Economic analysis of different goat farming systems in Kallakurichi block of Villupuram District

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ABSTRACT: *Livestock are a crucial source of financial capital for the rural poor. To facilitate the adoption of economically feasible animal rearing system by farmers, both technical and economic benefits should be scientifically evaluated before making recommendations. The objective of this study was to assess the economic feasibility of non-descript and cross bred goats reared under extensive, semi-intensive and intensive systems. Fifty four goats (27 Jamunapari cross and 27 non descript) about 15 months of age were managed under three systems (viz. intensive, semi-intensive and extensive) for a period of two years (May 2014 to April 2016) in 6 different farms in Kallakurichi block of Villupuram District. Nine goats (1 male and 8 females) each from both Jamunapari cross and Non-descript were reared under three systems and the economic feasibility was evaluated using partial budget model. Partial budget analysis revealed that both Jamunapari Cross and Non-descript goats reared under semi-intensive system were economically feasible as it resulted in positive net benefit of Rs.2140 and Rs.941 respectively. The other two systems were not economically feasible because of their negative net returns. The results also indicate that, under rural conditions, rearing of crossbred goats were more economically productive and beneficial.*

Key Words: *Goat Farming, Extensive System, Intensive System, Semi-intensive system, Economic analysis, Partial budget*

INTRODUCTION

Livestock are a crucial source of financial capital for the rural poor. In fact, for rural farmers and often for poor women, livestock are the most important fungible asset as they provide a critical reserve against emergencies and decrease vulnerability to financial shocks from ill health, crop failures and other risks (Christy, 2014). The rearing of livestock helps people to meet consumption requirements not only by directly providing them with food, fuel, transport, or with hair or wool for clothing, but also by generating income that helps them to purchase other consumption goods and services (Dorward *et al.*, 2005).

The vast majority of livestock resources are kept by smallholder farmers under traditional management systems (Ayalew *et al.,* 2003). Unfortunately, improvement of these traditional production systems was too often taken to mean commercial level intensification of production to increase the output of marketable products (e.g. Delgado *et al.*, 1999). Driving forces for intensification in crop-livestock systems act at international, national, regional, and agro-eco system levels. Whether or not individual households respond to these drivers depends on the availability of household resources, the family situation, and livelihood alternatives (Udo *et al.,* 2011). Intensification of livestock production is widely advocated to meet the increasing demands for livestock products and to contribute to improving the livelihoods of rural households (Shalander Kumar, 2007) .

The goat was the first animal domesticated to produce for the consumer. Specialisation in agricultural production replaced traditional farming, aimed at supplying growing urban populations. Sheep and goat rearing is traditional occupation of economically weaker sections of society (Senthil Kumar and Meganathan, 2005). These two species have been a major source of economic sustenance and financial cushioning, especially for economically weaker section of society. Goat meat is becoming increasingly popular because of its positive ecological image, dietetic and health benefits, the cultural tendency of consumers towards natural foods and the non-association of goat meat with religious taboos (Dubeuf *et al.,* 2004). Rapidly increasing goat populations in developing countries, point to the goat assisting in solving some of the needs created by the rising human populations (Boyazoglu *et al.,* 2005).

Unlike market-oriented commercial farmers, rural livestock producers follow broad production objectives that are driven more by their immediate subsistence needs rather than demands of a market. While monetary returns are the driving force in a high-input and free-market economy, biological survival and

established cultural traditions may define the essential values of a rural community. An increasing wealth of evidence shows that subsistence agriculture follows low-input and risk-averse strategies, and the producers make rational decisions to maximize overall benefits from limiting resources, or in broader terms, to maximize total system output (Orskov and Viglizzo, 1994).

OBJECTIVES OF STUDY

To facilitate the adoption of economically feasible animal rearing system by farmers, both technical and economic benefits should be scientifically evaluated before making recommendations. There are circumstances where research outputs could be technically feasible but not profitable and hence not adopted. The objective of this study was, therefore, to assess the economic feasibility of non-descript and cross bred goats reared under extensive, semi-intensive and intensive systems.

