



Broad Pattern and Reason of Sheep Rearing: A study on sheep Farming in Kashmir

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ABSTRACT

The study was undertaken in the Ganderbal district of the Jammu and Kashmir. Ganderbal district is rich in the mountainous alpine pastures and sheep rearing is the core activity of people living in the high altitudes. There are three Zones based on the altitude and from each Zone, 120 sheep farmers were chosen making a total of 360 for this study. The sheep rearing in the district was divided into two main phases *i.e.*, Migratory and Non-Migratory. Migratory phase is spent on the high alpine pastures of the district and non-migratory phase mild grazing and stall feeding is done. The main reason for the farmers choosing sheep farming as an occupation was the proliferation of the sheep followed by adaptability of the sheep to Kashmir and family business of the farmers. The least preferred reason for farmers to rear sheep include least expensive to start and easier to manage. Infact, there is need for the conservation of the high land pastures scientifically because they form the backbone of sheep rearing in Kashmir.

Key Words: Alpine pastures, Migration, Proliferation, Reasons, Sheep rearing.

INTRODUCTION

Sheep and goat rearing is the core activity of rural masses of Kashmir valley and play a vital role in the socio-economic upliftment of the weaker sections of the society (Anonymous, 2019). Due to favourable agro-climatic conditions, abundant alpine meadows, and other natural resources, the J&K is suitable for sheep production. Sheep farming is the main source of income for the rural people in this region and plays an important part in the upliftment of the weaker sectors of society (Want *et al*, 2020). Shah *et al* (2018) reported in their study that sheep rearing is an important secondary occupation in the Kashmir but is primarily in the hands of poor and illiterate people with low income and marginal land holding. The existence of alpine and sub-alpine pastures, locally called as Margs or

bahaks, is a distinctive feature of the mountainous UT of Jammu and Kashmir (Allen *et al*, 2011). The presence of these Alpine pastures plays an important role in the sheep rearing in Kashmir valley. It can be said that alpine pastures are having major importance in sustaining the small ruminants in Kashmir (Singh *et al*, 2018). The semi-migratory nature of the sheep in the Kashmir has been reported in the study conducted by Bhatia and Arora, (2005). The main objective of this study was to document the pattern of the sheep rearing in Kashmir that is unique from the other parts of the India. Moreover the major factors for which the farmers are choosing sheep rearing as a profession as sheep rearing is the main income generating source for the majority of the people in downtrodden areas in Kashmir.

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MATERIALS AND METHODS

The area for this study was chosen as Ganderbal district of Central Kashmir. Ganderbal is the newly formed district Jammu and Kashmir of India, earlier, it was part of Srinagar. It is located at 34.14°N and 74.47°E at an average elevation of 1,950 m (6,400 ft) above sea level and at a distance of 21 kilometres from Srinagar city. The Ganderbal district was divided into three Zones based on the different altitude of the area. The Zones include Zone-I (high altitude), Zone-II (Medium altitude) and Zone-III (low altitudes or planes). From each zone the villages having more sheep population based on the preliminary study and interaction with officials of sheep husbandry department were chosen for interview. From each Zone 120 sheep farmers were chosen based on the snowball sampling technique. This made a total of 360 respondents for the present study. A well-structured questionnaire was formulated in consultation with the experts for collection of the information from the sheep farmers of the area. The basic information regarding the pattern of sheep rearing during migration and non migratory period along with the major reasons for choosing sheep rearing as a source of income was gathered from the respondents.

Statistical analysis: The data were analyzed using Software Programme, Graph Pad Prism, version 6 and results were expressed as Mean \pm S.D. The average differences of parameters among Zone-I, Zone-II and Zone-III were made by one way analysis of variance (ANOVA) and means were compared using Tukeys multiple comparison test. The p value ≤ 0.05 was considered statistically significant.

