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## Economic analysis of intensive and semi-intensive systems of goat rearing in Tamil Nadu

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### Abstract

Goats contribute significantly to the Indian economy by sustaining the livelihood of rural people. It was reared under extensive, semi-intensive and intensive systems of management. 40 Tellicherry and 40 Salam black kids under the age of 3 – 4 months were selected for the study in the economic analysis of intensive and semi-intensive goat rearing. The selected goats were divided into Treatment – 1 (T<sub>1</sub> – 8 males and 12 females) and Treatment – 2 (T<sub>2</sub> – 8 males and 12 females) in each breed. The net income obtained per animal in Tellicherry males reared under intensive and semi-intensive systems of management was Rs. 752.33 and Rs. 828.70, respectively and corresponding value observed in Tellicherry female kids was Rs. 311.92 and Rs. 363.36 respectively. In Salem Black kids, the net income per animal observed under intensive and semi-intensive systems of management was Rs. 675.06 and Rs. 730.10 for males and Rs. 195.77 and Rs. 296.84 for females. The study concluded that the semi-intensive system was the best method for high return when compared to the intensive system of management in the Tellicherry and Salem Black goat rearing.

**Keywords:** Economic analysis, goat, intensive, Tamil Nadu, semi-intensive

### Introduction

Goats were among the first farm animals to be domesticated (Ensminger and Parker, 1986) [3]. Goats contribute significantly to the Indian economy by sustaining the livelihood of small farmers and the rural poor. The demand for goat meat is progressively increasing as Indian prefers goat meat (Chevon) among all other meats (Sen *et al.*, 2004) [9]. It makes a very valuable contribution, especially to the poor people in rural areas for generating employment, income, capital storage, and improving household, nutrition in developing countries (Devendra, 1992) [2]. Generally, the goats were reared under extensive, semi-intensive and intensive systems of management. In an extensive system, goats are in the open field or entire pasture land and left for the whole season. The combination of limited free-range grazing and feeding in stalls is called the semi-intensive system and the intensive system which was housing in confinement under stall fed throughout the year. In modern days increasing the demand for goat meat, it was managed under a semi-intensive and intensive system in India. A number of studies on the economics of rearing goats had been conducted in different breeds and regions. In this view, the supporting study was conducted in the objective of an economic analysis of the intensive and semi-intensive systems of Tellicherry and Salem black goat in Tamil Nadu.

### Materials and Method

The study was carried out at Instructional Livestock Farm Complex (ILFC), Veterinary College and Research Institute, Namakkal, Tamil Nadu during the period from March 2013 to September 2015. The study area is generally semi-arid to sub-humid region with frequent occurrence of drought. 40 Tellicherry and 40 Salam black kids under the age of 3 – 4 months were selected for this study. The selected goats were divided into Treatment – 1 (T<sub>1</sub> – 8 males and 12 females) and Treatment – 2 (T<sub>2</sub> – 8 males and 12 females) in each breed. The T<sub>1</sub> was kept under an intensive system of rearing and another group under the semi-intensive system of rearing (T<sub>2</sub>), throughout the study period. The animals were given an adaptation period of 15 days before the start of the experiment. The T<sub>2</sub> group was sent for grazing in both breeds which were allowed for grazing from 9.00 a.m. to 4.30 p.m. The T<sub>1</sub> group was kept under stall feeding condition. The stall-fed animals were offered concentrate feed, Co-4 grass (Bajra X Napier hybrid variety), subabul (*Leucaena leucocephala*), sorghum (*Sorghum bicolor*) stover

and ground nut haulms (*Arachis hypogaea*) at different times of the day. All the experiment animals were fed with concentrate feed as per the standard (ICAR, 2013) [4] requirement based on their age and body weight. All four groups were housed in an open type of housing with an asbestos-roofed, earthen floor shed with partitions made of chain link material.

The economic analysis was carried up-to the marketing age (9 months) of the animals. Calculation of the cost of feed input was carried on institutional purchase prices of concentrate feed, harvesting charges for tree leaves; cost of cultivation of green fodder and production cost of dry fodder were used. One labourer was engaged on part time basis to look after the stall-fed animals and another labourer was engaged to grazing of animals. The prevailing wage rate of the institution was used to calculate the cost of labour input. Prevailing institutional purchase and sale prices of live animals and

market price of manure were used for calculations. Cost of health cover included the expenditure towards deworming, vaccination and treatment of sick animals for minor ailments. Only the variable cost towards feeding and other expenditure were included and not the fixed cost as the existing shed and facilities of the institution were utilized and animals were disposed off at the end of the trial. The collected data were analyzed statistically as per the methods suggested by Snedecor and Cochran (1996) [10].

