

ASSESSMENT OF MANAGEMENT PRACTICES OF MECHERI SHEEP FARMERS IN UDUMALPET REGION OF TAMIL NADU

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ABSTRACT

Small ruminant production system is a remunerative enterprise for large number of rural people and coexists invariably with agriculture. Sheep rearing is generally associated with the non-adoption of scientific management practices in terms of breeding, feeding, housing and prophylactic measures of these production systems. The aim of the study was to investigate the management practices followed by sheep farmers of Udumalpet region of Tiruppur district of Tamil Nadu. It would therefore be valuable to assess management practices followed by different sheep production systems. A total of 50 sheep farmers were interviewed about the practices followed by them in rearing and marketing of sheep. The results revealed that improper feeding regimen for their sheep, indiscriminate breeding practices, non-adoption of vaccination and insuring the animals, poor record maintenance were the limiting factors that affect profitability from this enterprise. Further, improper use of barren/common property resources and poor marketing skills and inadequate veterinary services were the major challenges faced by the farmers of the study area. The results of the study highlighted that stakeholders should play a pivotal role in addressing the technology gap among the sheep farmers through outreach programmes, demonstrating the profit oriented accelerated lambing system, exploiting the group dynamics in availing veterinary services and quality inputs, better utilisation of common property resources by replenishing poor quality pastures and exploiting better marketing options.

Key words: Mecheri sheep, socio-economic factors, breeding, feeding, housing, lamb, constraints, management

Introduction

Sheep production is still in the hands of traditional farming community which play an important role in the sustenance of rural farmers particularly in arid and semi-arid regions. According to 20th livestock census 2019, the population of sheep in country is 74.26 million which increased by 14.1% over previous Census. Sheep production serves as one of the propitious sectors characterised by low input, easy marketing and unprejudiced social acceptance. Despite this, sheep production is characterised by scarcity of superior rams, prevalence of poor genetic make-up of animals, scarcity of feed and fodder and high mortality on account of very low adoption of recommended scientific practices. In addition, inadequate housing mostly open and under closures, depletion of grazing resources, low availability of veterinary and other support services, low price realisation, lack of organised marketing and lack of cooperatives are some major factors that affect sheep production. Sheep rearing is the one of the major livestock contributing factor in the Western part of Tamil Nadu. The state is blessed with many climate resilient breeds in which Mecheri/Mayilambadi breed of sheep is having Salem, Namakkal, Dharmapuri, Karur, Tiruppur and Erode as the breeding tract. The study area is characterized by 30.4 – 31.6-degree Celsius temperature and 59-72% humidity. Review of literature revealed that there is lack of extensive research in documenting the adoption of recommended management practices among the sheep farmers. Hence, this study focuses on the documentation of management practices followed by sheep farmers of Udumalpet region and identifying limiting factors that influences sheep rearing of Tiruppur district.

Materials and Methods

The study was conducted purposefully in Udumalpet region of Tiruppur region because the study area has dense sheep production and it coexist with agriculture. Despite, the decline trend in sheep population is observed in Tiruppur district viz., 9.94% less compared to 2012 Census and the present population of 3,31,028. The study uses primary data collected from 50 sheep farmers belonging to randomly selected 10 villages of Udumalpet region. The data were collected by pre-tested interview schedule and discussion from the key informants. The variables studied were socio-economic characteristics, feeding, breeding, housing and prophylactic management practices and constraints faced by them. The data were tabulated and described by using conventional statistical tools such as mean, SD and Percentage

Results and Discussion

Socio-economic profile of the sheep farmers

Socio-economic profile of sheep farmers was studied and presented in Table 1. The study revealed that nearly one-third of the respondents (36%) belonged to middle age, 24 per cent of the farmers belonged to old age and one-sixth (16%) of the respondents were of young age. Hence, traditional sheep production system in the study area is more of subsistence in nature which limits the participation of younger generation. Three-fourth of the sheep farmers (74%) surveyed were male and rest (26%) were female. Based on their educational qualification, about one-fourth of the respondents had high school education, nearly one-sixth of the respondents (16%) had primary and high school education each, 18 per cent had

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Table 1: Socio-economic characteristics of the sheep farmers (n=50)

