

ANIMAL HEALTH-CARE AND ANIMAL PRODUCE MARKETING PRACTICES ADOPTED BY LIVESTOCK FARMERS IN HIGH ALTITUDE NORTH-WESTERN HIMALAYAN (GUREZ) VALLEY OF JAMMU AND KASHMIR

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ABSTRACT

The present study was undertaken to assess the health-care and animal produce marketing practices followed by livestock farmers in Gurez valley of Kashmir. The information was gathered from livestock farmers (n = 63) in three arbitrary zones viz., Lower, Middle and Upper Gurez through interview and direct observation using pre-tested structured questionnaire. The results revealed that farmers practiced deworming (86%) and vaccination (84%) to prevent occurrence of diseases in livestock, with higher (P<0.01) dosing practicing level in Lower and Middle Gurez when compared to Upper Gurez. Dipping to prevent external parasitic infestation was practiced by only 21% of the respondents mainly in Middle Gurez. Sanitary conditions of animal houses were poor which were cleaned only once in a day (67%) or once in three days (33%) along with no drainage facilities (100%) and poor ventilation (91%). Only 6% of the farmers provided mineral mixture supplement to their animals, while 65% of the farmer reported no provision for isolation of sick animals within animal sheds. Production was highest for milk (P<0.05) in Middle, while that of wool (P<0.01) in Upper Gurez. Wool clipping of sheep was done twice annually (95%). The animal produce i.e. milk (84%) and wool (71%) were consumed mainly for domestic purposes. Sixty-five percent of the respondents preferred to sell animals in district town markets. The study concluded that poor sanitary conditions of animal sheds, farmers' unawareness for technical farming and livestock management; and poor marketing facilities were the major constraints in the sustainable livestock farming in Gurez valley of Kashmir.

Keywords: Animal produce marketing, Gurez valley, Health-care practices, Livestock

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Under mountain agro-ecosystems, extreme biophysical and climatic conditions constrain the agricultural productivity, so most of the community livelihood activities revolve around livestock. Animal husbandry remains one of the most important means of providing livelihood and nutritional security to the majority of rural masses (Kumar *et al.*, 2020). Understanding different animal husbandry practices followed by the farmers is important to identify the strengths and weakness of the adopted animal rearing system for planning appropriate interventions to enhance health, performance of livestock (Tewari *et al.*, 2018) and efficient channelization of animal produce for higher economic returns to the farmers.

Gurez is a remote beautiful valley of Kashmir in India's North-Western high altitude Himalayas. The region being bestowed with rich natural resources along with typical mountainous terrain embracing long flat grasslands provide enormous scope for livestock especially small ruminants based production system. Sheep and goat rearing is the core activity of rural masses in the region, and it plays a vital role in social, economical and nutritional security of migratory herders (Gujjars, Bakerwals, Chopans, Gaddies) which form weaker sections of the society. However, several factors like poor performance, high mortality etc.

impedes animal productivity; besides, non-remunerative price for livestock produce making livestock enterprise less monetarily beneficial for the farmers. In this context, the present study was undertaken with the aim to gather information regarding existing health-care and animal produce marketing practices followed by the livestock farmers in Gurez valley.

MATERIALS AND METHODS

The study was conducted in Gurez valley, one of three tehsils of district Bandipore in Kashmir division, located at an altitude of about 2370 m above mean sea level, extending between 34° 25' North latitude and 74° 38' East longitude. The study was carried out in three zones viz., Lower Gurez (Bagtoor belt), Middle/Central Gurez (main Gurez valley) and Upper Gurez (Tulail belt), where three villages (Koragbal, Tarbal and Kanzalwan in Lower Gurez; Achoora, Churwan and Dawar in Middle Gurez; Sheikpora, Badoab and Burnoi in Upper Gurez) in each zone were selected based on the highest livestock population. In each village, seven farmer families were selected randomly for the study.

A single-visit-multiple-subjects formal survey technique (ILCA, 1990) was used to gather information. Information and data pertaining to the animal health-care

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and animal produce marketing practices adopted by the livestock farmers were obtained through household semi-structured interviews conducted in the local language by the authors among the family elders of all visiting households ($n = 3 \times 3 \times 7 = 63$) using a pre-tested, structured questionnaire and personal observation. The questionnaire was prepared in accordance with objectives of the study before collection of data and validated against field conditions.

The analysis of the data was performed using chi-square test statistics. The test was two sided and referenced for P value for their significance. Any P value less than 0.05 ($P < 0.05$) was taken to be statistically significant. The analysis of the data was carried out by using statistical software program SPSS (version 20.0).