## Results and Discussions

### Economic analysis of Tellicherry goat under intensive and semi-intensive systems:

The economics of Tellicherry kids reared under intensive and semi-intensive systems of management are presented in Table. 1.

**Table 1:** Economics of rearing Tellicherry Goat under Intensive and Semi-intensive Systems

S.No.	Parameters	Intensive system		Semi-intensive system	
		Male (n=8)	Female (n=12)	Male (n=8)	Female (n=12)
<b>Expenditures:</b>					
<b>I.</b>	<b>Animal Value:</b>				
1.	Average initial weight of animals (kg)	15.56	13.13	15.63	13.17
	Value of the animals (Rs. 250/kg)	31,120.00	39,390.00	31,260.00	39,510.00
<b>II.</b>	<b>Feed Cost:</b>				
1.	Concentrate feed consumed (kg)	358.23	415.80	304.80	387.32
	Cost of concentrate feed@ Rs. 18.00 /kg	6,448.14	7,484.40	5,486.40	6,971.76
2.	Green fodder consumed-Co-4 (kg)	1,611	2,268.00	-	-
	Cost @ Rs. 1.50 /kg	2,416.50	3,402.00	-	-
3.	Green fodder consumed-Subabul green (kg)	130.86	153.79	-	-
	Cost @ Rs. 2.00/kg	261.72	307.58	-	-
4.	Dry fodder consumed- Sorghum stover (kg)	155.00	175.36		
	Cost @ Rs. 2.15/kg	333.25	377.02	-	-
5.	Dry fodder consumed-Ground nut haulms (kg)	102.70	127.40	-	-
	Cost @ Rs. 2.50/kg	256.75	318.50	-	-
	Total feed cost (Rs.)	9,716.36	11,889.50	5,486.40	6,971.76
<b>III.</b>	<b>Other Expenditures:</b>				
1.	Labour cost (Rs.)	4,125.00	6,187.50	5,280.00	7,920.00
2.	Health cover (Rs.)	152.00	138.00	136.00	138.00
3.	Miscellaneous (Rs.)	288.00	152.00	128.00	79.92
	Total expenditure (Rs.)	45,401.36	57,757.00	42,290.40	54,619.68
<b>Income:</b>					
1.	Average final body weight (kg)	25.11	19.90	24.10	19.30
	Value of the animal (Rs. 250/kg)	50,220.00	59,700.00	48,200.00	57,900.00
2.	Manure (Rs.)	1200.00	1,800.00	720.00	1,080.00
	Total income (Rs.)	51,420.00	61,500.00	48,920.00	58,980.00
	Net income (Rs.)	6,018.64	3,743.00	6,629.60	4,360.32
	Net income/animal (Rs.)	752.33	311.92	828.70	363.36

The total expenditure incurred in male Tellicherry goat under intensive and semi-intensive systems of management was Rs. 45,401.36 and Rs. 42,290.40, respectively and the total receipts obtained was Rs. 51,420.00 and Rs. 48,920.00, respectively. The net income per male animal received under the intensive and semi-intensive systems was Rs. 752.33 and Rs. 828.70 respectively in Tellicherry goat. The total expenditure in female Tellicherry goat under intensive group was Rs. 57,757.00 and in semi-intensive group it was Rs. 54,619.68. Return by manure cost was high in intensive group (Rs. 1,800.00) than in semi-intensive group (Rs. 1,080.00). The female animal value at the completion of the experiment

was Rs. 59,700.00 in intensive group and Rs. 57,900.00 in semi-intensive group. Total receipt was higher (Rs. 61,500.00) in intensive group than semi-intensive group (Rs. 58,980.00). The net income per animal was higher in semi-intensive group (Rs. 363.36) than in intensive group (Rs. 311.92) in female Tellicherry goat.

### Economic analysis of Salem Black goat under intensive and semi-intensive systems

The economics of rearing of Salem Black kids reared under intensive and semi-intensive systems of management are presented in Table. 2.

