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Development Perspective of Goat Rearing in India: Status, Issues and Strategies

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INTRODUCTION

Goats are a very important species of livestock in India, mainly on account of their short generation intervals, higher rates of prolificacy and the ease with which the goats and their products can be marketed. The goats are especially useful in the semi-arid and arid zones, where they can sustain themselves on sparse vegetation and extreme climatic conditions where other species of animals may perish. Goats produce a variety of products, mainly meat and skins, and to some extent, milk, fleece and manure. In addition to arid and semi-arid regions, goats are a major occupation for people living in the hilly regions where, in addition to good meat producing breeds, breeds capable of producing fine high quality fibre (pashmina) are found. Goats are one of the main meat animals in India contributing more than 10 per cent of the total meat production. Goat meat (chevon) is one of the most expensive meats in India and is acceptable to people of all castes, creed and religions. Almost 95 per cent of the goat meat produced in the country is consumed locally and the per capita availability is far below its requirement. However, development of goat enterprise faces several constraints resulting in lower productivity. There is a wide gap between actual and potential productivity of goats (Kumar, 2001). There is, therefore, considerable potential for developing goat production not only for meat for internal consumption and for export, but also for the quality leather production in which India ranks high among the goatskin exporting countries.

Goats in India are largely identified with the poorest of the poor. Goats possess wide range of adaptability and higher disease resistance. It can be profitably raised with low investment under semi- intensive as well as the most extensive forms, *i.e.,* nomadic form of management. This sector further assumes critical importance in rain-fed areas, high altitudes as well as in wasteland and fragile zones having low agricultural productivity. In the backdrop of importance mentioned above this article examines the population growth rate of goats and their economic contribution; density and distribution of goats and factors affecting it; desertification issue, and options and strength for development of goat sector.

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METHODOLOGY

This paper uses secondary as well as primary data on goat production. Secondary information on goats, other livestock species, determinants of goat density and their economic contribution at national level were collected from various livestock census reports, CMIE reports on Indian agriculture, FAO production year book and other published literature. The primary data on costs and returns from goat rearing were collected from 34 goat keeping households of Farah and Sadabad block of Mathura district of Uttar Pradesh for the year 1996-97.

Compound growth rates were computed by using the function of exponential form. In order to understand the variation in density of goats among different states, a linear regression model was fitted with all potentially possible factors that may affect density of goats. The following explanatory variables were considered in the model: Percentage of people below poverty line in the state; Average size of holding (ha.); Percentage of pasture, cultivable wasteland and fallow land to the total; Percent net irrigated area, and Bovine density. The cost categories for livestock enterprises namely, cost A, B and C (Vyas, 1971) were used for estimating cost of goat rearing. Among these cost categories; Cost A includes all cash and kind expanses actually incurred, depreciation and interest on working capital; Cost B includes cost A and interest on fixed capital; and Cost C includes cost B and imputed value of family labour.

GROWTH AND DISTRIBUTION

Goat breeds with varying capacities to yield milk, meat, and fiber have been developed in India primarily through natural selection. Goats of temperate Himalayan region (where rainfall is low) grow fiber of good quality and possess the finest quality undercoat (Pashmina). All the milch breeds are found in north and northwest India. In south and west India, dual-purpose goats (milk and meat) are found. The highly prolific meat breeds are found in east India. There are about 20 well-defined breeds of goat apart from the nondescript regional goats (Sastry, 1995). These breeds are widely distributed among different agro-climatic zones of the country and each breed has an individual characteristic or specialty and that quality should be exploited for local advantage (Table 1).