S.No	Categories	f	%
Age			
1	Young (<35)	8	16
2	Middle(36-45)	18	36
3	Old(>45)	24	24
Gender			
1	Male	37	74
2	Female	13	26
Level of Literacy			
1	Can't read and write	5	10
2	Primary schooling	8	16
3	Middle	7	14
4	Higher	13	26
5	Higher secondary	8	16
6	Graduate	9	18
Adopting sheep rearing as			
1	Primary Occupation	9	18
2	Secondary Occupation	41	82
Total number of sheep			
1	Less than 25	3	6
2	26- 50	19	38
3	More than 50	28	56
Breeds possessed			
1	Mecheri	24	48
2	Mixed	26	52
Experience in sheep rearing			
1	<5	10	20
2	5-10	10	20
3	>10	30	60
Land Holding			
1	Landless	9	18
2	Marginal (Less than 2.5 acres)	23	46
3	Small (2.5- 5.0 acres)	8	16
4	Medium and Large (More than 5.0 acres)	10	20
Family size			
1	Nuclear	39	78
2	Joint	11	22
Management of sheep by			
1	Family members	50	100
2	Engaged labourers	0	0

collegiate education and rest do not know to read and write. With regard to the land holding pattern, majority (46%) were marginal farmers, 20 per cent were medium and large farmers, 16 per cent were small farmers and rest 18 per cent were landless. More than two-third of the respondents (78%) lived as nuclear family. The trend indicates that sheep rearing indicates the advantages of the small family in providing sustenance for their livelihood. This finding is contradicted by the study of Singh *et al.* (2020).

According to this study, around 70% of the sheep farmers were part of social organisation as member such as PACS, SHGs etc. Mecheri was the breed raised and preferred by almost fifty per cent of the farmers in the study area. The reason for preferring this breed as expressed by the respondents were higher demand of Mecheri breed in the shandy, range land availability for rearing and running speed of Mecheri is less when compared to Coimbatore breed of sheep (Native of Coimbatore tract of Tamil Nadu). Whereas 52% of farmers

were rearing other breeds such as Pattanam along with Mecheri breed. The reason for rearing other breeds with Mecheri is its better adaptability with low input and maximum output system. The average flock size is 43±10. The range of the flock possessed were 20 to 94 sheep. All the respondents surveyed were managing their sheep herds with their family members. About one-sixth of the respondents (66%) preferred collective selling of their sheep in shandy and rest 34 per cent of the respondents sold their goats to farms/neighbours. Collective selling method reduces transaction and transportation cost for farmers thereby resulting in high price spread and minimised the middle-men exploitation. Majority of the respondents (60%) had experience of more than 10 years of experience and rest 40 per cent had less than 10 years of experience. Only (18%) of the respondents had sheep rearing as their primary occupation. More than two-third of the respondents were large herders (more than 50), 38 per cent of the respondents were medium herders (26-50) and rest 6 per cent were small herders (Less than 25). Eighteen per cent of the respondents do not possess any land and they practice penning method (Fig.1) for income and housing needs. The results of the study revealed that socio-economic attributes were the major determinants that affect the flock size.



Fig.1: Sheep penning under coconut trees in the study area

Feeding management

According to the data presented in Table 2 and 3, all sheep farmers informed that barren and agricultural lands were used for grazing their animals and only 18 per cent of the respondents were practicing supplementary feeding, in addition to grazing. The time spent in grazing was 6 to 9 hours per day. The common areas of grazing were uncultivated areas along the road side, harvested field and barren lands. None of the respondents were providing quality green fodders and tree fodders to ram and ewe. Nearly 68 per cent of the farmers provided tree fodders like neem, agathi and moringa. This method of complete neglect of green fodder is attributed to the fact that the sheep farmers perceive that grazing supplements the green fodder requirement. High majority of sheep farmers (92%) surveyed were not including dry fodder in their feeding regime of adult ram and ewes. About half of the respondents (56%) farmers were providing dry fodder to lambs. With regard to concentrate feeding, 44 per cent of sheep farmers included concentrates feeds like maize, sorghum, broken rice and oil cakes like groundnut oil cake in the feeding regime of rams, whereas only 28 and 18 per cent of farmers included concentrate diet for their lambs and ewes, respectively. Similar feeding

Table 2: Feeding management practices followed by sheep farmers (n=50)

Feeding practices	Categories	f	(%)
Feeding practices adopted	Grazing	50	100
	Stall feeding	0	0
	Grazing and supplementation (Mineral Mixture)	9	18
Place of grazing	Barren land	2	4
	Agricultural lands	6	12
	Both	42	84

Table 3: Classification of the respondents based on the adoption of recommended feeding management practices followed by sheep farmers (n=50)