RESULTS AND DISCUSSION

Broad pattern of sheep rearing in Kashmir

In Kashmir, sheep production is divided into two primary phases: migratory and non-migratory. The strategy of sheep rearing in Kashmir is illustrated in Fig 1. The non-migratory period is even further divided into two sub-phases, one of

which comprises entirely intensive sheep rearing. During this phase, the sheep are entirely confined to the inside and stall feeding is done. This phase is the most challenging phase for the sheep rearers in Kashmir. On one hand the feeding costs increase much during this phase and on other hand the prices are also high along with the chances of shortage of feed and fodder. It was also reported by Manzoor *et al* (2020) that Sheep rearers meet most of the requirements for the enterprise from the available resources except winter feeding. From December through March, this sub-phase lasts mostly four months. The other sub-phase of the migratory period falls before winter and early spring, and it involves mild stall feeding. During this sub phase sheep are herded to graze surrounding available grazing places including CPR, forests and mountain areas, road side, and so on during the non-migratory period. The migratory phase of sheep rearing in Kashmir is the second stage. The feeding of salt for prevention of various diseases and increasing the productive and reproductive performance before migration of the sheep to highland pastures was reported by Rather *et al* (2020) and Shubeena *et al* (2018) and use of beef soup was reported by Shubeena (2017) in their respective studies. Sheep flocks are migrated to highland pastures or Kashmir's alpine pastures for 6-7 months during this phase. A shepherd (also called as Chopan locally) is hired to move sheep to highland pastures at a fixed amount per sheep. During migratory period it is entirely duty of the Chopan to take care of sheep and if there occurs death of any animal the chopan has to provide proof in the form of the skin of the dead animal. Rather *et al* (2020) also reported in their study that the chopan has to provide the skin of the dead animal as proof to the farmer. During this phase, the sheep are entirely reliant on grazing, and no feeding expenses are to be handled by the farmers. The similar findings were reported by Mir *et al* (2016) Ahmad *et al* (2018) and Rather *et al* (2020) who in their respective studies reported that sheep flocks migrate to far away distances and thrive on alpine pastures during May to September-October

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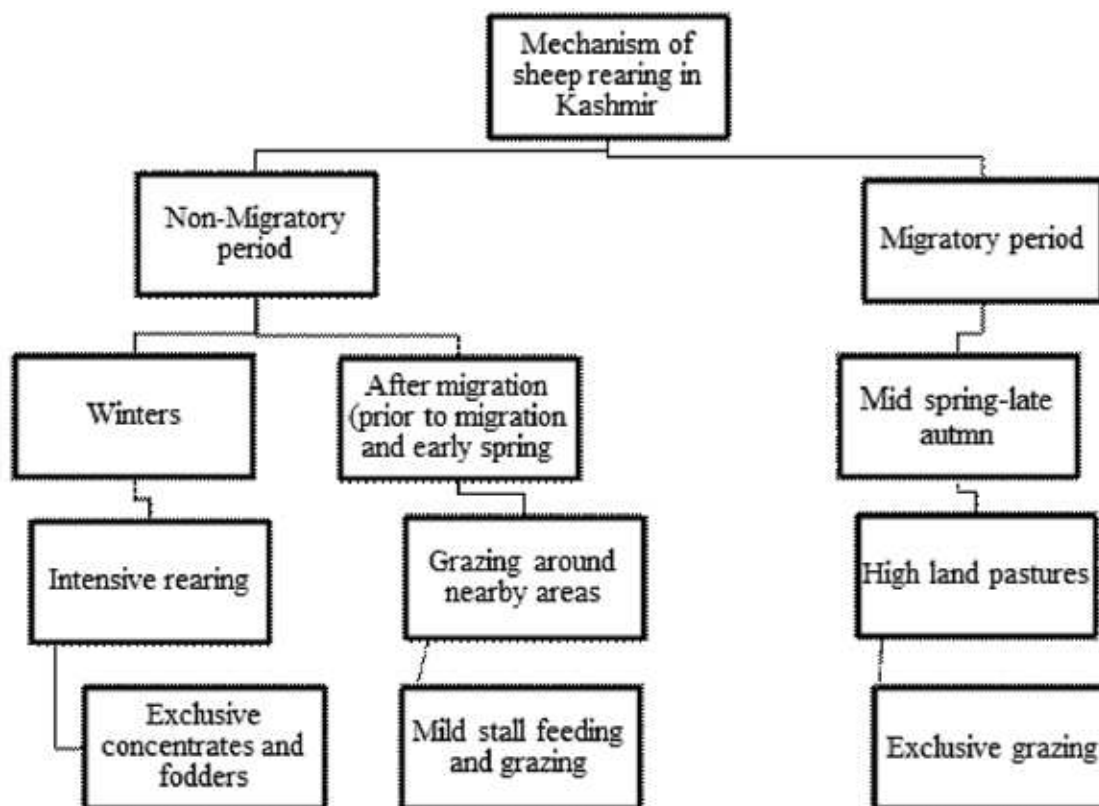


