Indian Journal of
Small Ruminants

# ECONOMIC ANALYSIS OF SHEEP FARMING IN TAMIL NADU

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Manuscript received on 27.10.2008, accepted on 10.01.2009

## ABSTRACT

A study was carried out to estimate the cost of production of sheep in farms of Tamil Nadu. The data was collected from 150 sheep farmers of Ramanathapuram district, which is a drought prone with high concentration of small ruminants. Conventional analysis in the form of percentages and averages were used to analyze the data. The results revealed that the total cost per farm with imputed value of family labour per farm was lowest in small farmer category and highest in marginal farmer category. The overall picture showed that the total gross income obtained per farm per annum from sheep flock was the highest in marginal farmers followed by landless farmers, small farmers and was the lowest in large farmers. The net return with imputed value of family labour per sheep was highest in marginal farmers followed by small farmers, landless farmers and lowest in large farmers. (**Indian Journal of Small Ruminants 2009, 15(2): 224-230).**

**Key words:** Economics, Farming, Gross Income, Net Return, Sheep



Sheep has got special importance among all other livestock species due to their multifaceted utility. India possesses one of the largest livestock populations in the world. In 2004, the country had 61 million sheep, while the Tamil Nadu had 5.59 million sheep. The sheep population in the state had always registered a positive growth rate except during 1989–94 and 1994–97 periods. In 2006-07, sheep farming contributed to 45 million kg of wool and 2.3 million tonnes of meat (Economic survey, 2007-08). Sheep farming provides regular employment and income to the rural farmers and is little influenced by the vagaries of nature. Hence, it becomes imperative to study the economics of sheep production from time to time to exploit this growing sector more efficiently. The objective of the present study was to analyze the economics of sheep production in dry land farming situations in Tamil Nadu.

## MATERIALS AND METHODS

A total of 150 sheep farmers belonging to 15 villages (10 farmers from each village) of Ramanathapuram district of Tamil Nadu, which is a drought prone district with high concentration of small ruminants, were randomly selected. The total households were post-stratified according to the land holding viz., landless (no land), marginal (upto 2.5 acres), small (2.5 to 5 acres) and large (more than 5 acres). The field survey was conducted during March - October 2007 and the data collected from the sample units related to the year 2006 -2007.

The cost of sheep/goat building and equipments were grouped under fixed investment (Moorti et al., 1985; Prabaharan and Sivaselvam, 1987) while the cost of all the animals was included to compute cost of sheep. Fixed cost included depreciation on buildings (10 per cent per annum), depreciation on equipments (15 per cent per annum) and interest on fixed investment (10 per cent per annum). Variable cost included feed cost, labour cost and health coverage charges (Dastagiri et al., 1988). Since sheep are sold at the doorstep of the farmers they do not currently incur any marketing expense. Hence the marketing cost was not included in the cost component. The sheep were allowed to graze free of cost on community lands. So expenses on feed, fodder and concentrates were not taken for estimating the feed cost. The family labour was the chief source of labour employed in sheep rearing and the labour was mostly used for the purpose of grazing management. The labour hours actually spent were recorded and converted into man-days based on the ratio of existing wage rates in the study area. Eight hours of work per day was considered as one man-day. For the calculation of imputed value of wage rate the prevailing wage rates in the study area were used. Likewise, the wages of labour employed for rearing sheep and goat were also calculated and included. The cost of vaccination, deworming, dipping, cost of medicine and fees paid to veterinary aid were included under health coverage charges in the present study. The total cost was obtained by adding all the cost items included in fixed and variable costs. Gross return was obtained by adding the returns from sale of lambs/kids, adults, manure, value of unsold lambs/kids and penning charges collected (Kumar, 2007). The various components of costs and returns in sheep production were analysed by the conventional analysis in the form of averages and percentages.

## RESULTS AND DISCUSSION

The information on classification of sample households based on the land holding size along with the flock size is presented in Table 1.The results showed that the sample farmers were distributed almost equally. In case of the average sheep flock size, it was found to be highest in large farmers (49.46), followed by landless labourers (45.61), marginal farmers (42.82), small farmers (39.07) with the overall picture of 44.45.The reason for higher flock size in the landless labourers category was that they took sheep rearing as the main source of occupation and their livelihood depended on this activity.

