



## **CONSTRAINT ANALYSIS OF GOAT REARING HOUSEHOLDS IN RAJASTHAN**

**R.K. Yogi<sup>1\*</sup>, N.K. Verma, S.R. Singh<sup>2</sup> and L.R. Gurjar<sup>3</sup>**

*National Dairy Research Institute, Karnal- 132 001, Haryana*

*<sup>1</sup>Indian Institute of Natural Resins and Gums, Ranchi- 834 010, Jharkhand*

*<sup>2</sup>Sardarkrushinagar Dantiwada Agricultural University, Sardarkrushinagar- 385 506, Gujarat*

*<sup>3</sup>Central Sheep and Wool Research Institute, Avikanagar- 304 501, Rajasthan*

*\*E-mail address: yogindri@gmail.com*

Manuscript received on 16.12.2013, accepted on 21.04.2014

### **ABSTRACT**

Goat contributes milk, meat, fibre and skin and serves as the source of livelihood security in arid and semi-arid areas. This study discusses the socio-economic background of goat rearing households and specific findings of constraint analysis to prioritize the problems faced at household level. Garrett's ranking technique was used to prioritize various constraints. Scarcity of water bodies and inadequacy of basic facilities like marketing, credit and veterinary services for goat keepers were identified as the major constraints. The study revealed that the severity of the non-institutional constraints was more in these areas.

**Key words:** Arid and semi-arid, Constraints, Garretts ranking technique, Goat, Rajasthan

**G**oat sector has potential to create employment in rural areas with least investments as compared to other sectors. According to 18<sup>th</sup> Livestock Census (2007), there were 140.53 million goats in India which contributed 13.30 and 3.77% to the total meat and milk production of the country, respectively. In the light of the potential, contribution and role of the sector in the state to cater to future demands of the goat products, a strategic approach needs to be devised for desired growth of this sector. Planned growth of the sector can prove as a potent tool for sustainable economic and social development of rural households. Rajasthan has good potential to harness the opportunities in livestock sector. About 13% of small ruminants of the country are found in the state. It is imperative to ascertain the constraints and to devise appropriate strategies to overcome the obstacles in the progress of this sector. In this study, an attempt was made to identify major constraints to rank and prioritize across various flock size categories in the arid and semi-arid regions of Rajasthan.

### **MATERIALS AND METHODS**

Multi-stage random sampling design was adopted for selection of district, talukas and villages.

Top three goat milk producing districts viz. Jaipur, Jodhpur and Churu were selected purposively from the state. These districts contribute about 24% of the total goat milk produced in the state. Depending upon number of talukas in each of the three districts, two talukas from Jaipur and one taluka each from Jodhpur and Churu districts were selected randomly. Thus, a total of eight villages spread over four talukas in three districts were taken up for complete enumeration of goat rearing households and ultimate selection of sample households. A complete list of the entire goat rearing households (having at least five does) in the selected villages was prepared. Due to different socio-economic conditions across the various flock size categories, a specific approach was required. Hence, goat rearing households were classified into three flock size categories as small (5-16 does), medium (17-36 does) and large (> 36 does) using cumulative frequency square root method (Gupta, 1987). A representative sample of 201 goat rearing households spread over eight villages was drawn randomly for detailed survey by using probability proportional to the number of households in each flock size category. To identify major constraints faced by the goat rearing households regarding socio-economic, technical and marketing aspects, Garrett's ranking technique

(Garret, 1926) was employed by interviewing respective respondents and recording observations on a structured schedule. In Garrett's ranking technique, respondents were asked to enumerate and assign ranks to different problems which were used for prioritization of constraints. The order of merit given by the respondents was converted into ranks by using the following formula:

$$\text{Percent position} = [100 (R_{ij} - 0.50)] / N_j$$

Where,  $R_{ij}$  = Rank given for  $i^{\text{th}}$  problem by  $j^{\text{th}}$  individual and  $N_j$  = Number of problems ranked by the  $j^{\text{th}}$  individual.

