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Goat Rearing and Rural Poor: A Case Study in South-western Semi-arid Zone of Uttar Pradesh

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Abstract: The paper examines the role of goats in the economy of rural resource-poor in India. It is observed from the field study conducted in semi-arid parts of India that goats play a significant role in food and nutritional security of the family of goat keepers. Goat rearing utilizes the labor, which has negligible opportunity cost, and generates income and employment. Importantly, it helps in the empowerment of poor rural women by providing them employment and to some extent financial autonomy. It was also observed that the goats of rural poor were mainly dependent on common property resources (CPRs), which have been declining in the recent past.

Key words: Goat rearing, income, employment, food security, resource-poor farmer.

During last three decades goat population in India has been increasing at the fastest rate (2.71% per annum) among all the major livestock species. This growth reflects not only its adaptability, but also confirms its utility under the multifaceted economy of the country. The role and contribution of goats is clear from their wide distribution in terms of meat, milk, fibre and skin, and also their socio-economic relevance in terms of income generation and human nutrition (Devendra and Burns, 1983). Goat rearing has been found to be an economically viable activity (Kalla *et al*., 1992). Its contribution is especially manifested in the rural area, where goats are closely associated with the poorest of the poor. Economic analysis of goat production has received little attention in the past. An attempt, therefore, has been made in this paper to analyze the role of goats in the economy of rural resource-poor in semi-arid parts of Uttar Pradesh.

Materials and Methods

The data for this study were collected from four villages, namely Pingri, Mahuan, Fatiha and Kurkunda of Farah block of Mathura district, which falls under south-western semi-arid zone of Uttar Pradesh state. A sample of 61 goat-keeping households was selected randomly from three categories, viz., small (less than 5 goats), medium (5 to 10 goats) and large (above 10 goats), on the basis of probability proportional to the size in each category. The data relating to investment pattern, maintenance cost, loss due to diseases, employment generation, consumption of goat products, economic returns from goats, etc., were collected for the agricultural year 1998-99. The data were analyzed with the help of simple tabular analysis. To work out the economics of goat enterprise, standard cost concepts were employed (Kahlon and Singh, 1992).

Results and Discussion

It was observed from the prevailing goat production system that more than 50% of the goat keepers were landless and goat rearing was mainly a subsidiary enterprise, taken up at subsistence level. All the goat keepers were illiterate, except 11.62% farmers in small category whose main occupation was service or agriculture. It was also observed that the availability of family labor was positively associated with flock size (Tables 1 and 2). The average investment per household was estimated to be Rs. 3,806 in small category for flock size of 2.2 breedable goats, Rs. 8,954 in medium flock of 5.25 goats and Rs. 22,608 in large category for a size of 16 breedable goats (Table 2). It was also observed that most of the farmers started with 1 or 2 goats and increased the size of flock to present level through multiplication.

Table 1. General informaiton regarding goat keepers

Particulars	Small	Medium	Large	Overall
Distribution of goat keepers				
Landless	23	6	2	31
Land owner	20	6	4	30
Total	43	12	6	61
Education of head				
Literate (%)	11.62	–	–	8.49
Illiterate (%)	88.38	100.00	100.00	91.51
Family labor availability (Man-days/annum)				
Adult male	325.50	378.00	756.00	378.17
Adult female	370.13	349.13	217.88	351.02
Child	140.00	130.38	82.00	132.40

Resource use structure

The goat rearing was observed to depend mainly on grazing in common lands. On an average the goats were grazed on common land for more than 6 hours a day throughout the year. The grazing contributed for more than 85% share of total feed resources of goats. The common lands include community

Table 2. Initial investment and flock size

Particulars	Small	Medium	Large
Flock size			
Adult male	0.16	0.41	0.16
Adult female	2.20	5.25	16.00
Kid	2.62	5.64	21.32
Initial investment/farm (Rs.)			
Shed and equipment	985	2154	4275
Value of goat	2821	6800	18333
Total investment	3806	8954	22608

Table 3. Cost and return from goat rearing (Rs./annum/family)

Particular	Category of farmers			
	Small	Medium	Large	Overall
Cost				
Variable cost				
Green fodder	38	25	210	52
Dry fodder	120	125	200	129
Concentrate	182	171	589	220
Family labor	2224 (66.01)	5500 (73.95)	11694 (72.75)	3800 (70.12)
Grazing	1640	4807	8916	2979
Other activities	584	693	2778	821
Hiring charges of grazier	64	–	–	45
Veterinary expenditure	7	26	37	14
Annual repair, etc.	4	51	16	14
Total variable cost	2639 (78.33)	5898 (79.31)	12745 (79.26)	4274 (78.87)
Fixed cost				
Depreciation	273	465	616	345
Interest @ 12%	457	1074	2713	800
Total fixed cost	730 (21.67)	1539 (20.69)	3329 (20.71)	1145 (21.13)
Total cost (A+B)	3369	7437	16074	5419
Cost per doe (excluding cost of family labor)	520	369	274	395
Return				
Sale of animal and value-addition in kids	2189	6670	15758	4408
Milk	855	2964	5623	1739
Manure	73	282	500	156
Gross return	3117	9916	21881	6303
Returns to fixed farm resources	478	4018	9136	2029
Family labor income from goats	1972	7978	17500	4684
Family labor income per goat	896	1520	1094	1126
Income from other sources	13867	11504	15993	13611
Households' total income	15839	19482	33493	18295