Fig 1: Broad pattern of sheep rearing in Kashmir Division

months. Despite the fact that the state has more than 75% of the entire Himalayan alpine region, excessive grazing pressure and a lack of scientific management approaches are causing degradation, which is negatively affecting herbage productivity and, as a result, livestock (Ahmad *et al*, 2018)

Reasons for rearing of sheep

The results (Table 1) showed that majority (55.0%) of the farmers reveal that high proliferation of the sheep was the reason for sheep rearing and which varied significantly between Zone-III and other two Zones (Table 2). The mortality and disease resistance of the sheep was found to be medium by majority of the farmers and mortality don't show any significant difference between the three zones while as disease resistance varies significantly between the Zone-III and other two Zones. The sheep are known for their resistance, adaptability and less prone to diseases except in case of some outbreaks. Profitability in sheep farming was found to be medium by majority (57.78%) and varies

significantly between the Zone-III and Zone-I and Zone-II highest being in Zone-III. Family business as a reason for sheep rearing was found to be high by majority (62.22%) of the farmers and was varying significantly between the Zone-III and Zone-I and Zone-II highest being in Zone-I and Zone-II. In Zone -I and Zone-II there are majority of the traditional sheep farmers and has chosen sheep farming as family business.

The data (Table 2) indicate that high proliferation potential of the sheep is the first reason (mean of 2.53). The sheep are the prolific breeders and double the flock size in one year that increases the profit and interest of farmers. The proliferation of the sheep was varying significantly between the Zone-I and Zone-III and Zone-I and Zone-III ($P < 0.05$) while as there was not any significant difference between Zone-I and Zone-II. The second and third main reason of the sheep farmers for rearing of sheep was found to be adaptability of the sheep in the area and family business respectively. The better adaptability

Table 1. Distribution of farmers as per the reason of selecting sheep farming as their occupation.

Particulate	Scale	Zone-I	Zone-II	Zone-III	Overall
Proliferation	Low	4 (3.33)	2 (1.67)	0 (0)	6 (1.67)
	Medium	50 (41.67)	68 (56.67)	38 (31.67)	156 (43.33)
	High	66 (55.00)	50 (41.67)	82 (68.33)	198 (55.00)
Mortality	Low	24 (20.00)	36 (30.00)	36 (30.00)	96 (26.67)
	Medium	92 (76.67)	68 (56.67)	70 (58.33)	230 (63.89)
	High	4 (3.33)	16 (13.33)	14 (11.67)	34 (9.44)
Disease resistance	Low	36 (30.00)	44 (36.67)	18 (15.00)	98 (27.22)
	Medium	70 (58.33)	68 (56.67)	84 (70.00)	222 (61.67)
	High	14 (11.67)	8 (6.67)	18 (15.00)	40 (11.11)
Adaptability	Low	0(0)	6 (5.00)	6 (5.00)	12 (3.33)
	Medium	36 (30.00)	70 (58.33)	64 (53.33)	170(47.22)
	High	84 (70.00)	44 (36.67)	50 (41.67)	178 (49.44)
Profitability	Low	6 (5.00)	8 (6.67)	0(0)	14 (3.89)
	Medium	86 (71.67)	68 (56.67)	54 (45.00)	208 (57.78)
	High	28 (23.33)	44 (36.67)	66 (55.00)	138 (38.33)
Expensive to start	Low	78 (65.00)	90 (75.00)	84 (70.00)	252 (70.00)
	Medium	38 (31.67)	30 (25.00)	36 (30.00)	104 (28.89)
	High	4 (3.33)	0 (0)	0 (0.00)	4 (1.11)
Easier to manage	Low	38 (31.67)	44 (36.67)	26 (21.67)	108 (30.00)
	Medium	70 (58.33)	64 (53.33)	84 (70.00)	218 (60.56)
	High	12 (10.00)	12 (10.00)	10 (8.33)	34 (9.44)
Diversification of risk	Low	0 (0.00)	24 (20.00)	2 (1.67)	26 (7.22)
	Medium	64 (53.33)	84 (70.00)	88 (73.33)	236 (65.56)
	High	56 (46.67)	12 (10.00)	30 (25.00)	98 (27.22)
Family business	Low	14(11.67)	8 (6.67)	56 (46.67)	78 (21.67)
	Medium	8(6.67)	22 (18.33)	28 (23.33)	58 (16.11)
	High	98(81.67)	90 (75.00)	36 (30.00)	224 (62.22)