The per cent position of each rank was then converted into scores by referring the Garrett's Score Table. The mean scores for all the constraints were arranged and thus rank were assigned to prioritize the various constraints faced by the goat rearing households. To support the findings, secondary data on livestock population, agro-climatic and demographic features, land utilization pattern, cropping pattern of the study area and primary information related to goat rearing were obtained from various institutions and local functionaries.

## RESULTS AND DISCUSSION

Family members performed different operations in goat rearing. The overall average family size for all goat rearing households was 8 members and ranged from 6.24 members to 11.97 members. The economic and social progress of the households depends upon the size of the operational land holdings. Overall average size of the operational land holdings of the

goat rearing households was 1.80 hectares, varying from 1.16 hectare in medium flock size category to 2.08 hectares in small flock size category (Table 1). It was also observed that the deviating ratio of the other backward caste households across the flock size categories could have affected the distribution of size of land holding. Small and large flock size categories were owned by higher percentage of other backward caste households than the medium flock size category. Educational status of household owner was an important factor that influenced the decision making process. The highest percentage of the educated heads of households were observed in case of medium flock size category (83.78%) followed by small flock size category and large flock size category.

It was observed that for all categories of the households taken together, 65.17% of the households adopted goat rearing as their main occupation, while rest of the households (34.83%) adopted agriculture, agricultural labour and others as their main occupation for livelihood. Category-wise observation further revealed that goat rearing was followed as the main occupation by nearly half of the total small category households, 100% by medium and large flock size category households. From amongst small flock size category households, the rest adopted the agriculture and other agricultural related occupations for their livelihood. The results showed that in the absence of alternate livelihood options in the study area, large and medium flock owners adopted goat rearing as the main occupation. About 10% of small category households adopted agriculture as the main occupation as they had larger operational land holding.

Table 1. Socio-economic profile of the goat rearing households

Particulars	Flock size			
	Small	Medium	Large	Overall
No. of households	134 (66.67)	37 (18.41)	30 (14.92)	201 (100.00)
Family size (No.)	6.24	10.92	11.97	7.96
Operational land holding (ha/household)	2.08	1.16	1.28	1.80
Educational status				
Illiterate	61 (45.52)	6 (16.22)	17 (56.67)	84 (41.80)
Literate	73 (54.48)	31 (83.78)	13 (43.33)	117 (58.20)
Main occupation				
Agriculture	14 (10.45)	0 (00.00)	0 (00.00)	14 (6.97)
Agricultural labour	33 (24.63)	0 (00.00)	0 (00.00)	33 (16.42)
Goat rearing	64 (47.76)	37 (100.00)	30 (100.00)	131 (65.17)
Others	23 (17.16)	0 (00.00)	0 (00.00)	23 (11.44)

Figure in parentheses are percentages

Average flock size per household was 32 animals comprising 5 kids (0-3 months), 8 young (4 months to the age of puberty) and 19 adult (doe and buck) goats. The average flock size across various categories showed that the proportion of kids and young under small goat rearing household (17.00 and 27.20%) was higher in comparison to the large (12.69 and 23.16%) and medium categories of households (14.37 and 24.61%), while the proportion of adult animals was increasing as the flock size increased. Thus, overall the ratio of adult animals was found about 60% and rest comprised kids (14.85%) and young (25.16%) goats.

Frequent severe droughts are the reality in the arid and semi arid regions. Water resources like natural water bodies, ponds, etc are not sufficient. Overall it was observed as the major natural constraint for the goat owners. Particularly, in summer season there was scarcity of water in remote rural areas (Table 2). In the month of May - June water also depleted completely and goat keepers had to move in search of water to the big ponds in nearby areas. The constraints analysis revealed that poor marketing facilities was the most severe problem faced by the medium and large flock size category of goat rearing households, while it was ranked II by the small category of households. In

remote areas the visits of marketing agencies particularly butcher and traders was found to be very less. In the absence of organised market, there was always risk of lower price for the live animals as well as goat milk. Lack of institutional back up by the market side for input supply, mainly green fodder, dry fodder and concentrates were also observed as major hindrances faced by the goat keepers.