**Table 2:** Economics of rearing Salem Black Goat under intensive and semi-intensive systems

S.No.	Parameters	Intensive system		Semi-intensive system	
		Male (n=8)	Female (n=12)	Male (n=8)	Female (n=12)
	<b>Expenditure:</b>				
<b>I.</b>	<b>Animal Value:</b>				
1.	Average initial weight of animals (kg)	14.18	13.05	14.18	13.09
	Value of the animals(Rs. 250/kg)	28,360.00	39,150.00	28,360.00	39,270.00
<b>II.</b>	<b>Feed Cost:</b>				
1.	Concentrate feed consumed (kg)	328.40	333.00	266.40	315.00
	Cost of concentrate feed@ Rs. 18.00/kg	5,911.20	5,994.00	4,795.20	5,670.00
2.	Green fodder consumed-Co-4 (kg)	1572.00	1744.00	-	-
	Cost @ Rs. 1.50/kg	2,358.00	2,616.00	-	-
3.	Green fodder consumed-Subabul green (kg)	116.66	146.86	-	-
	Cost @ Rs. 2.00/kg	233.32	293.72	-	-
4.	Dry fodder consumed- Sorghum stover (kg)	120.25	180.54	-	-
	Cost @ Rs. 2.15/kg	258.53	388.16	-	-
5.	Dry fodder consumed-Ground nut haulms (kg)	109.38	108.55	-	-
	Cost @ Rs. 2.50/kg	273.45	271.38	-	-
	Total feed cost (Rs.)	9,034.50	9,563.26	4,795.20	5,670.00
<b>III.</b>	<b>Other Expenditures:</b>				
1.	Labour cost (Rs.)	4,125.00	6,187.50	5,280.00	7,920.00
2.	Health cover (Rs.)	152.00	138.00	136.00	138.00
3.	Miscellaneous (Rs)	288.00	152.00	128.00	79.92
	Total expenditure (Rs.)	41,959.50	55,190.76	38,699.20	53,077.92
	<b>Receipts:</b>				
1.	Average final body weight (kg)	23.08	18.58	21.91	18.52
	Value of the animal (Rs. 250/kg)	46,160.00	55,740.00	43,820.00	55,560.00
2.	Manure (Rs.)	1,200.00	1,800.00	720.00	1,080.00
	Total receipts (Rs.)	47,360.00	57,540.00	44,540.00	56,640.00
	Net income (Rs.)	5,400.50	2,349.24	5,840.80	3,562.08
	Net income/animal (Rs.)	675.06	195.77	730.10	296.84

The Salem Black (SB) male goat total expenditure incurred under the intensive group was Rs. 41,959.50 and in semi-intensive group it was Rs. 38,699.20. The value of male goats at the final stage was Rs. 46,160.00 in intensive group and Rs. 43,820.00 in semi-intensive group. In general, the total receipt was Rs. 47,360.00 in intensive group and Rs. 44,540.00 in the semi-intensive group male SB goat. The total receipt was highest in intensive group when compared to semi-intensive group. The net income per male animal was higher in semi-intensive group (Rs. 730.10) than in intensive group (Rs. 675.06). Based on the initial body weight, the values of SB female goats were worked out to be Rs. 39,150.00 in intensive group and Rs. 39,270.00 in semi-intensive group. The quantity of concentrate feed consumed were 333.00 kg in intensive group and 315.00 kg in semi-intensive group. In the intensive group, cost of feeding was Rs. 9,563.26 and the same was Rs. 5,670.00 in semi-intensive group in female SB goat.

The total expenditure of SB female goat was Rs. 55,190.76 in intensive group and Rs. 53,077.92 in semi-intensive group (Table 2). Values of the animals at the finishing stage were Rs. 55,740.00 in intensive group and Rs. 55,560.00 in semi-intensive group. The semi-intensive group had higher net income per animal compared to intensive group. Net income per animal was higher in semi-intensive group (Rs. 296.84) when compared to intensive group (Rs. 195.77) in SB female goat.

The net income obtained per animal in Tellicherry males reared under intensive and semi-intensive systems of management was Rs. 752.33 and Rs. 828.70, respectively and corresponding value observed in Tellicherry female kids was Rs. 311.92 and Rs. 363.36 respectively. In Salem Black kids,

the net income per animal observed under intensive and semi-intensive systems of management was Rs. 675.06 and Rs. 730.10 for males and Rs. 195.77 and Rs. 296.84 for females. The wide variation in net income per animal between sexes might be due to better growth rate and feed conversion ratio of male kids when compared to females. The present study indicated the net income per animal was higher in semi-intensive system of management when compared with intensive system of management and was in agreement with the finding of earlier reports on different sheep and goat breeds of India (Bhatt *et al.* 1991; Shinde *et al.*, 2000; Karim and Verma, 2001; Ravi and Rama Prasad, 2005; Kuldeep Parwal *et al.*, 2006)<sup>[1, 8, 5, 7, 6]</sup>.

### Conclusion

The net income per animal for males and females was higher in semi-intensive group than in intensive group in both Tellicherry and Salem Black breeds and the study indicated that the semi-intensive system was the best method for high return when compared to intensive system of management for both the Tellicherry and Salem Black goats.

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