Table 1. Classification of sample households according to land holding in sheep farming

| Particulars | Landless labourers | Marginal farmers | Small farmers | Large farmers | Overall |
|---|---|---|---|---|---|
| Households | 36 | 35 | 39 | 40 | 150 |
| Per cent to total | 24.00 | 23.33 | 26.00 | 26.67 | 100.00 |
| Average sheep flock size per farm | 45.61 | 42.82 | 39.07 | 49.46 | 44.45 |

*Landless labourers, No land; Marginal farmers, Upto 2.5 acres; Small farmers, 2.5 to 5 acres; Large farmers, Above 5 acres*

The average fixed investments in sheep production in the study area are presented in Table 2. The investment pattern among different categories of farmers revealed that the cost of sheep accounted for the major portion (above 85 %) of the total average fixed investment followed by cost of building ranging from 6 to 8 % and cost of equipment 5 to 6 %in the study area. The overall trend also revealed the same pattern. The increase in the investment cost in the case of large and landless farmer category was due to increased sheep flock size of the sample farmers. Since sheep rearing was carried out in extensive method of farming system in the study area, less attention was paid for the infrastructure and equipments and hence it was less when compared with investment on animals.

Table 2.Fixed investment in sheep production (Rs./Farm)

| Particulars | Landless | Marginal | Small | Large | Overall |
|---|---|---|---|---|---|
| Cost of Sheep | 82293.68 | 71891.08 | 67095.64 | 86217.30 | 76557.51 |
| | (88.44) | (85.76) | (85.79) | (89.65) | (87.51) |
| Cost of Building | 5909.09 | 6815.79 | 6028.58 | 5641.03 | 6109.59 |
| | (6.35) | (8.13) | (7.71) | (5.87) | (6.98) |
| Cost of Equipment | 4848.48 | 5121.62 | 5085.71 | 4307.69 | 4817.24 |
| | (5.21) | (6.11) | (6.50) | (4.48) | (5.51) |
| **Total** | 93051.25 | 83828.49 | 78209.93 | 96166.02 | 87484.34 |
| | (100.00) | (100.00) | (100.00) | (100.00) | (100.00) |

*Figures in parentheses are percentage of the total cost*

The different cost components viz., fixed cost; variable cost and total cost in sheep production among sample farmers in the study area were computed and are presented in Table 3. In the case of fixed cost, the interest on fixed investment formed the major share that ranged from 22 to 28 % of the total cost and in the overall picture the share was 25.85 %. Since in the sheep rearing, the cost of sheep being the major expenditure when compared with building cost and equipment cost, that cost was found to be the major item. The depreciation on building cost component, ranged from 1.64 to 1.92 % with the overall share of 1.80 % in the total cost.

The hired labour cost was found to be ranging from 31 to 36 % with overall share of 35.17 %. This was followed by the imputed value of family labour cost which ranged from 29 to 32 % with overall share of 29.79 %. Since in the study area, mainly sheep are reared on extensive grazing, apart from fixed cost, the farmers incurred health cost alone and it was found to be minimal. Hence, cost of labour and imputed value of family labour formed the major components in the cost of production. The total variable cost was higher in marginal farmers and lesser in landless farmers category. The health coverage charge was higher in landless farmers and lesser in small farmers category.