Figures in parenthesis are percentage to total cost.

pastures, riverbed, grazing land available on road side and railway track side. As a result of increased demand of land for crop production and housing, and distribution of community land to landless people in the village, there is heavy pressure on common grazing resources. The scarcity of grazing resources is causing heavy stress to the poor people in the villages whose animals are mainly dependent on common grazing resources. Therefore, the policy of distribution of common land of the villages

Table 4. Loss due to disease (Rs. annum^{-1})

Losses	Small	Medium	Large
Mortality			
Adult	1241	1592	3333
Kid	308	529	1883
Abortion	–	11	60
Expenditure on treatment	13	24	68
Production loss	12	8	136
Total loss/household	1574	2164	5481

to landless individuals may be re-examined. The consumption of green fodder, dry fodder and concentrate per flock per annum was around, 125, 129 and 55 kg, respectively. The shelters were mainly constructed of mud and thatch. All the inputs, including traditional medicines, were available from the village system itself.

Income generation

In order to understand the role and potential of goats for increasing income of rural poor, it is essential to examine the economic viability of goat enterprise under the field conditions. The total cost of goat rearing per annum was estimated to be Rs. 3,369, Rs. 7,437 and Rs. 16,074 on small, medium and large category, respectively (Table 3). Imputed value of family labor was found to be major component of total expenditure, which accounted for more than 70% of the total cost of goat rearing. The actual expenditure incurred by the family on rearing a goat was very low and ranged from Rs. 274 in large category to Rs. 520 per annum in small category of goat farmers. The direct benefits of goat rearing were through sale of live animals, changes in flock inventory, milk and manure. The return from sale and value addition in kids formed the major component of gross return (70%), followed by value of milk, which accounted for around 28%. The average family labor income per household from goat rearing was estimated to be Rs. 1,972, Rs. 7,978 and Rs. 17,500 per annum on small, medium and large category, respectively, whereas the annual family labor income per goat ranged from Rs. 896 in small to Rs. 1,520 in medium category. The share of income from goats/total income was estimated to be 12.45, 40.95 and 52.25% on small, medium and large category of goat keepers, respectively. It is evident from the above figures that goat enterprise is the major source of income for rural resource-poor. It is also observed that the magnitude of income from goats is positively associated with households' total income.

The goat farmers suffered heavy losses on account of diseases and parasitic infestations in their animals. The losses incurred were to the tune of Rs. 1,574, Rs. 2,164 and Rs. 5,481 per annum on small, medium and large category, respectively (Table 4). If prophylactic measures were followed the losses could have been minimized by about 70%.

Employment generation

Women and children were consistently involved in a variety of activities concerning

Table 5. Employment generation (man-days/family/annum)

Category	Labor (Man-days)				
	Adult		Child	Old male	Total
	Male	Female			
Small	4.36	32.76	18.49	–	55.61
	(7.84)	(58.91)	(33.25)		(100)
Medium	19.40	60.76	41.00	16.34	137.50
	(14.11)	(44.19)	(29.82)	(11.88)	(100)
Large	49.70	94.25	79.25	69.14	292.34
	(17.00)	(32.24)	(27.11)	(23.65)	(100)

Note: 1 female = 0.75 male, 1 child = 0.5 male, based on prevailing wage rates. Figures in parenthesis are percentages to total labor use.

the management of goats. Women, children and family old men together contributed 83 to 92% share of the total labor requirement (Table 5), which had a zero or negligible opportunity cost. Adult males of the family were generally involved in other activities. Women alone contributed 32 to 59% share of total labor requirement. These figures indicate that goat rearing helped the women for their empowerment and achieving financial autonomy. The women took most of the decisions regarding goat enterprise on small flocks.

Food security

Individual and household food security depends on access to assets, work and assured income. Goats contributed to family's food security in terms of milk and meat, and also in employment and income generation that may assure access to food. The families of goat keepers had access to goat milk for a period of 60 to 150 days (Table 6), which was mostly consumed by the children. As such the goat enabled the farmers to generate income of Rs. 1,972, Rs. 7,978 and Rs. 17,500 on small, medium and large category, respectively, which ensured access to food. The goats act as a living bank of the goat keepers, which could be utilized at any time for acquiring food and to fulfill other needs of the family.

The contribution of goat enterprise in the economy of small farmers and landless resource-poor was enormous. With a small initial investment, it helps the poor in uplifting

Table 6. Consumption of goat milk (L day^{-1} family^{-1})

Category	Duration			
	150 days	90 days	75 days	60 days
Small	–	0.90	0.41	0.65
		(11)	(3)	(7)
Medium	–	3.92	1.06	1.80
		(7)	(2)	(2)
Large	4.0	–	–	3.33
	(3)			(2)

Figures in parenthesis are number of milk-consuming households.

them above the poverty line. In addition to high rate of returns the goats contributed to nutritional and food security of the family through output of milk and meat, and employment and income generation. Goat enterprise also helped in women empowerment by increasing their income. Moreover goat rearing utilized family labor like women, old persons and children, which had negligible or zero opportunity cost. It was also observed that the magnitude of income from goats was positively associated with households' total income. This makes a strong case for the promotion of goat rearing as an instrument of poverty alleviation. Common grazing resources that are the key inputs for goat rearing are not managed properly and their declining state need attention.

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