Feeding Management	Ram		Ewe		Lamb	
	Yes	No	Yes	No	Yes	No
Green fodder	0	50 (100%)	0	50 (100%)	34 (68%)	16 (32%)
Concentrates	22 (44%)	28 (56%)	9 (18%)	41 (82%)	14 (28%)	36 (72%)
Dry Fodder	4 (8%)	46 (92%)	0	50 (100%)	28 (56%)	22 (44%)
Mineral Mixture/Salt lick	9 (18%)	41 (82%)	0	0	0	0

practices were followed among sheep farmers in the Mecheri breeding tract of Coimbatore district of Tamil Nadu (Thiruvnkadam *et al.*, 2007). The importance of feeding micro nutrients through mineral mixture was least known to the farmers in the study area. With respect to mineral mixture, only 18 per cent of the surveyed sheep farmers were providing salt lick or mineral mixture in their diet. All the respondents surveyed were providing water to their sheep after grazing only. Individual water along the housing enclosure and common ponds were the major source of water for their sheep. Providing water while grazing is a better option to ameliorate stress in sheep (Hyder *et al.*, 2017). Similar feeding practices were adopted by the sheep farmers of Karur district of Tamil Nadu (Kumar *et al.*, 2021). The feed resources commonly used by the farmers differ from season to season. In agricultural (flush) seasons, the feed resources are mainly from crop residues and by product from agricultural field. On the other hand, during non-agricultural seasons (dry season) the main feed resources are from common property resources. It is evident from the study that agricultural practices and seasonal factors were the major factors determining the availability, quantity and quality of the feed resources for the sheep. Hence, introduction of best management practices for forage production viz., cultivation of cereals like maize and sorghum, leguminous crops like hedge lucerne and planting perennial forage crops such as agathi as a boundary fence will ensure forage availability during the lean period for the sheep in the study area. There is more scope to utilise the available local resource, agro - by products and crop waste with the application of field level technologies and supplementary feeds to maximise the genetic potential of the animals

Housing management

With reference to the data presented in Table 4, All respondents reared sheep under extensive method. Sheep

Table 4: Housing management practices followed by sheep farmers (n=50)

Housing practices	Categories	f	%
Rearing system	Extensive	00	100
	Semi-intensive	0	0
	Intensive	0	0
Housing type	Pucca	9	18
	Semi pucca	29	58
	Kutchcha	12	24
Roofing type	Lean	36	72
	Others	14	28
Roofing material	Thatched	21	42
	Aluminium	26	52
	Tiles	3	6
Frequency of cleaning the shed	Yes	37	74
	No	13	26
Adequate spacing	Yes	28	56
	No	22	44
Adequate height for ventilation	Yes	28	56
	No	22	44
Usage of disinfectants in shed cleaning	Yes	50	100
	No	0	0
Separate shed	Yes	8	16
	No	42	84
Migratory	Yes	6	12
	No	44	88
Flooring	Mud	47	94
	Concrete	3	6

were mostly housed during night time only which were similar to the practices reported for North coastal sheep of Andhra Pradesh (Gangaraju, 2010; Anandarao, 2010). Majority of the respondents (58%) reared sheep under semi pucca house, whereas 24% respondents and 18% respondents reared under kutchcha and pucca houses. Lean type roofing was preferred by nearly 72% of respondents and 28% of the respondents had their animals under gable type roof commonly used roofing material was country tile followed by thatched roof. Half of the respondents surveyed (52%) used country tile, 42% respondents used thatched roof and rest 6 per cent of the respondents use country tiles as the roofing material. Aluminium roof was least preferred in the study area. Most common flooring material was mud. The findings are in accordance with Kumar *et al.* (2006), Virojirao *et al.* (2008)

Nearly three-fourth of the respondents (74%) clean their shed at regular intervals viz. one time a day and rest 26 per cent of the respondents were not cleaning the shed at regular intervals. Adequate spacing between animals was provided by 56% of the respondents, whereas in the flocks maintained by 44% of respondents (overcrowding) congestion among rams, ewes and lambs was noticed. As a result of this practice, vices like wool pulling were observed in flocks that were overcrowded. Almost all the houses had adequate height (6ft) for ventilation. All the surveyed respondents were using quick lime, potassium permanganate and dung and neem mixed in water for cleaning the shed. A high majority of the respondents (84%) were rearing ram, ewe and lambs in same shed and

rest 16 per cent of the respondents were having separate shed for ram, ewe and lambs. This shows that farmers were least aware about spacing requirement and ventilation. Most of the flock (88 %) were static, while around 12% were found to be migratory. The average distance travelled was 150- 300km. The reason for migratory system of rearing was mainly practices by the larger herders (More than 70) in search of feed and fodder resources.