The goat population in India during last two decades has increased at a very fast rate among all major livestock species, in spite of the fact that nearly 41 per cent of goats are slaughtered annually with about 15.5 per cent natural death in the rural areas. In 1951 the population of goat was 47.2 million constituting 16.12 per cent of the total livestock population, which increased to 115.28 million in 1992 and constituted 24.52 per cent of the total livestock (Table 2). This change in livestock composition was because of much higher growth rate in the number of goats as compared to cattle, buffalo and sheep. The current goat population is estimated to be around 123.50 million (FAO, 2002), it has been estimated that goat population may

TABLE 1. DISTRIBUTION OF GOAT BREEDS ACROSS AGRO-CLIMATIC ZONES AND THEIR SPECIALTY FOR RESEARCH AND DEVELOPMENT PROGRAMME IN INDIA

Agro-climatic zone (1)	Important goat breeds (2)	Speciality (3)
Western Himalayan	Changthangi	Cashmere (Pashmina fibre)
	Chegu	Cashmere (Pashmina fibre)
	Gaddi	Fibre, draughtability
Eastern Himalayan	Assam hill	Meat
Lower gangetic plain	Black bengal	Prolificacy, meat
Middle gangetic plain	Black bengal, local	Prolificacy, meat
Eastern plateau and hills	Black bengal	Prolificacy, meat
Upper gangetic plain	Barbari	Meat, milk, prolificacy
	Jamunapari	Milk
Trans-gangetic plain	Beetal	Milk
Central plateau and hills	Jhakhrana	Milk
	Sirohi	Meat, milk, disease resistance
Western plateau and hills	Osmanabadi	Meat, milk
	Sangamneri	Meat, milk
Southern plateau and hills	Local breeds	Meat
East coast plains and hills	Ganjam	Meat
	Kannaidu	Meat, skin, disease resistance
West coast plains and ghats	Malabari	Milk, meat
Gujarat plains and hills	Gohilabadi	Milk, meat
	Kutchi	Milk, meat
	Mehasana	Milk, meat
	Zalawadi	Milk, meat
	Surti	Milk
Western dry	Marwari	Milk/meat, coarse fibre

Source: Khan and Rai (2000) and Rout *et al.* (2002).

reach a figure of 137 million in the next 5 years, where it may stabilise (CIRG, 1997). The increase in goat population from 47.2 million in 1951-52 to 115.3 million in 1992 gave a mean rate of increment of 1.7025 million per annum and an annual compound growth rate of 2.20 per cent. Among the small ruminants the proportionate sheep population has been declining. Although sheep population increased from 39.1 million in 1951-52 to 50.8 million in 1992, relative to goats it came down from 82.8 per cent of goats 1951-52 to 44.05 per cent in 1992. Combining the annual rate of population growth of around 2.20 per cent with the mean slaughter rate and mortality rates, the goats have shown the potential of population growth of about 58.70 per cent per year. This is the single most important factor that makes goats as most desired species of animals for meat production. The country now has 26.32 per cent of Asia's and 16.54 per cent of world's goat population (FAO, 2002). This large increase in the population of goats is being driven by high demand for goat and its products.

TABLE 2. POPULATION GROWTH RATE OF MAJOR LIVESTOCK SPECIES IN INDIA

Species	Population (million)		Annual compound growth rate (per cent)		
	1951	1992	1972-82	1982-92	1972-92
(1)	(2)	(3)	(4)	(5)	(6)
Cattle	155.30 (53.04)	204.50 (43.50)	0.76	0.61	0.69
Buffalo	43.40 (14.82)	84.21 (17.91)	1.96	1.89	1.93
Sheep	39.10 (13.35)	50.78 (10.80)	2.01	0.40	1.20
Goat	47.20 (16.12)	115.28 (24.52)	3.50	1.93	2.71
Livestock	292.80	470.14	1.73	1.44	1.44

Source: Livestock Census, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi.
Note: Figures in parentheses indicate percentage to total livestock population.

Distribution among States

Though goat is well adapted to a variety of agro-ecological regions, still there are marked variations in population distribution and its density among different states. More than 52 per cent of goat population of the country is concentrated in four states, namely, Bihar, Rajasthan, West Bengal and Uttar Pradesh (Table 3). Among the small ruminants, goats are more widely distributed as reported by Rath (1992) that while about 95 per cent of the villages in Maharashtra had goats, only 18 per cent of the villages in the state had sheep.

