Full Length Article

SOCIOECONOMIC AND NUTRITIONAL CONTRIBUTION OF NATTUKUTTAI CATTLE IN TAMIL NADU

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ABSTRACT

An exploratory study was carried out to ascertain the socio economic and nutritional contribution of Nattukuttai cattle to the farmers in Villupuram, Tiruvallur and Kancheepuram districts of Tamil Nadu. Forty respondents were selected from each of the three selected districts and thus the total respondents accounted to 120 Nattukuttai cattle rearers. Majority of the farmers rearing Nattukuttai breed of cattle were middle aged, Hindus, belonging to Scheduled caste category and were employed as agricultural labourers. Majority of the Nattukuttai rearers had an annual income ranging from Rs. 80,500 -1,61,000/-. The mean annual income obtained from rearing Nattukuttai cattle alone was Rs. 27,945/-. Majority of the respondents were rearing Nattukuttai cattle for meat, milk and manure purpose under zero input system. The male calves were reared till 2-3 years of age and sold to the local vendors for meat purpose. Most of the farmers in the study area had the practice of consuming beef. Nattukuttai breed of cattle had a direct socio economical, ecological and nutritional impact on the sustainable livelihood of the farmers in the study area. A targeted livestock service is suggested towards Nattukuttai cattle rearers to safeguard this cattle genome as well as its ecosystem.

Keywords: Indigenous cattle, livelihood. Nattukuttai farmers, Socioeconomy

Received : 26.05.2021 Revised : 01.10.2021 Accepted : 11.10.2021

INTRODUCTION

Globalization and intensification of agriculture has a crucial impact on the population of local breeds in India. A decline of six per cent of total Indigenous / Non – descriptive cattle population has been observed in the country over the last eight years as per the 20th livestock census (LC, 2020). The major reasons for the decline in population are agricultural mechanization, shrinking of grazing land, ignorance on significant quality traits of indigenous cattle

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and high feeding cost (Balaraju *et al.,* 2017). Local Non-descriptive breeds still play an important protagonist role in ecosystem and cultural services (Ulla and Katriina, 2017). In India there are fifty registered cattle breeds, of which four breeds namely Bargur, Kangayam, Pulikulam and Umblachery are reared in Tamil Nadu (NBAGR, 2020). Nattukuttai cattle, a breed of indigenous cattle are reared in the North Eastern districts of Tamil Nadu namely Villupuram, Tiruvallur and Kancheepuram. The Nattukuttai cattle are short statured with a compact body, red or brown in colour with white spots on the body. The milk yield of Nattukuttai cows was found to be very low, while the Nattukuttai males are used mainly for draught and meat purpose. These animals were observed to be reared under zero input system by the local farmers. The occurrence of diseases in Nattukuttai breed of cattle was found to be low, when compared to crossbred cattle.

The production performance of Naattukuttai breed of cattle has been documented in few literatures only. This paves way for a systematic study on the socio economic characteristics and the marketing behaviour of Nattukuttai cattle rearers in the state. Hence, an exploratory study on socio economic characteristics and marketing behaviour of Natttukuttai cattle rearers and nutritional contribution of Nattukuttai cattle in Villupuram, Tiruvallur, and Kancheepuram districts of Tamilnadu was carried out.

METHODOLOGY

Research design

An exploratory research design was adopted in this study.

Sampling design

The three districts, viz., Villupuram, Tiruvallur and Kancheepuram of Tamilnadu were purposively selected for the present study as comparatively larger number of Nattukuttai cattle prevailed in these areas. From each of the selected districts, two blocks were purposively selected and from each block 20 Nattukuttai cattle rearing farmers were selected. Hence, a total of 120 Nattukuttai cattle rearers constituted the sample for the present study.

Data collection

A well-structured, pre-tested interview schedule was employed to elicit data on socio economic characteristics and marketing behaviour of Nattukuttai cattle rearers and nutritional contribution of Natukuttai cattle. The data thus collected were tabulated and analyzed using measures of central tendency and dispersion. The Rank Based Quotient (RBQ) method was employed to rank the reasons stated by the farmers for rearing Nattukuttai breed of cattle

RESULTS AND DISCUSSION

Socio-economic profile of the farmers rearing Nattukuttai cattle

The socio-economic characteristics of farmers rearing Nattukuttai cattle in Tiruvallur, Villupuram and Kancheepuram districts of Tamil Nadu were depicted in the Table 1.

