and Europe. The earliest to be
domesticated in southwest Asia was Ovis orioentalis uignei, found
wild from Tibet to Elburz Mountains. Descendants of Ovis musimon,
the ouuflon are found in Sicily, Cousica, Sardinia, Cyprus, Anatolis
and northern Iran. Ovis Ammon the argali is found in the
mountainous regions of soviet central Asia. The argali is a very large
sheep with a shoulder height of up to 120 cm. Ann occurs father east
and northeast than uriali, raging from Bokhara through the Altai
Mountains and Tibet to northern China.45

National Phenomena on Sheep and Goat Rearing

The following are the studies pertaining to the national level
Sheep and Goat rearing.

Sastry N.S.R. and C.K.Thomas mentioned in their study that
Livestock, especially cattle are the backbone of Indian agriculture as
India is an agricultural country. Bullocks, camels and equines provide
the country with the necessary power for effective village and
transport of commodities from place to place; buffaloes and cows
provide milk for India’s millions; while Sheep and Goats provide
wool, hair and mutton for large sections of populations. Pigs

45 Randhawa M.S. “A History of Agriculture in India Vol. - I”, 1980, Indian Council of
Agricultural Research, New Delhi – 110 001, p.120.
constitute rather the only source of animal protein for the poor and downtrodden. In fact, India’s national economy and well-being is so closely knit with her livestock, that it is of greater importance for India than for most other countries in the world to implement proper managemental practices of livestock, protect them against diseases and parasites, and provide adequate hygiene and housing. Livestock rearing has helping the rural poor through remunerative self-employment, as reflected from the reduction in percentage of the people below the poverty line from 51 to 37 percent (1979-85).

Indian ranks first in goat population and sixth in sheep population, but productivity from livestock is very low. To improve the livestock productivity major emphasis has been on the introduction of exotic high-producing breeds of animals, machinery and manpower training. Livestock development strategy and policies during the last 3 decades were designed mainly to maximize animal production.

During pre-independence era main emphasis was given to improve sheep through selection in plains and though cross breeding
in the temperate Himalayan region and parts of Deccan plateau. For the implementation, rams were produced and distributed. 

After Independence the research scheme entitled “Improvement of sheep and wool on regional becyis” continued functioning and further strength ended during 1952-60.

Nilakantha Rath explained that the growth rates were not uniform from one livestock census to the other during the 36 years, 1951-87. After significant and increasing growth rates during the fifties, the total number of cattle in the state showed no increase but a small net decline during the 17 years 1961 to 1978. This was true of all types of cattle, including working bullocks, except cows in milk, which recorded increasing population during the period. It is here that the small ruminants particularly the goats come into the picture. Unlike the Deccani sheep, which is a very poor milk yielder the goats in Maharashtra yield a little milk for the household, over and above what their kids consume.

This is an important reason, why the poor households in rural Maharashtra maintain a goat or two. Though the milk supply is not the most important source of income of the household from the goats.

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Unlike a cow, a few goats can be maintained more easily and can be disposed off at no great loss in years of drought. The advantage of goats is gully reflected in the growth rate of the number of goats in the state, which is the highest, much higher than not only of cattle but also of sheep. In 1951 there were 1.9 times as many goats as sheep in the state. By 1987 there were 3.2 times as many goats as sheep.

The goat keeping households in the state on the other hand are largely the poorer households, either the landless or the marginal and small cultivators. The Integrated livestock Survey in 1990-91 shows that nearly 23 per cent of the goat keeping households in the state were landless or with less than 0.4 ha (i.e., one acre) of cultivated land. More than 69 per cent of the households had between 0.4 ha and 4 ha (lacre and 10 acres) of cultivated land. These may be called the marginal and small farmers. Less than 8 per cent of the goat keeping households hand more than 4 ha (i.e., 10 acres) of cultivated land.

The 1976-77 special survey in Maharashtra reported that larger farmers did not keep goats because it was considered a poor man's enterprise and not as remunerative as keeping dairy cattle. Thus it is clear that the goat is the animal of the poor households in Maharashtra. The adult women in such a household look after the
goat, including the sale of kids as well as of the little surplus milk. Unlike the sheep the goat is the poor man’s or rather the poor woman’s dairy animal in rural Maharashtra.