TABLE 3. DENSITY, DISTRIBUTION AND ANNUAL COMPOUND GROWTH RATE OF GOATS IN MAJOR STATES, 1992

State	Population (million)	Density goats/sq. km	Per cent of total population	Annual growth rate (1972-92)
(1)	(2)	(3)	(4)	(5)
Andhra Pradesh	4.328	15.73	3.75	-0.06
Assam	3.454	44.03	3.00	5.18
Bihar	17.459	100.41	15.14	4.41
Gujrat	4.241	21.63	3.68	1.40
Haryana	0.810	18.09	0.70	2.60
Himachal Pradesh	1.118	20.80	0.97	1.06
Jammu and Kashmir	1.767	7.95	1.53	5.91
Karnataka	6.287	32.78	5.45	2.65
Kerala	1.848	47.55	1.60	1.16
Madhya Pradesh	8.370	18.87	7.26	1.54
Maharashtra	9.943	32.31	8.63	2.63
Orissa	4.943	31.74	4.29	2.73
Punjab	0.544	10.80	0.47	-1.92
Rajasthan	15.309	44.73	13.28	1.16
Tamil Nadu	6.343	48.77	5.50	2.39
Uttar Pradesh	13.110	44.53	11.37	3.48
West Bengal	14.170	159.66	12.29	5.13

Source: Livestock Census, Directorate of Economics and Statistics, Ministry of Agriculture, New Delhi.

The annual compound growth rates of goat population in different states over the last two decades (1972-92) presented in Table 3 shows that it was highest in West Bengal (5.13 per cent) among the major goat keeping states, followed by Bihar (4.41 per cent) and Uttar Pradesh (3.48 per cent). The goat population declined in the state of Punjab and Andhra Pradesh. Intensification of agriculture and sharp decline in the area of common grazing resources in Punjab might be the reasons for decline in goat population, whereas the goat rearing has been discouraged in a subtle manner by the system in Andhra Pradesh. The growth rate of goats has also been quite high in the north-eastern states. Agro-ecology of the north-eastern states is very much suitable for goat enterprise having sufficient common grazing resources. Moreover the north-east States have a good domestic market for meat and also the nearby export markets for meat and live goats to Bangladesh.

In order to understand the variation in the density of goats among different states, a linear regression model was tried with all potentially possible factors that may affect density of goats (Table 4).

TABLE 4. LINEAR ESTIMATES OF DETERMINANTS OF GOAT DENSITY, 1992

Explanatory variables (1)	Regression coefficient (2)	t-value (3)
Percentage of people below poverty line in the state	-2.01	0.403
Average size of holding (ha.)	-64.84	1.275
Percentage of pasture and cultivable waste and fallow land to the total	26.38*	3.446
Per cent net irrigated area	-11.35*	3.696
Bovine density per 100 ha.	0.92*	5.534
Constant term	-251.05	
Coefficient of determination (R^2)	0.82	

* Significant at 1 per cent level (< 0.01).

The explanatory variables accounted for 82 per cent of the variation in goat density. Average size of holding and percent net irrigated area were negatively associated with the density of goats (Table 4) validating the general perception that goat is associated with marginal and small farmers and provide livelihood to the people in the unirrigated and dry regions. The association between goat density and area under pasture/ wastelands is positive and highly significant, which highlights the role of common property resources in goat production system. This has implications for production growth, particularly in the short run, suggesting that goat production can be increased through proper management of grazing resources. Therefore management of CPRs is crucial for the development of goat. It also validates the theory that goat has greater potential in the unirrigated and dry regions.

Economic Contribution

The goats contribute significantly to the Indian economy by providing sustenance and in supplementing the income of the farmers especially marginal, small, and landless goat owners. This enterprise is associated with social and cultural fabric of millions of resource poor farmers for whom goat along with other livestock provide varying degree of sustainable farming and economic stability. The average size of land holding in India is steadily declining and will continue to decline until such time in the distant future when, due to industrialisation and consequent emigration from rural areas (or at least from agriculture), the absolute number of people depending on agriculture begins to decline (Rath, 1992). The small and marginal farmers who cannot afford to maintain a cow or a buffalo see goats as the best alternative source of milk and supplementary income. This is one important reasons why poor rural households maintain a few number of goats, though milk supply is not the most important source of income of the household from goats. Unlike a cow or buffalo, a few goats can be maintained more easily and can be disposed off at no great loss in the years of drought. The contribution of goats at the aggregate level in monetary terms has been estimated in Table 5.