Breeding management

With regard to breeding management, the data presented in Table 5, uncontrolled natural mating takes place throughout the year as the rams and ewes are grazed and penned together. Further, it is observed that there were no clearly defined breeds. The probable reason might be due to indiscriminate breeding of ewes with poor genetic merit buck. Natural service was preferred by all the respondents. Flock method of mating is practiced by high number of respondents (88%). Only few respondents (14%) were practicing flushing and remaining 86 per cent of the respondents were not practicing flushing due to lack of knowledge about the importance of flushing. Physical changes like increase in the size of abdomen and udder are being considered to be some of the common signs to confirm pregnancy. More number of sheep farmers surveyed (84%) of the respondents were not exchanging the breeding rams. Adult rams are used to observe estrum among the ewes. About fifty per cent of respondents (54%) used the adult ram for more than a year before replacing them whereas 46% of respondents replaced the adult rams once in a year. The criteria followed by sheep farmers for ram selection were horn pattern, body weight and absence of physical deformities. Majority of the respondents (58%) removed the aged animal (three years of age) from their flock once in six months. It is evident from the study that the respondents were not aware about the breeding seasons and way to exploit it. Further, the farmers were not

Table 5: Breeding management practices followed by sheep farmers (n=50)

Breeding practices	Categories	f	%
Flushing	Yes	7	14
	No	43	86
Mating system adopted	Flock	44	88
	Pen	0	0
Exchange of Ram among other farmers	Yes	8	16
	No	42	84
Ram replacement	Once in a year	23	46
	More than one year	27	54



observing the ewe’s productivity in terms of observing estrus signs, pregnancy diagnosis lambing percentage. The mean ram to ewe ratio followed in the study area was 1:30-35. The optimum sex ratio for better productivity is 1:20-25. This uncontrolled mating may impair the semen quality, conception rate and lamb survival rate. The skin coat and morphological characters of the sheep (Fig. 2) revealed that the breed reared by the farmers are not pure but mixed/ cross breed, due to indiscriminate breeding.

Health care management

All the respondents surveyed dewormed their animals once in three to four months to reduce the endoparasite infection. High majority of the respondents (82%) were not vaccinating their sheep against infectious/contagious diseases. The findings were not in line with the practices of sheep farmers of Eastern part of Rajasthan (Singh *et al.* 2020). This is due to lack of awareness on vaccination, non-availability of vaccination services and lack of conviction about prophylactic measures. Sheep farmers surveyed were aware about the type of disease which causes mortality, but not aware about the prophylactic measures to control the diseases. The study revealed that sheep of this region is most affected by sheep pox, enterotoxaemia followed by foot and mouth disease. All the respondents (100%) are relying on traditional medicines as a first line of treatment for ailments. Only one-fourth of the respondents surveyed were availing treatment services from the local veterinarians. Only one-sixth of the respondents (16%) were insuring their animals. The data are presented in Table 6. The probable reason for not insuring the animals were due to lack of knowledge and awareness on the insurance schemes.

Lamb management

The data pertaining to the lamb management is glanced in Table 7. The major factor that determines ewe productivity and farm profitability is lamb survival rate. The study revealed that high majority of farmers (92%) allowed the new born lambs for an unlimited colostrum feeding. About 88 per cent of the respondents were not practising the cutting and disinfection of naval cord. Lambs up to one month of age are reared in lamb hut to protect them from extreme weather condition and predators. The farmers in the study area do not practice weaning since there lack of conviction towards weaning practices. Data regarding lamb mortality due to abortion, still birth, were questioned among farmers, but the respondents were not aware of the trends in lamb mortality. Respondents



Fig.2: Colour variants of the Mecheri sheep reared in the study area

Table 6: Health care management practices followed by sheep farmers (n=50)

Health care management practices	Categories	f	%
Deworming	Yes	50	100
	No	0	0
Vaccination	Yes	9	18
	No	41	82
Traditional medicines followed	Yes	50	100
	No	0	0
Common disease encountered in past one year	Pox like symptoms	39	78
	Enterotoxemia	32	64
	FMD	0	0
Insurance	Yes	8	16
	No	42	84