He also mentioned in his study that both Sheep and Goats in the state depend upon grazing in the village common or other public lands. The major source of income in the case of both is the selling of the young ones, the lamb or the kid besides the culled adults, for meat. And yet we find such a wide difference between the Sheep and Goat farming in the state: while more than a quarter of the rural households keep goats, hardly one per cent has sheep and the growth rate in the number of goats is two and a half times the growth rate in the number of sheep. 47

Vijay Paul Sharma mentioned the importance of livestock sub-sector can be gauged from the contribution it makes to the national economy. Livestock sector accounted for 25.5 per cent of agricultural GDP, and about 5.6 per cent of total GDP in 2001-02. The share of livestock in the gross value of agricultural outputs (at 1993-94 prices) has increased from 18.6 per cent in 1971-72 to 35.5 per cent in 2001-02 (CSO, 2003). The dairy sector contributes the largest share in

agricultural GDP. The large contribution that livestock sector makes to the national economy is a reflection of multiple roles that livestock plays in the farming systems in the country.  

As per the Agro-economic Research report the main product of goat is meat. The share of goat meat in total meat production in West Bengal in 1992-93 was 41.00 per cent. Demand for goat meat in State is high. For this reason, in every year, appreciable numbers of goats and sheep are brought regularly in West Bengal from the other States. Goat rearing is an activity allied to agriculture. That is why goat-rearing households are found to have involved in different agriculture allied occupations.

Based on present trend of growth in 1995 meat production may achieve a target of 0.42 million tonnes. If this trend continues uninterrupted, then by 2024 AD, meat production would go upto 0.586 million tonnes. This increase in meat production by 2020 AD is merely because of extrapolated population rise of goats.

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Balaraman N Sikkim is well recognized for its potential for intensive livestock production. The state has a wide altitude range of 300 m to 5,000 m. The settled farming households are mostly confined up to an altitude level of about 1,800 m. The high altitudes of Sikkim, that is, the altitude ranges beyond 1,800 m are of particular interest because of the extreme agro-climatic situation prevalent there as well as the tribal native populations which inhabit these areas. Sheep are reared mostly by the specific traditional shepherded tribes in Sikkim, namely, Gurungs in western Sikkim and Lachen and Lachung tribes in the north.

Western Sikkim seems to offers conducive climate and better grazing conditions to sheep rearing. The Tibetan breeds of sheep requires special mention as they are confined to high altitudes in the northern Sikkim and produces fine wool and have a good carcass weight. The two locally recognized breeds of sheep are the banpala (forest grazing sheep) and the ‘gharpla’ (home reared sheep). Home reared sheep are smaller in size and are grow in much lower altitudes
that are, even below 1,500m while the forest grazed sheep are larger in size and are migratory.\textsuperscript{50}

**Theoretical Framework for the Study**

Sheep and Goat rearing occupies an important place among the livestock species firstly because it is one of the oldest domesticated ruminant and secondly because it is endowed with almost unique adaptability to varying environmental conditions. Goat has the widest ecological range of all livestock species ranging from extremes of tropical rain forests to dry desert. Being very prolific breeder and cheaply reared, goat’s value, as meat animal is also most superior to other livestock species of this tract. Its flesh is always preferred to sheep’s and fetches better price. There is no religious dogma against the sale of uneconomic goats. This is not the case with cow and its progeny due to ban on cow slaughter.

The chief differences between the goat and the sheep are in their ecological requirements and in the raw materials they supply. The sheep is essentially a grass-feeder preferring (Where available) the protection of open woods. The goat is a browser preferring foliage of shrubs to grass. These goats are well adapted to life beyond the tree

\textsuperscript{50} Balaraman N., “Feeding and management of livestock in Sikkim”, Indian Farming, Jan 1982, Vol.XXXI, No.10, pp.31-34.
lie both in high mountains and in arid zones, where small shrubs are available in abundance. The goat is probably content with even sparse food than the oriental breeds of sheep.

In particular, it eats aromatic herbs despised by other ruminants. Hence it can penetrate further into the desert. Apart from the supply of meat, both species provide, the sheep scores in respect of wool and fat and in the quality of its meat whilst the goat furnishes more milk. It is possible that the use of milk and its derivatives was first established with the goat, before the cattle were domesticated,

In the course of time, however the sheep got the upper hand over the goat, especially in temperate countries, presumably because its meat is tastier and less tough and because it produces both fat and wool. Moreover, where cattle are kept without difficulty, the need of keeping goats as milch animals does not arise. Yet, where pasture is scarce where thorny scrub dominates over grass, where it is difficult on account of lack of good food and water to keep cattle. The goat become an important economic factor, for it is able to live under conditions which do no suit sheep and it provides milk in quantities which are large compared with the size of the animal.
During the history of animal’s husbandry, many secondary products have arisen in an attempt to increase carcass utilization and reduce waste. For example, animal offal and non-edible parts may be transformed into products such as pet food and fertilizer. In the past, such waste products were sometimes also fed to livestock as well. However, intra-species recycling poses a disease risk, threatening animal and even human health (Sheep and Goat spongiform encephalopathy (BSE), scrapie and prion). Due primarily to BSE (mad cow disease), feeding animal scraps to animals has been banned in many countries, at least in regards to ruminants.