TABLE 5. CONTRIBUTION OF GOATS TO INDIAN ECONOMY - 2002

Item	Quantity (000' tonnes)	Value (million Rs.)
(1)	(2)	(3)
Meat[1]	469.00	37,520.00
Milk[2]	3,320.00	19,920.00
Pashmina[3]	0.04	40.00
Offals[4]	252.54	4,221.00
Manure[5]	19,491.00	7,796.00
Blood[6]	46.90	93.80
Skin[7]	128.88	4,510.80
Increment in stock[8]	1.0 million (number)	675.00
Total		74,777.00

Source: FAOstat (2002) Food and Agricultural Organisation of United Nations, Rome

Note: 1. Estimated @ Rs. 80/kg.
2. Estimated @ Rs. 6/kg.
3. Estimated @ Rs. 1000/kg.
4. Since figures are not available, it is estimated as 35 per cent of live weight and valued @ Rs. 90/goat slaughtered.
5. Since the information on manure produced is not available, the average yield of manure has been estimated @ 500 g/adult and 200 g/young/day and valued @ Rs. 400/tonne. Ratio for adult and kids is 60:40.
6. Estimated @ 5 per cent of live weight and valued @ Rs. 2/goat slaughtered.
7. Estimated @ Rs. 35/kg.
8. Considering the period of last one decade, average one million goats are added each. It is assumed that 50 per cent kids are born in February-March-April and 50 per cent in September-October. The incremental stock is valued as: 500 thousand animals of 8-9 month age @ Rs. 900/ animal and 500 thousand of 3-4 months age @ Rs. 450/animal.

Goats and its products contribute Rs. 74,777 million annually to the national economy (Table 5) accounting for 7.6 per cent of gross domestic product (GDP) from the livestock sector, which contributes around 23 per cent of GDP from the agricultural sector. Among different products, meat has the largest share contributing more than 50 per cent of the total value of goat products, followed by milk and manure which contribute 26.64 and 10.43 per cent of the total value of goat products respectively. Goat skin is another important output contributing Rs. 4,510.80 million annually to the national economy.

The contribution of goats at the micro level could be understood from the study of costs and returns from goat rearing by landless goat keepers in Sadabad and Farah blocks of Mathura district of Uttar Pradesh, which is presented in Table 6.

TABLE 6. COST AND RETURNS IN GOAT REARING - 1996-97

(Rs./goat/annum)

Item	Category		
	Small	Large	Overall
(1)	(2)	(3)	(4)
Number of goat farmers	23	11	
Flock size	5.75	34	14.89
Costs			
(a) Cost 'A'			
Dry fodder	54	66	58
Concentrate	34	73	47
Veterinary expenses	23	16	21
Miscellaneous	12	4	9
Depreciation	70	34	58
Total cost 'A'	193	193	193
(b) Cost 'B'	318	326	321
(c) Cost 'C'	1,476	958	1,303
Returns			
Milk (litres)	76.00	65.00	72.44
Value of milk	456	396	437
Value of animals sold	716	408	616
Value of added stock	142	311	197
Value of dung	65	37	56
Gross returns	1,379	1,152	1,306
Returns over cost 'A'	1,186	959	1,113
Returns over cost 'B'	1,061	826	985
(Family labour income)			
Family labour income/ flock	6,101	28,084	14,667

Source: Based on primary data collected from Mathura district of Uttar Pradesh in 1996-97.

In the case of large category (on an average 34 goats), an income of Rs. 28,000 per annum (Table 6) is sufficient for the sustenance of family of the under-employed landless poor. Goat rearing not only generates income, but also provides nutritional security to the resource poor farmers through producing nutritional food (milk and meat). Women, child and old men of the family together contributed more than 70

per cent of the total labour requirement in goat rearing. Goats act as a living bank of the goat keepers, which could be utilised at any time for meeting food requirements, and to fulfil other needs. Sagar and Ahuja (1993) have also highlighted these positive aspects of goat keeping.