Majority of the Nattukuttai cattle rearers were middle aged (50.83%), Hindus (88.33%) and belonging to Scheduled caste category (95.00%). This is in line with the study of Kumar *et.al.* (2016), Vekariya *et al.*(2016),

Kotresh *et al.* (2017) and Widyobroto *et al.* (2018) who stated that majority of dairy farmers belonged to middle age group. On the contrary, Vinothkumar (2014) in his study stated that 58.89 per cent of Nattukuttai cattle rearers were old aged. Thesinguraja (2017) opined in his study that majority of the Pulikulam cattle rearers were old aged and belonged to Backward community. It was reported that two decades earlier, Nattukuttai breed of cattle was reared by both backward and scheduled caste communities. The study showed that majority of the Nattukuttai cattle farmers were belonging to schedule caste, as the economically weaker section who could not able to cope up with the changes due to urbanisation and popularisation of crossbred cattle which requires comparatively higher investment. On the other hand, rearing of Nattukuttai cattle would be possible by zero input grazing system and this might be the reason for mostly scheduled caste people rearing this cattle. In the study area, the male and female farmers were equally distributed (Table 1). This is in contradictory to the report of Nisha (2019) who divulged that more than one half of the dairy farmers were female.

It could be observed from the Table 1 that, majority (56.67%) of the Nattukuttai cattle rearers were landless and most of them were possessing more than twenty years of experience in livestock rearing (44.17%). This is in line with the study of Thesinguraja (2017) and Nisha (2019) who reported that majority of the respondents were landless farmers and had more than twenty years of experience in livestock rearing. This is in partial agreement with Vinothkumar (2014) who stated that most of the Nattukuttai cattle rearers were marginal farmers (47.78%) and had more than twenty years of experience in livestock rearing (65.56%).

It could be inferred from the Table 1 that majority of the farmers rearing Nattukuttai cattle were illiterate (50.00%) and belonged to joint family type. Similar findings were reported by Kumar *et al.* (2016) and Nisha (2019). This is in partial agreement with Gopi *et al.* (2017) who reported that majority of dairy farmers in Villupuram and Salem districts were illiterate and belonged to nuclear family.

It was observed that about fifty percent of the respondents' primary income was derived by working as labourers in agriculture and industries. This finding is in accordance with the study of Nisha (2019) who stated that majority of the tribal farmers in Attappadi were primarily daily wage workers. This is not in accordance with the findings of Vinothkumar (2014) and Thesinguraja (2017). It is evident that the secondary occupation of about two - third of the Nattukuttai cattle rearers was livestock rearing. Majority of the youth in the respondent's family were showing keen interest to work in industries only and they had evinced very limited interest in Nattukuttai cattle rearing. Athilakshmy *et al.* (2013) reported that low milk procurement price and high cost of feed attributed to the decreasing interest of respondents in dairy farming.

Table 1. Distribution of respondents based on Socio economic characteristics (n=120)

S. No.	Socio economic parameters	Frequency (f)	Percentage (%)
	Age		
1	Young(≤35 years)	28	23.33
2	Middle(36-50 years)	61	50.83
3	Old(>50 years)	31	25.83
	Gender		
1	Male	60	50.00
2	Female	60	50.00
	Religion		
1	Hindu	106	88.33
2	Christian	14	11.67
	Community		
1	Scheduled caste	114	95.00
2	Most Backward class	4	3.33
3	Backward class	2	1.67
	Educational qualification		
1	Illiterate	60	50.00
2	Primary	24	20.00
3	Middle	3	2.50
4	Higher secondary	22	18.33
5	Graduate and above	11	9.17
	Family type		
1	Joint	71	59.17
2	Nuclear	49	40.83
	No.of income earners in the family		
1	One	73	60.83
2	Two	47	39.17
	Primary occupation		
1	Agriculture labourer	35	29.17
2	Agriculture	31	25.83
3	Industrial labourer	24	20.00
4	Livestock rearing	18	15.00
5	Others	12	10.00

	Secondary occupation		
1	Livestock	81	67.50
2	Others	39	32.50
	Land holding		
1	Landless	68	56.67
2	Marginal	47	39.17
3	Small	5	4.16
	Experience in Nattukuttai cattle rearing		
1	Upto 10 years	19	15.83
2	11-20 years	48	40.00
3	>20 years	53	44.17
	Total	**120**	**100.00**

Economic and nutritional contribution of Nattukuttai cattle towards sustainable

livelihood of the farmers.

The results of Economic and nutritional contribution of Nattukuttai cattle towards sustainable livelihood of the farmers is presented in this section.

Total annual income of the Nattukuttai cattle rearers

The total annual income of Nattukuutai cattle rearers is presented in Table 2.