Table 3. Cost components in sheep production (Rs./farm/annum)

| Particulars | Landless | Marginal | Small | Large | Overall |
|---|---|---|---|---|---|
| **Fixed cost** | | | | | |
| Depreciation on building | 590.91 (1.81) | 681.58 (1.78) | 602.86 (1.92) | 564.11 (1.64) | 610.96 (1.80) |
| Depreciation on equipment | 727.27 (2.23) | 768.24 (2.01) | 762.86 (2.43) | 646.15 (1.87) | 722.59 (2.14) |
| Interest on fixed investment | 9305.13 (28.51) | 8382.85 (21.96) | 7820.99 (24.96) | 9616.60 (27.85) | 8748.43 (25.85) |
| Total fixed cost | 10623.31 (32.55) | 9832.67 (25.75) | 9186.71 (29.31) | 10826.86 (31.36) | 10081.98 (29.79) |
| **Variable cost** | | | | | |
| Imputed value of family labour | 9951.55 (30.49) | 12478.51 (32.67) | 9710.50 (30.99) | 10225.10 (29.61) | 10081.98 (29.79) |
| Health coverage charges | 1855.60 (5.69) | 2115.25 (5.54) | 1425.50 (4.55) | 1755.60 (5.08) | 1775.40 (5.25) |
| Labour cost | 10204.90 (31.27) | 13766.06 (36.04) | 11017.14 (35.15) | 11720.90 (33.95) | 11900.00 (35.17) |
| Total variable cost | 22012.05 (67.45) | 28359.82 (74.25) | 22153.14 (70.69) | 23701.60 (68.64) | 23757.38 (70.21) |
| **Total cost** | | | | | |
| Without imputed value of family labour | 22683.81 | 25713.98 | 21629.35 | 24303.36 | 23757.38 |
| With imputed value of family labour | 32635.36 (100.00) | 38192.49 (100.00) | 31339.85 (100.00) | 34528.46 (100.00) | 33839.36 (100.00) |

*Figures in parentheses are percentage of the total cost*

The total cost was estimated in two ways – by including imputed value of family labour and without imputed value of family labour. The total cost per farm without imputed value of family labour was lowest in small farmer category and highest in marginal farmer category. The total cost with imputed value of family labour per farm was lowest in small farmer category and highest in marginal farmer category.

The information on the returns from sheep farming is presented in Table 4. The income from sheep farming was obtained mainly through sale of lambs and adults, sale of manure, value of unsold animals and through penning charges collected. In the study area, the farmers with the flock size of not less than 20 sheep allowed their sheep to house in others land during night. Rotationally the sheep flock can cover the

entire land in a week or two weeks time and the manure of sheep improves the fertility of the soil. This was one of the important income generation activities forming a major component in sheep farming. This method apart from yielding good returns to the sheep farmers also ensured that the amount was realized regularly for meeting their regular expenses. Further, to eliminate the effect of variations in the timing of sale of animals on the levels of income of different farmers, changes in the stock pattern during the accounting period was also added to the income. The overall picture showed that the total gross income obtained per farm per annum from sheep flock was the highest in marginal farmers followed by landless farmers, small farmers and was lowest in large farmers.

The major source of cash income to the farmers in the sheep farming activity was through sale of ewes and lambs. Income obtained through sale of lambs was the highest in marginal farmers followed by landless and small farmers and was the lowest in large farmers; which contributed to about 30.97, 27.55, 25.63 and 12.08 %, respectively to the total returns. The income obtained from sale of ewes was highest in marginal farmers, followed by small farmers, landless farmers and large farmers contributing to about 36.47, 41.22, 35.37 and 36.51 %, respectively to the overall share of about 34.50 %.



Table 4. Gross Return from Sheep Production (Rs./farm/annum)

| **Particulars** | **Landless** | **Marginal** | **Small** | **Large** | **Overall** |
|---|---|---|---|---|---|
| Sale of lambs | 19647.06 (27.55) | 26962.96 (30.97) | 18088.24 (25.63) | 7954.54 (12.08) | 18688.17 (27.06) |
| Sale of ewes | 25228.57 (35.37) | 31750.00 (36.47) | 29076.92 (41.22) | 24025.64 (36.51) | 23829.78 (34.50) |
| Sale of rams | 7500.00 (10.52) | 9629.63 (11.06) | 9608.70 (13.62) | 11727.27 (17.82) | 9775.80 (14.16) |
| Value of lambs unsold | 5250.00 (7.36) | 5666.67 (6.51) | 833.33 (1.18) | 7954.55 (12.09) | 2954.55 (4.28) |
| Charges collected for penning in others land | 7548.39 (10.58) | 7216.22 (8.29) | 6790.32 (9.63) | 6859.38 (10.42) | 7075.76 (10.25) |
| Value of manure utilized/ sold | 500.00 (0.70) | 600.00 (0.69) | 1000.00 (1.42) | 1666.67 (2.53) | 1350.00 (1.95) |
| Net change in the value of stock | 5645.55 (7.92) | 5240.75 (6.01) | 5150.20 (7.30) | 5625.55 (8.55) | 5385.60 (7.80) |
| **Gross return** | 71319.57 (100.00) | 87066.23 (100.00) | 70547.71 (100.00) | 65813.60 (100.00) | 69059.66 (100.00) |