Table 7: Lamb management practices followed by sheep farmers (n=50)

Lamb management practices	Categories	f	%
Recording lamb mortality	Yes	0	0
	No	50	100
Aware about cause mortality	Yes	0	0
	No	50	100
Colostrum feeding	Yes	46	92
	No	4	8
Cutting and disinfection of navel cord	Yes	0	0
	No	50	100
Special care during extreme condition	Yes	50	100
	No	0	0
Weaning the proper age	Yes	50	100
	No	0	0

reported that lamb mortality (0-3 months age) is more during rainy season. It was evident from this study that the farmers were not recording the lamb mortality and unaware about its causes. Lambs in grazing were first dewormed at 90 days of age.

Marketing management

The flock dynamics of the farm is studied by the way of acquisition and mode of disposal of sheep by the respondents and data is presented in Table 8. Most of the farmers send their animals to market at around 6 to 9 months of age. About two-third of the respondents (66.0%) were preferring middle-men for selling their produce in shandy and rest 34 per cent of the respondents preferred their neighbourhood farms to sell their goats. Increase in flock size, festive period, financial exigencies and disease outbreak were the main reasons for selling the goats. The reason might be that majority of the time they are selling the sheep during exigencies. The study revealed that farmers generally market their animals when the flock size exceeds 60. Farmers market their sheep to

Table 8: Marketing management practices followed by sheep farmers

Marketing management practices	Categories	f	%
Source of marketing	Shandy	33	66
	Farm / Neighbours	17	34
	Middle man	0	0
Reasons for marketing	Festive period	24	48
	Exigencies	13	26
	Disease outbreak	13	26
Exploitation of middle-men	Yes	13	26
	No	37	74
Satisfied with the marketing price	Yes	28	56
	No	16	32
Preferred transport	Own transport	23	46
	Hired	27	54

Narikkalpatti and Kannivadi village in Dindigul district of Tamil Nadu and at Kundadam, a small town located in Dharapuram region of Tiruppur district of Tamil Nadu. If the farmers were not satisfied with the price offered, they were selling the sheep to the shandy in karur district, 115kms away from their place. Market price is generally determined from the prevailing market price and flat rate basis. The average price fetched during selling Ram (one year), Ewe (one year) and lamb (six months) were 20,000-25,000; 7000-9000 and 5000-6000, respectively. About three-fourth of the respondents (74%) perceived that they were not exploited by the middle-men and rest one fourth of the respondents (26%) perceived that they were exploited by middle-men.

Constraints faced by sheep farmers

The major constraints expressed by the respondents were declination of grazing/common range lands, Lack of awareness about prophylactic measures especially insurance, lack of awareness about sheep development programmes and distant location of shandy. The other constraints expressed by the respondents were inadequate availability of veterinary services, non- remunerative price for sheep while marketing in shandy and theft of animals. The most critical constraints faced by the respondents in ascending order is presented in Table 9. The finding was in accordance with the findings of Kumar *et al.* (2021), who reported that depletion of grazing area, marketing and sale of goat and sheep, morbidity and mortality of animals by diseases and predator attack mainly by dogs by the sheep farmers of Karur District

Conclusion

The study on husbandry practices of the sheep farmers of Udumalpet region revealed that the sheep farming in the breeding tract was traditional and adoption of the

Table 9: Constraints faced by sheep farmers (n=50)

S.No.	Constraints	f	%
1	Declination of grazing/ common range lands	46	92
2	Lack of awareness about prophylactic measures especially insurance	42	84
3	Lack of awareness about sheep development programmes	38	76
4	Distant location of shandy	38	76
5	Inadequate availability of veterinary services	32	64
6	Non- remunerative price for sheep	27	54
7	Theft of animals	29	58
8	Mosquito menace during seasons	12	24
9	Less recognition among peers	9	18

recommended technologies was low and there exist there is a gap in technical scientific knowledge among the sheep farmers. Scientific sheep management practices were generally not practiced by majority of the farmers, except adoption of housing management practices and vaccination against few diseases and deworming. The variations in the coat colour and morphometric of the sheep revealed that breed dilution occurs due to indiscriminate breeding. This might be due to the less extension programmes conducted by stakeholders for sheep rearing and on the other sheep herders are less interested in the training programmes. Research and increased development efforts in transferring recommended scientific technologies should be considered as a key aspect for increased production performance and breed improvement in resilient sheep production.

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