Table 2. Distribution of respondents based on total annual income (n=120)

S. No.	Annual income (Rs)	Frequency (f)	Per cent (%)
1	Low (55,000 - <80500)	16	13.33
2	Medium (80500-161000)	74	61.67
3	High (>161000 – 300000)	30	25.00
	Total	**120**	**100.00**

It could be observed from Table 2 that the annual income of majority (62.00%) of Nattukuttai cattle rearers in the study area ranged between Rs.80,500 to Rs.1,61,000. Further it was observed that majority of the respondents were belonging to joint family type and possessed more number of dependents. This is in accordance with the study of Verma *et al.* (2014) who stated that majority of the dairy farmers' annual income ranged between Rs.80,000 to Rs.1,30,000. Kumar *et al.* (2016), Vekariya *et al.* (2016) and Adhiti *et al.* (2018) divulged that majority of dairy farmers had medium annual income. On the contrary, Vinothkumar (2014) in his study reported that majority of farmers had annual income between Rs.50, 001 to Rs.1,00,000. Kotresh *et al.* (2017) reported that the annual

household income of dairy farmers (82%) of Wayanad district was around Rs.50,000. Maximum proportion of the Pulikulam cattle rearers had total annual income above Rs.1,65,000 (Thesinguraja, 2017).

Annual income from Nattukuttai cattle rearing

The annual income from Nattukuttai cattle rearing is depicted in the Table 3.

Table 3. Distribution of respondents based on annual income from rearing Nattukuttai cattle (n=120)

S. No.	Annual income	Frequency (f)	Per cent (%)
1	Low (500 - <12430)	19	15.83
2	Medium (12430-40330)	65	54.17
3	High (>40330 – 66,800)	36	30.00
	Total	**120**	**100.00**

It could be inferred from the Table 3 that among more than fifty percent of the respondents rearing Nattukuttai cattle, the annual income obtained from Nattukuttai cattle rearing alone ranged between Rs. 12,430 – Rs. 40,330. Nagaratna *et al*. (2013) in their study opined that the percent contribution of livestock to the household income ranged from 18.63 per cent to 33.90 per cent in Western Maharashtra. It was also observed that the extent of contribution to annual income by way of sale of male calves was highest among those farmers rearing Nattukuttai cattle, followed by sale of milk and manure obtained from Nattukuttai breed of cattle (Fig.1). Thesinguraja (2017) reported that the average annual income earned from sale of Pulikulam male calves and manure were Rs.1,82,507 and Rs.58,945, respectively.

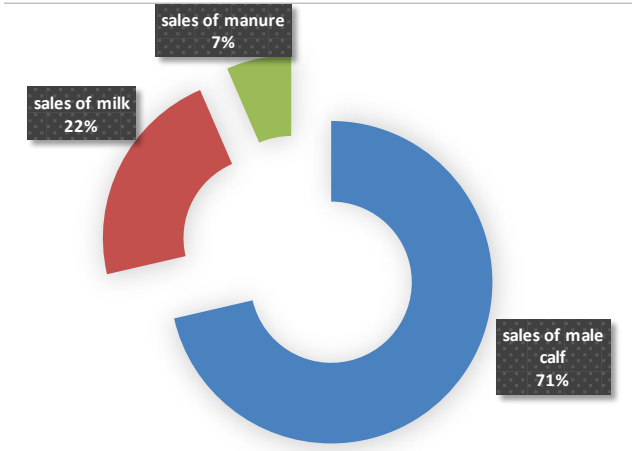

Fig. 1. Average annual income by way of sale of Nattukuttai male calves, milk and manure

Milk utilised for household consumption

The daily household consumption of Nattukuttai cattle milk was ascertained through personal interview and the data are presented below in the Table 4.

Table 4. Distribution of respondents based on daily household consumption of Nattukuttai cattle milk (n=120)

S. No.	Approximate household milk consumption/day/family	Frequency (f)	Per cent (%)
1	Less than 0.5litre	26	21.67
2	0.5 litre to < one litre	28	23.33
3	Above 1 litre	66	55.00
	Total	**120**	**100.00**

It could be observed from Table 4 that a more than one half (55 per cent) of the respondent's household consumption of Nattukuttai breed of milk per day was 1.0 litre per day followed by 23.33 per cent and 21.67 per cent who had consumed 0.5 litre and less than 0.5 litre of Nattukuttai milk, respectively.

Marketing behaviour of Nattukuttai breed of cattle rearers

The marketing behaviour of Nattukuttai cattle rearers in Tamil Nadu in terms of quantity of milk sold per day and number of calves sold per year is presented in Table 5 and 6.