(Figures in parenthesis indicate the percentage)

of the sheep towards harsh climatic conditions was also reported by Wodeyar and Kadam (2018). The adaptability of the sheep was varying significantly between Zone-I and other two Zones ($p < 0.05$) with highest adaptability in Zone-I (2.70 ± 0.45). Zone-I have more traditional farmers and some farmers use to rear indigenous breeds of sheep having better adaptability.

The sheep farmers used to follow the sheep farming as traditional business. The Kashmir Valley

is ideally suited for small ruminant rearing due to presence of alpine pastures, available grazing areas as suited to the nature of sheep and goat so it has turned to be a family business for number of farmers. The profitability of sheep than other livestock species also plays a role for taking this as a way of earning. Uzunoğlu and Akçay (2009) in their study also revealed that sheep farming is a profitable business. Less investment and easy to manage were at rank-IX and rank VIII with mean

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Table 2. Average mean score and SD of the reasons for rearing of sheep in Ganderbal district of Central Kashmir.

Particulate	Zone-I	Zone-II	Zone-III	Overall	Rank
Proliferation	2.50 ± 0.56 ^a	2.4 ± 0.52 ^a	2.68 ± 0.46 ^b	2.53±0.53	I
Adaptability	2.70± 0.45 ^a	2.31±0.56 ^b	2.36 ± 0.57 ^b	2.46±0.56	II
Family business	2.7±0.66 ^a	2.68±0.59 ^a	1.83 ± 0.86 ^b	2.40±0.82	III
Profitability	2.17±0.51 ^b	2.3 ± 0.58 ^b	2.55 ± 0.49 ^a	2.34±0.55	IV
Diversification of risk	2.46 ± 0.50 ^a	1.9 ± 0.54 ^c	2.23 ± 0.46 ^b	2.2±0.55	V
Disease resistance	1.80±0.62 ^a	1.7 ± 0.58 ^a	2 ± 0.55 ^b	1.83±0.60	VI
Low mortality	1.83 ± 0.45	1.83 ± 0.63	1.81 ± 0.62	1.82±0.57	VII
Easier to manage	1.78±0.61	1.73 ± 0.63	1.86 ± 0.53	1.79±0.59	VIII
Less expensive to start	1.38±0.55	1.25 ± 0.43	1.3±0.46	1.31±0.48	IX

(Figures with different superscripts within a row differ significantly at $p < 0.05$)

score of 1.31 and 1.79 respectively. Diversification of risk at rank 5 was varying significantly between the three production Zones of the study area with highest diversification of risk in Zone-I. In Zone-I although there are more risks in terms of feed shortage etc. but high experience of farmers play a great role to mitigate the risks associated with sheep rearing. Harsh winters, low growth rate and disease outbreaks as major risk factor in sheep farming in Kashmir were also reported by Shubeena *et al* (2021) in their study on sheep farming in Kashmir.

CONCLUSION

The sheep rearing is the core activity of the rural masses in Kashmir and alpine pastures form the backbone of sheep rearing. There is need for the scientific conservation of the alpine pastures of the Valley so that sheep farming turns to be sustainability. The proliferation of the sheep although is good but can be improved by introducing traits of twinning like *Fec-B* genes so that this enterprise turns to be more profitable in the future. The farmers who have taken sheep farming as family business can be turned into entrepreneurs by proper information and awareness.

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