GOATS AND ECOLOGY

The development efforts for goat enterprise have suffered on account of the popular belief that goats cause deforestation and environmental degradation. One of the reasons of such belief is on account of the inherent capacity of goats to survive in worst of the agro-geo-climatic regions, and hence they are generally accepted as the agents to have caused such worst conditions. Studies at Central Sheep and Wool Research Institute, Avikanagar (Acharya and Patnaik, 1974) and Central Arid Zone Research Institute, Jodhpur (Ghosh and Khan, 1980) indicated that small ruminants do not play a major role in ecological destruction. Contrarily, some experts opine that it improves the grazing land by dispensing seeds and goats have been widely recognised as being able to control many weeds such as *Nosetta trichoforma, Rubus Fructicosus, Rosa rubiginosa* (Rout *et al.*, 2002). In countries like France, Italy, Australia and Syria, there is no official bias against goats. A Government of India task force comprising ecologists, environmentalists and economists has gone into the details of the role of small ruminants in ecologically fragile regions of the country and they concluded that the role of sheep and goat in ecological degradation has been exaggerated (Government of India, 1987). They proved that factors such as extension of crop farming to marginal lands, over-grazing by large number of bovines and indiscriminate felling of trees for industrial purpose are the main causes of ecological degradation.

The density of goats is the highest in the state of West Bengal, which has no sign of desertification. However, goats can sustain themselves in the deserts. Therefore it may be inferred that the deserts are there not because goats are there, but goats are there because deserts are there. In spite of the proposed policy to restrict the population of goats at 40 million and to increase the number of sheep to 70 million by 2000 A.D. (Government of India, 1976), the population of goats rose to 115 million in 1992 from 47 million in 1951 whereas the population of sheep remained at 50 million in 1992. This reflects the socio-economic relevance and wide adaptability of goats. Had the goats been responsible for desertification and degradation, instead of fast rise they would have long ago been discarded.

It is undoubtedly true that unduly large population of goats or any other livestock under continuous grazing throughout the year in a small area could be extremely harmful to the growth and development of vegetation. But it is a fact that deforestation coupled with over-grazing by livestock will have adverse consequences on the degraded forest and wasteland (Acharya, 1992). Therefore, in order to get the best from the system the animals and common property resources (CPRs)[1] need to be managed properly.

One of the main reasons for over-grazing is shrinking of grazing resources. Most of the CPR lands have been distributed to the farmers/persons belonging to lower income group. These people generally sell these lands to large farmers, again becoming land-less. In this process the CPR land which was mostly used by poorer section of the society for raising their animals like goat, sheep, buffalo and cow and for collecting fuel has been converted into agricultural land or residential plots. In irrigated regions, most of the villages have lost their almost entire common lands in this process. Therefore if we are able to maintain the common lands it will be in the interest of poor, especially those belonging to landless category for raising animals (goat, sheep, buffalo, cow, etc.).

It has been reported and observed that the economy of small and marginal farmers has developed a close link between private property resources (livestock) and common property resources (tank beds, roadsides, hill slopes, wastelands, community pastures and forest) in the villages. Due to growth of population, market forces and political lobbying for land reforms, the CPR lands have become 'open access lands'. Government policy has also been ineffective in preventing the increasing claims of the rural elite on these lands. Most of the CPR land is either under the control of the village elite or with the government. The small ruminants of poor people who have traditionally survived on these resources are subjected to heavy stress. As many of these small and marginal farmers survive on CPR based animals, they are struggling hard to maintain their stock (Pasha, 1991). Further, in dry region, decreased availability of forage and herbage due to degradation of CPR lands permits only small ruminants to be sustained. Goats and sheep fit well and survive in the changed eco-system. Jodha has opined that small ruminants have become more important following the degradation of CPRs (Jodha, 1990). If it is true, proper management of common property resources is crucial for the development of small ruminant sector. Moreover, on account of short generation interval and high prolificacy, the goats are more suitable in the adverse climatic conditions, as their numbers can be quickly reduced in bad (drought) years, and equally quickly regained in good years.