METHODOLOGY

Fifty four goats (27 Jamunapari cross and 27 non descript) about 15 months of age were managed under three systems (viz. intensive, semi-intensive and extensive) for a period of two years (May 2014 to April 2016) in 6 different farms in Kallakurichi block of Villupuram District. Nine goats (1 male and 8 females) each from both Jamunapari cross and Non-descript were reared under three systems. Animals of the intensive group were confined in individual pens and offered green fodder *ad lib* and 300-350g concentrate mixture per head per day. The concentrate mixture consisted of wheat bran (54%), groundnut oil cake (19%), maize (26%), and salt (1%). The extensive group was allowed to graze for 8 hours daily and housed in the evenings. The semi-intensive group had access to grazing and were supplemented with 300-350g concentrate mixture at mid-day in individual pens.

TECHNIQUES OF DATA ANALYSIS

The economics module is based on the principles of partial budgeting in which the economic consequences of a specific change in firm procedure are quantified (Boehlje and Eidman, 1984). Establishing a partial budget requires information on:

1. Additional returns (returns that will not be received unless the change is undertaken i.e. increase in litter size and market weight)
2. Reduced costs (costs present in the initial situation that will be avoided if the change is made i.e. labour cost, feed cost)
3. Returns foregone (returns received in the initial situation that will not be received if the change is made - reduction in litter size and market weight)
4. Extra costs (costs associated with the change that are not present in the initial situation i.e. housing, labour and feed costs).

If the sum of additional returns and reduced costs is greater than that of returns foregone and extra costs, the change can be economically justified. The general format for partial budgeting is made up of four categories: AR, additional returns; RC, reduced costs; RF, returns foregone; AC, additional costs. Additional costs are for example control costs. Net returns, NR, are calculated by adding returns minus costs (Bergevoet *et al.,* 2009).

NR= (AR+ RC) – (RF+AC)

In order to perform the partial budget analysis, the costs and benefits were worked out by using market price prevailed during the study period in the study area for all animal. Then the average value for benefits and costs for each category were computed before imputing values in the partial budget model constructed using Google Sheets. The results are presented in the Table -1.

RESULTS AND CONCLUSIONS

Partial budget analysis revealed that both Jamunapari Cross and Non-descript goats reared under semi-intensive system resulted in positive net benefit of Rs.2140 and Rs.941 respectively. It also indicated that the other two systems were economically infeasible because of their negative net returns. Even though the rearing of goats under intensive system fetched highest additional returns due to higher market weight of kids, this system resulted in negative net returns due to higher feeding cost. Extensive system also fetched negative net returns due to poor weight gain of kids and smaller litter size. This study found that semi-intensive system rearing was economically feasible for both non-descript and cross bred goats. The results also indicate that, under rural conditions, rearing of crossbred goats were more economically productive and beneficial than the non-descript animals.

In the light of the results obtained and conclusions drawn from the study, the following policy suggestions are made. Rearing of cross breed goats may be encouraged so as to derive maximum economic gain by giving suitable incentives and support. Well-knit extension programme popularising positive features of semi-intensive system are to be developed for education at farmers' level.

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Table - 1 :

Average return per animal per year in rupees

Particulars	Extensive System		Semi-intensive System		Intensive System	
	Jamunapari Cross	Non-descript	Jamunapari Cross	Non-descript	Jamunapari Cross	Non-descript
Additional Returns (AR)	0	0	5315	3617	5415	3978
Reduced Costs (RC)	2711	2519	0	0	0	0
Returns Forgone (RF)	5120	3522	0	0	0	0
Additional Costs (AC)	0	0	3175	2676	5611	4382
Net Returns (AR+ RC) – (RF+AC)	-2409	-1003	2140	941	-196	-404