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Winter management practices of sheep farms and socio-economic status of Kashmir Marino sheep breeders

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Abstract

Study on management practices followed by the sheep farmers during winter season in Kashmir valley revealed that sheep were completely stall fed. Most of the farmers were middle aged and illiterate keeping sheep in varying flock size ranging from 5 to 150 heads. The majority of sheep farmers were traditionally associated with agriculture as the main occupation (51.75%). Dry fodder was the main source of roughage fed to the sheep during winter (100%). Concentrate feeding was followed by all the farmers (100%). Fortification of feed and fodder was not practiced by the sheep farmers. Majority of sheep flocks were housed in pucca sheds (52.63%). Random flock mating using both superior and inferior rams without any data recording and castration of low quality rams was a regular practice. Vaccination against major prevalent contagious diseases and deworming against endo and ecto parasitic diseases were regularly followed by all farmers under supervision of Sheep Husbandry Department of Jammu and Kashmir Government. It can be concluded that sheep farming in Kashmir is the secondary source of livelihood earning constrained by long and harsh winters along with high costs of feeds and fodders mainly practiced by illiterate, middle aged and poor people.

Keywords: sheep, management, concentrate feeding, random flock mating, vaccination

Introduction

The livestock rearing is core and secondary economic activity of rural communities of Jammu & Kashmir (J&K). Although it has been adopted as secondary occupation by majority of the rural population, yet it contributes significantly to overall livelihood earning of rural masses. Particular communities like Chopan, Gujjars and Bakarwals depends extensively on sheep and goat production for their livelihood. Although, sheep farming is core activity of rural masses (Rather. 2019) [16] due to favorable agro-climatic conditions and other natural endowments including rich alpine. Simultaneously, it is also less capital- intensive, important income generating option for land less labourers and marginal farmers owing to its low land requirement, low operational costs and low initial investment (Birthal and Ali, 2005) [5] but in Kashmir Valley it is constrained by long and harsh winters along with high fodder and feeding costs. Therefore, a scientific approach needs to be adopted for sheep rearing management in this temperate region specially during winter season. The production potential of sheep depends upon its genetic worth and the prevailing environmental conditions including nutrition and management. Kashmir Merino sheep is a major synthetic breed reared in Kashmir possesses promising production potential under extreme climatic conditions of Kashmir and high adoptability (Rather. 2019) [16]. To express the genetic worth to its optimum sheep requires optimum management including feeding, breeding, data recording at farmer level and provision of better housing including ventilation and hygiene. To increase the livestock production potentials more emphasis is required to maintain by adopting better management practices particularly during winter months when it is critical in Kashmir valley. By attaining this objective we can meet to some extents to the ever growing need of mutton in Jammu and Kashmir. In sheep production, winter management is the key factor in connection with production and profitability. Therefore, the present study was designed to determine the winter management practices for sheep production potential in temperate zone of Kashmir valley and the socio-economic status of the sheep farmers.

Material and Methods

The present study was carried out during the period November 2012 to March 2013 in ten villages of district Gandarbal (Lar, Ajjaj, Safapora and Nowabadi) and Bandipora (Hajin, Malikpora, Madhavan, Parank, Makdhoomari and Baniary) as these villages have good concentration of sheep farmers located nearby Mountain Livestock Research Institute of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir. A total of 125 sheep farmers were selected randomly from these villages. Data were collected through formal interview of sheep farmers regarding winter management practices followed, socio-economic status of sheep farmers, feeding practices and health management by using pre-structured and pre tested format specially developed for the purpose. The data in all villages were pooled and analyzed by using frequency and percentage (Snedecor and Cochran 1967) [23] for interpretations.