PRODUCTIVITY PERFORMANCE

Meat, which is the major product from goats, has increased from 410 thousand tonnes in 1990 to 470 thousand tonnes in 2001. This increase in meat production is mainly because of the marked increase in the population of goats. The average meat production per goat was 9 kg in 1980; it rose to 10 kg in 1992 and after that it has stagnated (FAO). Stagnation in the yield of goat meat is a matter of concern. Quantitative and qualitative deterioration of common grazing resources, subsistence and extensive system of production and lack of technological breakthrough are the main reasons for stagnating yields. Common property resources in the country have deteriorated invariably. This emerges from a study of 80 villages in 21 districts in dry regions of seven states undertaken by Jodha (1986) which shows that the area under

CPR lands has declined by 26 to 63 per cent during last three decades. Simultaneously, grazing pressure on land kept on increasing due to increase in livestock population.

The system of production is largely subsistence oriented. Animals sustain mainly by grazing and additional nutrient requirement for production is generally not available. There exist a huge deficiency of feeds and fodder even for the livestock sector as a whole (Table 7).

TABLE 7. AVAILABILITY AND REQUIREMENT OF FEEDS AND FODDER IN 1991

Feedstuffs	Availability (MT)	'Requirement (MT)	Deficiency (MT)	Deficiency (per cent)
(1)	(2)	(3)	(4)	(5)
Straw/stovers	387.86	650.70	262.84	40.39
Green fodder	573.50	761.53	188.03	24.69
Concentrates	41.98	76.04	34.05	44.79

Source: Ranjhan (1995).

Ruminant research has received relatively less attention in India. Studies indicate that the allocation of livestock research expenditure to small ruminants is disproportionately low compared to their contribution to gross value of livestock output (World Bank, 1990; Jha, *et al.*, 1995). Goat breed improvement programmes for increasing body weight are underway. Their impact in the field is yet to be realised. Attention to nutritional and health aspects can increase meat yields per animal of the existing stock in the short run. Regarding the role of technology in sustaining output growth, Devendra and Burns (1983) are of the opinion that improved veterinary care, nutrition and other aspects of husbandry may achieve spectacular gains when first introduced. But sooner or later breeding and genetic improvement programmes will have to be considered and the genetic potential of existing stock assessed. Though India is rich in animal genetic diversity, their potential is yet to be fully assessed (CIRG, 1997).

The role of institutions and infrastructure in goat development needs no underscoring. Poor access to veterinary services by subsistence goat farmers, unregulated marketing with high margin for middlemen (Deoghare and Rekib, 1997) also lower the incentives to improve the goat productivity. The financial institutions' sceptical view for financing the goat development projects is another factor constraining the development of this enterprise.

Shift in System of Production

The very slow pace of change from subsistence production to commercial production in goat enterprise has accelerated somewhat in the last couple of years. High demand for goat and its products and the potential of good returns are driving many progressive farmers, businessmen, professionals, ex-servicemen and educated youth to take up the goat enterprise on a commercial scale. This trend of

commercialisation is especially prominent in the states of Maharashtra, Madhya Pradesh, Bihar and Uttar Pradesh, where the availability of grazing resources is relatively better. Central Institute for Research on Goats (CIRG), Mathura is doing a commendable job by providing practical training on commercial goat farming to aspirant entrepreneurs, where more than 700 of aspirant commercial goat farmers have been trained. With the information available around 70 people who got trained at CIRG, have started goat farming on commercial scale under semi-intensive/intensive system of management. All these commercial farmers are well educated and have better access to technical and market information contrary to the traditional goat farmers who in majority are illiterate (Kumar and Deoghare, 2002) and belong to the poor section of rural population.

This trend of commercialisation in goat production driving entrepreneurs looking for higher productivity and profitability seems desirable. More commercial-isation would encourage intensification of goat production hitherto highly extensive system depending only on grazing in common lands. Commercialisation might not only help in increasing the productivity of goats by having better access to material inputs and technical knowledge, but may also relieve some pressure from the grazing lands. Animals in commercial production would have to depend on alternative sources of fodder (like agro-forestry, tree leaves and partial stall-feeding) other than common grazing lands. Moreover the commercial goat entrepreneurs would also be better placed in meeting the quality standards necessary for exports of goats and their products to large expanding market of West Asia and Southeast Asia.