Vijay Paul Sharma\textsuperscript{51} states that, According to the Central Statistical Organisation (CSO) estimates, the gross value of output from livestock sector (at 1993-94 price) has increased from Rs. 20.856 crores in 1950-51 to Rs. 88.331 crores in 2001-02 (CSO, 2003).

Kondaiah N stated that considerable quantity is also produced from unauthorized slaughter places. Most of the slaughterhouses are 50.80 years old, maintained under unsatisfactory hygiene conditions. Improvement and modernization of slaughterhouses is essential for

\textsuperscript{51} Vijay Paul Sharma, op.cit, p.514.
producing hygiene meat and organizing meat industry in a better way.  

Chandhuri S.K. revealed that Wool Industry: Indian garments have now reached all the leading markets in Europe, North America, Australia and Japan. India ranked as the third largest exporter of chiefly wool knitwear and the sixth larger exporter of wool worsted yarn during 1997-98, season. India is also among the top 20 countries in the export of chiefly wool worsted wove fabrics. The Indian industry has enough resources to produce quality garments and is capable of competing neck to neck with the international products. Wool of Indian sheep is famous world over for carpet weaving. New Zealand is the only country other than India, which produces fibers fit for carpet weaving. Thus, India produces the world’s best quality carpet wool, which has established international market.

Wool Textile Industry (Marketing) the globalisation of India economy has increased the opportunities for India wool textile industry in the world market. With the western countries looking for low cost processing centers, India which is already hovering at the

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No.7, pp.31-3
seventh position in global wool consumption is set to become a world leader in wool textile trade.

The main advantages that India enjoys are

- the lower Labour costs, and
- the right business environment it offers.

Indian has established its position in the world clothing market. From a country traditionally known to be manufacturing only low-cost products, its now increasingly being looked upon as a major supply of high quality fashion garments.  

Satya Sundaram I. explained that Indian Leather Industry is not in a happy position. The Indian Leather industry has hit a plateau. If it does not look for new export avenues it may slip from the third position it now occupies among the leather exporting countries of the world. The quality restrictions imposed by the developed countries and environmentalists, are creating problems. A laze number of tanneries- the very backbone of the industry-have downed their shutters. On the exports front, there is growing competition from Southeast Asian countries and China.  

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Problems Associated With Rearing of Sheep and Goat

Studies undertaken in our country on rearing of Sheep and Goat have brought out various problems. The first problem is with regard to a viable size of the flock (Khot, 1957, Singh and More 1976, Balakrishna et.al., 1995). According to these studies the economically viable unit ranges from a flock of 21 and 60 sheep. Even now there is no final word about the economically viable unit. The viable unit is not a static concept but changes depending upon the scale for operation and costs and return and profitability. There is need to apply management tool i.e. break even analysis to judge the economic viability and profitability. Further the economic viability also depends upon the management practices adopted and the resource endowment of the entrepreneurs.

The second problem is with regard to housing. Most of the sheep rearers are poor and as such cannot afford to have separate shed or shelter for small ruminants. In our country most of the flocks are generally penned in open fields away from the house and no shelter is provided (Dwivedi and Jain, 1977).

The mortality rate is also high in our country. It varied from 17 to 47 percent (Basanthakumar and Kalia, 1979). In a recent
conducted in Andhra Pradesh the mortality rate ranged from 10 to 14 percent. This mortality results in economic loss to the farmers (Rao, 2001).

Illiteracy and social status of sheep and goat rearers also pose problem in getting good returns through scientific management. The farmers who took up small ruminants are mostly illiterate. The illiteracy rate varied from 57 to 74 percent on small farms. It is also observed that about 86 percent of farmers belonged to socially backward classes on small and marginal farms (Rao, 1989). Thus, sheep rearing in the country primarily rests in the hands of poor landless small and marginal farmers.

Yet another problem is with regard to feeding. In our country small ruminants are maintained on grazing and browsing alone. They pick up whatever is available on the ground of from trees and bushes in the common grazing areas (Pande, 1990). With the increasing of small ruminant population and declining of grazing land, the density per unit area is also on the increase. (Bhattacharya and Khan, 1988).