Results and Discussion

Socio-economic condition of Sheep farmers

The Socio-personal parameters of sheep farmers are presented in Table 1. As per data the age of respondents ranged from 30 to 62 years. Therefore, respondents were classified into three groups, *Viz.*; young group (Below 30 years), middle age (30 - 50 years) and old age (Above 50 years) on the basis of their age presented in Table 1. The findings revealed that the highest proportion (78.07%) of the farmers was in middle age group followed by young group (14.03%) and only 7.89% of farmers were having age 50 or above. From the study it can be concluded that middle aged people were actively involved with sheep rearing activities. Atta *et al.* (2018) [3], Sood *et al.* (2008) [24], Pal *et al.* 2009) [13], Rahman *et al.* (2012) [14], Ahamed *et al.* (2010) [1], Shah *et al.* (2017) [17], Want (2016) [26] and Sharmin (2005) [20] also reported that middle age group was actively involved in sheep and other livestock rearing activities. The reason for high involvement of middle aged people with sheep rearing may be patience, creativity, muscular strength, dynamism, vigor, zeal, talent and mental as well as physical fitness of middle aged people. The illiterate followed by middle school level (23.68%) and primary school level (18.42%) (Table 1). The results of the present study were in consonance with Sharmin (2005) [20], Sharmin (2010) [21], Want (2016) [26], Manzoor *et al.* (2020) [12] and Shah *et al.* (2017) [17] with respect of high proportion of Illiterate people involved with sheep rearing. However, Hossain *et al.* (2018) [9] reported that majority of the sheep farmers were having primary education whereas Education plays a key role in implementation and execution of improved management and breeding techniques in sheep rearing and people with higher education are more innovative than other groups. The results presented in Table 1. Indicated that sheep rearing was the main occupation for 39.47% of the sheep farmers whereas agriculture was the main occupation for 51.75% of the sheep farmers, thus, majority of the sheep farmers were depended on agriculture as a major source of livelihood for the sheep farmers of district Bandipora and Ganderbal in Kashmir. Manzoor *et al.* (2020) [12] also reported that agriculture was the main occupation of majority (45.41%) of sheep farmers. However, Dhara *et al.* (2019) [7], Shaik *et al.* (2017) [19] and Khan *et al.* (2013) [10] reported household work, sheep farming and livestock rearing as primary source of livelihood for majority of farmers. The special findings of the present study was that all the sheep farmers were found to be land

holders and percentage of medium and large farmers were 70.17% and 29.82% respectively which is the strength of sheep farming in Kashmir Valley. However, all sheep farmers were having marginal land holders. The results with respect to land holdings were in concord with earlier findings Want. 2016 [26]; Manzoor *et al.*, 2020 [12] and Shah *et al.*, 2017 [17]. However, Shirsat *et al.* (2019) [22] reported that 66.33% and 36.67 sheep farmers were housing sheep in Pucca and Kacha houses, respectively. Prevalence of Kacha and Pucca houses form housing sheep during extreme environmental conditions was also reported by Rajanna *et al.* (2012) [15], Amitendu *et al.* (2014) [2] and Chandran *et al.* (2013) [6].

Flock strength, livestock status and breeding management

The flock strength, livestock status and breeding management practices are presented in Table 1. The average flock strength of 15.38 ± 3.21 / farmers was. Majority of farmer (55.26%) had 11- 30 sheep heads in their flock, followed by 21.36% (between 31 -50 sheep heads/flock) and only 13.15% sheep farmers possessed more than 51 sheep/flock. Small fraction of farmer (5.26%) farmers possessed below 10 sheep /flock. Around one third of farmer (36.84%) maintained between 11-20 breedable ewes in their flock followed by 28.94% farmer who maintained between 21-30 breedable female, sheep whereas only 15.78% farmer possessed above 30 breedable females in their flock. About one fifth farmers (20.17%) did not keep any breeding ram in their flock and to depend on Department of Sheep Husbandry, Government of Jammu and Kashmir. Around 35.96% farmer maintained only one breeding ram in their flock followed by 17.54% who maintained 2 breeding ram in their flock. Only 30% farmer maintained 3 or more breeding rams. More or less similar findings were reported by Want (2016) [26], Shah (2017) [17] and Manzoor *et al.* (2020) [12]. Sheep farmers keep small flock size as they are constrained by long winters and high cost of feeds and fodders. However, Kunarathinam *et al.* (2019) [11] and Taye *et al.* (2000) [25] reported very small flock size of less than 10 sheep. Data recording and knowledge of data recording, an important and basic concept of animal breeding was not observed in the study area. However, random flock mating by using both inferior and superior rams was practiced. Castration of inferior slowing growing rams and producing low quality fleece of high fibre diameter was not practiced in both districts.

Housing Management: The housing management followed in study area is presented in Table 2. In the study area it was observed that 52.63% and 47.36% sheep farmers were housing sheep in pucca sheds (brick walled) and Kucha sheds, respectively. Want (2016) [26] also reported similar findings. With regard to flooring 26.31% sheds were with cement flooring and 73.68% houses were with kutcha flooring. All the farmers provided bedding materials to their sheep during winter and roughage refuses were used as bedding materials. On observation, cleanliness of sheds was found satisfactory in 21.05% and unsatisfactory in 78.94% sheds. Regarding manure disposal, all the selected farmers heaved sheep manure on the land surface. Cleanliness of the shed was followed once in day by 21.05% farmers, once in a week by 21.05% farmers, once in a month by 28.94% farmers and once a season by 28.94% farmers. Only 26.31% farmers provided adequate ventilation of the sheep shed by keeping one or two windows open whereas majority of the farmers (73.68%) did not provide adequate ventilation as they closed