Therefore along with the extensive production system, this trend of commercial-isation of goat enterprise needs to be encouraged. Intensification and commercial-isation of goat enterprise is also important because of shrinking of resources for extensive grazing. Commercialisation will help in increasing the goat productivity to some extent and in bridging the demand-supply gap. Commercialisation and intensive system seems to be a better option for increasing productivity and production from goats, but it will have its own associated problems like high incidence of diseases in large flocks. In the intensive system, the problems of John's disease, Brucellosis, etc., are the potential sources of loss. However these problems could be minimised by using recommended preventive health schedule (CIRG, 1999) and management practices. The best way for organised goat production would be the co-operative system if the farmers initiate it. Even forming associations of goat farmers could provide them power of scale and may help in mitigating the constraints like lower prices, inbreeding, lack of veterinary aid and poor access to information. The associations could be the best source of information to the goat keepers and members can exchange their breeding bucks regularly to avoid inbreeding

OPTIONS AND STRATEGIES

Increase in production by only increasing the number of goats does not satisfy the efficiency criterion. Moreover shrinking grazing resources might not be sufficient for

sustaining the fast increasing population of goats, which mainly depend on common grazing lands. In order to respond to expanding demand for meat and other goat products we need to focus more on enhancing the productivity of goats. The strategy for improving the productivity should concentrate on the following:

- Increasing private investment are attracting more efficient entrepreneurs in this sector,
- Research and development efforts for, breed improvement, improving feed availability, disease prevention and control and processing and marketing,
- Integration from production to processing,
- Policies that support goat enterprise and ensure remunerative prices for the producers.

Now the question is what specific actions need to be taken to realise the potential of goats which can contribute to food security, rural employment generation and export earnings of the country. Focusing on the above mentioned strategy the following specific actions/steps would greatly help in the development of goat enterprise in India:

Breeding

- Breeding programmes should aim at upgrading non-descript goats with compatible recognised Indian breeds, achieving higher body weights, better feeding efficiencies and better kidding rates. Selective cross-breeding of recognised meat breed with larger local and exotic breed like Boer of South Africa, which was developed under tropical climate, will increase production.
- Selection for breed improvement should not only focus on meat, milk and fiber productivity, but also the characteristics which have not been considered but important for the communities and have potential for commercial exploitation. Meat quality, skin quality, quality of cheese from goat milk and other such characteristic may be considered for selecting the animals.
- India has 20 recognised goat breeds (Acharya, 1982). The initial work on breed characterisation in goats was done before independence, which was published in *Indian Farming* journal by R.L.Kaura in 1943. A total of 15 goat breeds were recognised in this initial work. Later on some efforts were made to characterise the goat breeds in few pockets of India. In 1982, R.M. Acharya reported 20 breeds of goat. However large-scale systematic efforts at the national level have not been made to characterise the whole population of goats. The puzzling fact is that around 80 per cent of the total goat population in India are categorised as non-descripts. Apparently it seems unbelievable that more than 100 million of goats do not belong to any breed. There might be existing some other breeds which have not been characterised for their identity and utility. Therefore there is need to undertake large scale efforts to characterise and identify new breeds of goats which may be further improved for the development of goat enterprise.
- By and large goat keepers in the villages use any breeding male available with

them or in nearby flocks for breeding the female goats without considering the quality/breed of breeding male. There is need to have some kind of control on breeding of goats in the villages. Forming 'User groups' in the villages might help in doing this. The goat keeper in one or more villages may form such 'User groups'. The 'User groups' may decide to keep certain breeding males that could be used on payment basis for the members.