The required inputs (like feeds, credit and medicines with veterinary services, technical knowledge for improved breeds and packages of practices) were not easily available in remote areas. Lack of green fodder was ranked III followed by veterinary facilities and unavailability of dry fodder by all the category of households. Inbreeding problem due to lack of breeding knowledge and inadequate door-step delivery of services were the major issues for goat breeding management. Hence, intensive extension activities and training programmes are needed to improve the awareness and skill of the small and large goat keepers. It was also observed that like small-sized goat rearing households, medium and large sized goat rearing households also shackled with the problem of scarcity of green and dry fodder.

Table 2. Ranking of constraints faced in goat rearing by households

Constraints	Category-wise ranks			
	Small	Medium	Large	Overall
Lack of water resources	I	II	II	I
Inadequate marketing facilities	II	I	I	II
Scarcity of green fodder	III	III	III	III
Insufficient veterinary facilities	IV	IV	IV	IV
Inbreeding problem	V	V	V	V
Scarcity of dry fodder	VI	VI	VI	VI
Low availability and higher prices of concentrates	VII	VIII	VII	VII
Poor awareness about credit facilities	VIII	VII	VIII	VIII
Limited grazing area	IX	IX	IX	IX
Wild animal attack	X	X	X	X

It was observed that shrinking of grazing areas and natural resources resulting in shortage of grazing areas and it had emerged as an alarming situation for all the goat rearing households. This may be due to

declining area under pastures and grazing lands, encroachment of these lands by local people coupled with declining productivity of grazing lands. The transformation of pastures to other utilities is the big

challenge for biodiversity also. It is necessary to provide logistic support to the goat keepers for protection of the flock during natural calamities. Secondly, adoption of an efficient supply chain model for goat based products can be a good strategy to boost the goat rearing as a commercial activity and facilitating marketing infrastructure as well (Rai and Singh 2004; Singh et al. 2005). The problem of wild animal attack was prevalent among all the flock holders due to improper housing facilities as they invested very little for the shelter of goats thus proper housing structure/design for security against the wild animal attack may be popularized among the goat keeper's.

Awareness about scientific management practices and formation of goat breeders' cooperative societies should be encouraged among medium and large category households by supporting goat rearing as commercial activity to visualize the improvement in goat productivity. Demonstration and training about scientific management practices in goat rearing may be executed by utilizing the knowledge and expertise development agencies with the collaboration of the *Panchayati Raj* Institutions. Thus, strengthening and expanding village-level infrastructure for veterinary facilities, procurement of milk and live goat could be major policy implications for the progress of small ruminant economy.

## ACKNOWLEDGMENTS

The authors are grateful to the goat keepers, market intermediaries, local governing bodies, research institutes and government offices for providing primary as well as secondary data. A special word of gratitude goes to the Director, National Dairy Research Institute, Karnal for providing the necessary facilities and financial assistance.

## REFERENCES

- Garret H.E. 1926. *Statistics in Psychology and Education*. Longmans, Green and company, 55<sup>th</sup> Avenue New York, pp 59-111.
- Gupta, S.P. 1987. *Statistical Methods*. Sultan Chand and Sons, New Delhi, pp 25-125.
- Livestock Census. 2007. 18<sup>th</sup> Livestock Census, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India.
- Rai, B. and Singh, M.K. 2004. Rearing practices of *Jakhrana* goats in their native tract. *Indian Journal of Small Ruminants* 10: pp 33-35.
- Singh, M.K., Rai, B., Singh, S.K., and Simaria, M.B. 2005. Tribes associated with Zalawadi goats and their management practices. *Livestock International* 9: 18-20.