the sheep shed by putting polythene sheath in all the windows as well as doors to conserve heat in order to keep the shed warm. All the farmers constructed hay rack for feeding of roughage. None of the farmer constructed drainage system inside the shed. Heating arrangement for keeping the shed was not made by any of the farmers. Spraying of disinfectants

inside the shed was not common and only 10.52% farmer's sprayed disinfectant occasionally. The results were in consonance with the findings of Manzoor *et al.* (2020)^[12] and Want (2016)^[26] However, Rather (2019)^[16] and Baba (2016)^[4] reported provision proper ventilation, feeding, housing and breeding of sheep under or Ganaized sector.

Table 1: General information about the selected sheep farmers

S. No.	Observation	No. of farmers	Percentage	
1	Age group	Below 30 years	16	14.03%
		30 - 50 years	89	78.07%
		Above 50 years	9	7.89%
	Education	Illiterate	39	34.21%
		Primary level	21	18.42%
		Middle school level	27	23.68%
		High school level	18	15.78%
		Above high school level	9	7.89%
2	Main occupation	Agriculture	59	51.75%
		Livestock rearing	45	39.47%
		Govt. job	10	8.77%
3	Land holdings	Landless	0	0.00%
		Medium (1-3 acre)	80	70.17
		Large (above 3 acre)	34	29.82%
4	Flock size	Below 10	6	5.26%
		11-30 no	63	55.26%
		31 – 50 no	30	26.31%
		Above 50	15	13.15%
5	Breedable female	Below 10	21	18.42%
		11 - 20 no	42	36.84%
		21 – 30 no	33	28.94%
		Above 30 no.	18	15.78%
6	Breedable male	Nil	23	20.17%
		Only 1	41	35.96%
		2 – 3 only	20	17.54%
		Above 3	30	30.00%

Table 2. Housing management practices followed by the selected sheep farmers.

S. No.	Observation	No. of farmers	Percentage	
1	Type of housing	Pucca shed	60	52.63%
		Tin wall and tin roof shed	54	47.36%
		Thatched roof shed	0	0.00%
2	Type of flooring	Kutchra	84	73.68%
		Pucca	30	26.31%
3	Bedding provided	Provided	114	100.00%
		Not provided	114	0.00%
4	Type of bedding materials	Roughage refuses	114	100.00%
		Fallen tree leaves	0	0.00%
5	Cleanliness of the shed	Satisfactory	24	21.05%
		Not satisfactory	90	78.94%
6	Frequency of shed cleaning	Daily	24	21.05%
		Weekly once	24	21.05%
		Monthly once	33	28.94%
		Seasonly once	33	28.94%
7	Proper ventilation	Available	30	26.31%
		Not available	84	73.68%
8	Construction of manger	Constructed	114	100.00%
		Not constructed	0	0.00%
9	Drainage system	Provided	0	0.00%
		Not provided	114	100.00%
10	Shed Heating arrangement	Provided	0	0.00%
		Not provided	114	100.00%
	Manure disposal	Manure pit	0	0.00%
		Open dumping	114	100.00%
		Not remove from the shed	33	28.94%
11	Use of shed disinfectants	Regular	0	0.00%
		Occasionally	12	10.52%
		Never	102	89.47%

Feeding management

Feeding management in study area is presented in Table 3. From the present investigation it was observed that the entire farmers stall fed their sheep during winter season. All the selected sheep farmers grew fodder and only 36.84% farmers purchased dry fodder for feeding their sheep during winter season. Feeding of dry fodder during winter was practiced by all the selected farmers as during winter green forages were not available in Kashmir Valley. Oats hay was the main dry roughage fed to the sheep by the all the farmers. More than half of the sheep keepers (63.15%) additionally fed paddy straw, 86.84% sheep farmers provided maize straw and lave grass and 81.57% farmers fed tree leaves to their sheep during winter. Roughages were provided adlibitum to the sheep. Majority of the respondents (60.52%) provided dry roughage four times a day to their animals, whereas the remaining 39.47% farmers provided three times a day. All the selected farmers fed concentrate with supplementation of common salt in the ration with majority farmers (52.63%) fed 300 – 500 gm concentrate daily to the adult sheep. Very few farmers (13.15%) provided less than 300 gm concentrate to the adult sheep. More than half of the farmers (55.26%) provided additional concentrate during advance pregnancy and early lactation. None of the single farmer in the present study fed mineral mixture to their sheep during winter. Special roughage treatments like chaffing, soaking, urea molasses treatment were not practiced by the farmer in the study area.