Nutrition

- Feed resources especially in the form of CPRs are critical for the development of goat. Privatisation of CPRs will not help the poor. Rather, the CPR lands should be properly managed jointly with the stakeholders. Feed resource development through silvipasture/agro-forestry should be given greater priority.
- Thousands of tonnes of fodder grasses from common lands go waste every year in the rainy season (Nawab Singh, personal comm.). Therefore research and development efforts must be made for better harvesting of fodder resources (especially pasture grasses) when it is abundant in rainy season. Efforts should also be made for improvement in storage of this fodder for better utilisation during lean season.
- Management of CPRs including common grazing resources should become a component of Integrated Rural Development Programme at the village level. The proper management of common grazing resources is crucial for the development of small ruminants.

Health

- Use of available prophylactic measures may prevent most of common diseases in goats, which cause annual losses to the tune of Rs. 11,720 million to the national economy (Kumar *et al.*, 2002). But research effort needs to be intensified to control and prevent diseases like PPR, Johne's disease and brucellosis that are more prone in large flocks under intensive system of management (Vihan, personal comm.). Development of such package of practices that ensure low incidence of diseases in goats should also get priority. It would be necessary to achieve disease free status for our animals for the international trade in livestock products.
- Because of lesser chances of recovery of diseased animal the preventive care becomes more important in small ruminants. Existing veterinary services for prevention and control of diseases in goats in the rural areas are however less than satisfactory. Livestock services are biased towards delivering curative veterinary services. Preventive veterinary care receive scant attention and vaccination coverage of animals is below the level of effective protection (Ahuja *et al.*, 2000). The current budgetary resources cover mainly the salaries and benefits of veterinary staff, leaving very little funds for other recurrent needs such as drugs and veterinary supplies. Ahuja and others (2000) have reported

significant and positive willingness to pay for livestock services by the farmers from all income groups including poor. Therefore there is an urgent need to re-evaluate and re-orient the government current strategy for the delivery of veterinary services. Greater role for private veterinary service providers and privatisation of these services to certain extent, with optimising the existing service delivery system and manpower for vastly enhanced coverage and sustainable delivery of services, should be the goal in future. Level playing fields between private and public sector service providers is necessary by having certain fee structure for public veterinary services also.

Management

- Development of package of practices for commercial goat farming, which is perhaps coming up fast in many states, needs greater attention.
- Training on commercial goat farming is also important for local capacity building.

Processing

- Meat from spent goats[2] account for nearly 30-40 per cent of total goat meat production in the country and most of it is poor quality meat. Therefore, processing of meat from spent goats' needs to be encouraged in order to improve the quality of meat and meet the demand for such processed products. The value addition will benefit both the consumers as well as producers. Moreover meeting the phyto-sanitary standards through introduction of good manufacturing practices and total quality management systems has assumed greater significance under changed world meat trade scenario.
- Goat milk products especially cheese has a good export potential. More R&D efforts are needed for developing and popularising goat milk products and creating niche products.
- Consumer preferences for niche products and other attributes of local breeds will have to be moulded. Even the existing variability in cheese, yoghurt, meat, wool and other products has not been adequately embedded in the local knowledge system (Gupta, 1998) so as to provide extra value to the consumers of specialty products.

Marketing

- In order to safeguard the interest of the goat keepers, there is an urgent need to have some kind of regulation in the animal markets, which at present do not have any kind of regulation. There is need for a proper marketing policy for goats and its products. The policy should also consider and focus on the export requirement. For accomplishing this, regional goat marketing boards may be constituted. The aim of these boards should be to ensure quality standards and remunerative prices for the producers.

- Goat meat already has good internal as well as external demand. However, goat milk which has several advantages over the milk of other animals, does not have market in the country. Goat milk is generally sold as an adulterant in cow and buffalo milk. There is an urgent need to create market for goat milk and its products. Highlighting the utility (esp. medicinal value) of goat milk and its products could do this.

Finance

- Development of goat enterprise should be supported by financial institutions and goat development should be made part of Integrated Rural Development Programme (IRDP) throughout of the country, especially in the arid, semi-arid and hilly regions.

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NOTES

1. Common property resources (CPRs), in the present context, represent only common grazing resources.

2. Spent goats are those old goats that have completed their productive life of 5 years and culled for slaughter.

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