Table 5. Quantity of Nattukuttai cattle milk sold

n=120

S. No.	Milk sold/day	Frequency (f)	Per cent (%)
1	Not sold	67	55.83
2	Upto 1 litre	15	12.50
3	1 litre to 2 litres	11	9.17
4	> 2 litres	27	22.50
	Total	**120**	**100.00**

Table 6. Number of male calves sold/year (n=120)

S. No.	Number of male calves sold/year	Frequency (f)	Per cent (%)
1	One calf	26	21.67
2	Two calves	40	33.33
3	Three calves and above	54	45.00
	Total	**120**	**100.00**

A perusal of Table 5 indicates that above one-half of the respondents (55.83%) were not selling Nattukuttai cattle milk, as majority of the milk is utilised for household consumption only. It was observed that around thirteen per cent of the respondents only sold up to one litre of milk daily to the nearby households, while 22.5 per cent of the farmers sold more than two litres of milk per day to the neighbouring households. The reason attributed is due to the low milk yield obtained from Nattukuttai breed of cows and the other fact is that majority of the households utilised Nattukuttai cattle milk for household consumption. This finding correlates with Mahadev (2014) and Thesinguraja (2017) who opined in their studies that most of the respondents not sold their cow's milk. This is not in agreement with the study of Ghotge and Gaspardy (2016) and Kotresh *et al.* (2017) who stated that majority of the Indian dairy farmers sold their cow's milk to dairy cooperatives. The average milk yield reported in Nattukuttai cattle was 1 litre ± 0.25 litre per day. That too the milk yield will decrease to less than 0.5 liter in subsequent months. Similar findings were reported by Vinothkumar (2014) and Thesinguraja (2017). Even though the herd size is high, due to difficulty in restraining cows and low milk yield, the farmers were reluctant to milk these cattle.

It could be observed from the Table 6 that forty five percent of the respondents had sold three and more number of Nattukuttai male calves per year while nearly one third of the farmers (33.00 per cent) sold two male calves per year and the remaining 21.67 per cent had sold only one calf per year. It was revealed by majority of the respondents that they had the habit of consuming beef regularly and they also opined that they preferred Nattukuttai cattle meat over the crossbred cattle meat due to its typical taste and tenderness.

Reasons for rearing Nattukuttai cattle

The significant reasons revealed by Nattukuttai cattle rearers for rearing Nattukuttai cattle and their preferential ranking is presented in Table 7.

Table 7. Reasons for rearing Nattukuttai cattle

S. No.	Factors	RBQ	Rank
1	Milk for household consumption	82.29	I
2	Male calves	64.79	II
3	Manure for agricultural purpose	63.65	III
4	Family income	61.56	IV
5	Zero input	58.13	V
6	Ancestral practice	47.40	VI
7	Peer motivation	28.75	VII
8	Prestige	24.27	VIII

It could be inferred from the Table 7 that milk for household consumption (82.29) was the first and foremost reason as revealed by the Nattukuttai cattle rearers for rearing Nattukuttai cattle, followed by sale of male calves (64.79) and manure for agricultural purpose (63.65). This is not in line with the findings of Nagaratna *et al.* (2013) who stated that milk for sale as the prime reason for rearing cattle. The fourth reason opined for rearing Nattukuttai cattle as perceived by the farmers was that it supported significantly to family income (61.56). Zero input farming, Ancestral practice, peer motivation and prestige were ranked fifth, sixth, seventh and eighth, respectively in that order. Olorunnisomo *et al.* (2010) reported that majority of cattle farmers (92%) rated meat production as the most important reason for rearing cattle, followed by seven per cent of them for draft purpose, while a meagre one per cent considered milk as more important than other reasons. Thesinguraja (2017) in his study revealed that factors like prestige, selling male calves and trained bulls, utilization of local resources and emotional bondage towards native breeds were the foremost reasons for rearing Pulikulam breed of cattle in Tamil Nadu

CONCLUSION

Nattukuttai cattle rearers in Tamil Nadu were resource poor farmers belonging to the Scheduled caste community. These compact cattle maintained in few districts of Tamil Nadu were reared under zero input farming system. It was observed that Nattukuttai cattle rearers had less awareness on scientific dairy farming and the number of farmers rearing Nattukuttai cattle had decreased considerably over the last decade. Four storylines of *in situ* conservation of local breed viz., sustainable use in new forms of entrepreneurship, sustainable use in agricultural primary production, service-based conservation and product-based conservation. Promoting organic farming, providing incentives, establishing market linkage and integrated livestock services to indigenous cattle rearers were some of the strategies suggested by the field veterinarians to conserve indigenous cattle population. Scientific selection and selective breeding of Nattukuttai cattle is recommended for conserving these cattle in the native tract. A significant awareness and cooperation among the community is the need of the hour to conserve Nattukuttai cattle.

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