Tap water supplied by Public Health Engineering Department of Jammu and Kashmir Government was the main source drinking water for sheep of 42.98% farmers and river water served as source of water for 17.54% farmers. Remaining 37.14% farmers used tube well water as source of drinking water for their sheep. Drinking water was provided once daily to the sheep by majority of the farmers (84.21%) during winter. Only few farmers (15.78%) provided drinking water to the sheep twice daily. Only 17.54% farmers provided lukewarm drinking to their sheep during winter. The necessity of a clean and reliable year-round source of water cannot be overemphasized. Novice managers often mistakenly believe that animals can meet water requirements by eating snow or licking ice. With daily water requirements varying from three gallons (sheep) to 14 gallons (cattle), one can see that livestock would need to spend every waking hour eating snow to meet their requirements. Ice and snow consumption also lowers body temperature and increases maintenance energy needs, so it should be discouraged. Water consumption is encouraged when water temperature is 37°F or above. Tank heaters may be required to ensure that water sources do not freeze. Be sure to follow manufacturers' recommendations to prevent fires and electric shocks or electrocution of livestock. If heaters are not used, unfrozen water should be provided several times a day. Ensuring adequate water intake will encourage optimal health and performance of livestock and help prevent serious conditions such as colic and impaction.

Table 3: Feeding management practices followed by the selected sheep farmers.

S. No.	Observation	No. of farmers	Percentage	
1	Source of fodder	Home grown	72	63.15%
		Purchased	0	0.00%
		Both	42	36.84%
2	Feeding of dry roughage	Yes	114	100.00%
		No	0	0.00%
3	Type of roughage provided	Oat hay	114	100.00%
		Paddy straw	72	63.15%
		Maize straw	99	86.84%
		Lauve grass	99	86.84%
		Tree leaves	93	81.57%
		Rajmah/Soya bean straw	9	7.89%
4	Quantity of roughage supply	Limited supply	0	0.00%
		Ad-libium supply	114	100.00%
5	Frequency of roughage feeding	Two time	0	0.00%
		Three times	45	39.47%
		Four times	69	60.52%
6	Special treatment of roughage	Chaffing	0	0.00%
		Soaking	0	0.00%
		Urea molasses treatment	0	0.00%
		No treatment	114	100.00%
7	Feeding of concentrate supplements	Not feeding at all	0	0.00%
		Up to 300 gm/adult	15	13.15%
		300 – 500 gm/ adult	60	52.63%
		Above 500 gm	39	34.21%
8	Feeding mineral supplements	Yes	0	0.00%
		No	114	100.00%
9	Feeding common salt	Yes	81	71.05%
		No	33	28.94%
	Feeding of extra concentrate to lactating ewes	Yes	63	55.26%
		No	51	44.73%
10	Source of drinking water	Tube well water	45	39.47%
		Tap water supplied by PHE dept.	49	42.98%
		River water	20	17.54%
11	Frequency of watering	Once daily	96	84.21%
		Twice daily	18	15.78%
12	Physical status of drinking water	Cold form	94	82.45%
		Lukewarm form	20	17.54%

Health management: The health management practiced by sheep farmers in study area is reflected in Table 4. Regular drenching against prevalent parasitic infestations and vaccination against prevalent bacterial and viral diseases like FMD, ENT, sheep pox etc were practiced by farmers regularly. The vaccines and drenching material were provided by Sheep Husbandry Department of Jammu and Kashmir on subsidized rate. Similar, findings were observed by Want (2016) [26] and Shah (2017) [17]. This confirmed that farmers in the study area were well aware of vaccination and deworming practices. The sheep were shorn twice a year in autumn and winter. Both machine and hand shearing was practiced. Ganai *et al.* (2010) [8] also reported adoption of similar health management of sheep farmers in Guraz.

Table 4: Other miscellaneous management practices followed by the selected sheep farmers.

S. No.	Observation	No. of farmers	Percentage	
1	Shearing	Followed	114	100.00%
		Not followed	0	0.00%
2	Vaccination of the flock	Followed	114	100.00%
		Not followed	0	0.00%
3	Deworming	Followed	114	100.00%
		Not followed	0	0.00%

Conclusion

It is concluded that sheep farming in Kashmir is secondary source of livelihood earning constrained by long and harsh winters along with high costs of feeds and fodders mainly practiced by illiterate, middle aged and poor people. Further, mixture of scientific and unscientific practices are in vogue. Therefore, adoption of modern scientific techniques in housing, breeding, feeding, data recording and improvement in hygiene and ventilation can be a game changer in sheep production in Kashmir valley.

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