*Figures in parentheses are percentage of the total cost*

Income from the sale of rams was the highest in case of large farmers followed by marginal farmers and small farmers with the percentage contribution of 10.52 (landless farmers), 11.06 (marginal farmers), 13.62 (small farmers) and 17.82 (large farmers) to

the total returns. The charges collected for penning in others land was the highest in landless farmers followed by marginal farmer, large farmer and small farmer. The lower returns in case of large farmers could be attributed to the fact that the large farmers were not directly involved in rearing the sheep. They had engaged some labourers and supervised them whereas other category of farmers along with the hired labourers also moved along with the sheep flock. Because of lower attention paid by the large farmers, incidence of disease outbreaks was reported highest in them. Similar results were reported by Palanichamy (2005). Further for calculation of return, appreciative value of the flock was also calculated separately apart from the value of lambs unsold.

The net returns from sheep production realized by the sample farmers were estimated and the results are presented in Table 5. Perusal of the table reveals that the net returns with imputed value of family labour from sheep enterprise was highest in marginal farmers followed by small farmers, landless farmers and the lowest in large farmers. Assuming that the imputed value of family labour is an indirect income to the farmer, calculations were made for net income and it was observed that the net return was highest in marginal farmers followed by small farmers, landless farmers and the lowest in large farmers.



Table 5. Net returns from sheep production (Rs./farm/annum)

| Particulars | Landless | Marginal | Small | Large | Overall |
|---|---|---|---|---|---|
| **Total fixed cost** | 10623.31 | 9832.67 | 9186.71 | 10826.86 | 10081.98 |
| **Total variable cost** | | | | | |
| Without imputed value of family labour | 12060.50 | 15881.31 | 12442.64 | 13476.50 | 13675.40 |
| With imputed value of family labour | 22012.05 | 28359.82 | 22153.14 | 23701.60 | 23757.38 |
| **Total cost** | | | | | |
| Without imputed value of family labour | 22683.81 | 25713.98 | 21629.35 | 24303.36 | 23757.38 |
| With imputed value of family labour | 32635.36 | 38192.49 | 31339.85 | 34528.46 | 33839.36 |
| **Gross return** | 71319.57 | 87066.23 | 70547.71 | 65813.60 | 69059.66 |
| **Gross return per sheep** | 1563.82 | 2033.37 | 1805.67 | 1330.62 | 1553.65 |
| **Net return** | | | | | |
| Without imputed value of family labour | 48635.76 | 61352.25 | 48918.36 | 41510.24 | 45302.28 |
| With imputed value of family labour | 38684.21 | 48873.74 | 39207.86 | 31285.14 | 35220.30 |
| **Net return per sheep** | | | | | |
| Without imputed value of family labour | 1066.43 | 1432.84 | 1252.07 | 839.25 | 1019.17 |
| With imputed value of family labour | 848.23 | 1141.41 | 1003.53 | 632.52 | 792.36 |

The net returns with imputed value of family labour per sheep was highest in marginal farmers followed by small farmers, landless farmers and the lowest in large farmers. The net returns without imputed value of family labour were found to be highest in marginal farmers followed by small farmers, landless farmers and the lowest in large farmers. From the net return per sheep, it could be observed that sheep farming was found to be highly profitable in the case of marginal farmers category followed by small and landless farmers category.

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