RESULTS AND DISCUSSION

Animal health-care practices: Table 1 shows the animal health-care practices adopted by the livestock owners in Gurez valley. The most prevalent diseases were foot and mouth disease (81%) in cattle, foot rot (43.30%) and mange (38.80%) in sheep and goat. The probable reason might be poor sanitary conditions in animal houses as cleaning of the sheds were done only once in a day (67%) or once in three days (33%) along with no provision of drainage facilities (100%) and poor ventilation (91%) in animal shed. Farmers followed the deworming (86%) and vaccination (84%) practices with significantly ($P < 0.01$) higher deworming practicing level in Lower and Middle compared to Upper Gurez. However, only 28% of the farmers practiced deworming of their animals twice annually with higher ($P < 0.05$) values in Middle compared to Lower and Upper Gurez. This suggests fair level of awareness in livestock farmers particularly in Middle Gurez regarding protecting their animals against endoparasites and contagious diseases. Dipping to control ectoparasites was practiced by only 21% of the respondents in the surveyed areas mainly in Middle Gurez. As no scientific reporting from the area has been done so far, comparing these practices with similar studies conducted outside Gurez valley, the results have been found comparable to the reports of Somagond *et al.* (2019) for livestock reared by Soliga tribe of Karnataka, and Barnes *et al.* (2020) for herdsmen of rural Mongolia.

The veterinary services were being acquired (73%) from hospitals, dispensary or stockman centre for treatment of animals, reflecting well linkages with veterinarian departments. These findings were in agreement to those of Lavania *et al.* (2014) for care and management practices adopted by tribal goat farmers. Similarly, Tewari *et al.* (2018) reported that 85% of the respondents received well animal health-care services in Tarai region of Uttarakhand.

Animal management practices: Table 2 represents the animal health related management practices followed by the livestock farmers in Gurez. All the farmers had kacha close type animal houses, mainly as part of human residential buildings. Animal stockings within the sheds were mostly mixed with little provision for proper ventilation (9%) and no (0%) regular bedding and drainage arrangements. Regular cleaning of the animal sheds was not done in any of the surveyed area i.e. sanitary conditions of majority of the animal houses were poor, which predisposes the livestock to various infectious diseases. Similarly, Somagond *et al.* (2019) reported that majority of the livestock farmers of Soliga tribe did not adopt sanitary practices in their animal sheds. Maousami (2015) also reported that only 37.5% respondents were cleaning the animal sheds regularly.

Only 6% of the farmers that too in Middle (14.30%) and Upper (4.80%) Gurez supplemented the diet of animals with mineral mixture. This might be due to unawareness of livestock farmers regarding importance of mineral mixture supplementation and/or reluctance in use due to additional cost incurred for feeding of mineral mixture, predisposing livestock to many dietary deficiency conditions. Similar findings were reported by Madke *et al.* (2006) who reported only 6.67% of farmers fed mineral mixture to their animals. In contrast, Kavitha *et al.* (2020) reported that 81.67 % of the farmers followed mineral mixture supplementation in ration of dairy animals. No provision for isolation of sick animals within animal sheds was reported (65%), since mixed livestock stocking being practiced in the study area. Similar findings were reported by Tewari *et al.* (2018). Farmers (67%) had below average technical knowledge about livestock farming, indicating lack of their awareness about scientific and/or modern livestock practices. All these factors leads to deterioration of health and poor body score condition of animals, resulting in their lower productivity making livestock enterprise less remunerative for the owners in the study area.

Animal produce marketing practices: The animal produce marketing practices adopted by livestock rearers as depicted in Table 3 showed that milk production (expressed as L/animal/day as well as L/family/day) was highest ($P < 0.05$) in Middle when compared to Lower and Upper Gurez. This was probably due to better feeding opportunities and/or practices adopted, and presence of good germplasm (mostly crossbred in Dawar) dairy animals in the Middle Gurez. However, milk produced daily was consumed wholly for domestic purposes (84% overall). Among 16% of the farmers that reported surplus milk production, only 4.32% (27% of the overall) of the respondents were involved in production of milk products at home, while

Table 1
Animal health-care practices followed by livestock farmers in Gurez valley

Variables		Surveyed zones			Overall Gurez	P value
		Lower Gurez	Middle Gurez	Upper Gurez		
Common diseases of cattle	FMD	86.40 (19)	78.30 (18)	77.80 (14)	81.00 (51)	0.725
	others	13.60 (3)	21.70 (5)	22.20 (4)	19.00 (12)	
Common diseases of sheep/goat	Mange	37.50 (18)	36.40 (16)	42.90 (18)	38.80 (52)	0.804
	Footrot	43.80 (21)	47.70 (21)	38.10 (16)	43.30 (58)	
	Others	18.80 (9)	15.90 (7)	19.00 (8)	17.90 (24)	
Deworming	Yes	95.20 (20)	95.20 (20)	66.70 (14)	85.70 (54)	0.009
	No	4.80 (1)	4.80 (1)	33.30 (7)	14.30 (9)	
Frequency of deworming/year	Once	85.00 (17)	50.00 (10)	85.70 (12)	72.20 (39)	0.020
	Twice	15.00 (3)	50.00 (10)	14.30 (2)	27.80 (15)	
Dipping	Yes	19.00 (4)	33.30 (7)	9.50 (2)	20.60 (13)	0.159
	No	81.00 (17)	66.70 (14)	90.50 (19)	79.40 (50)	
Vaccination	Yes	81.00 (17)	95.20 (20)	76.20 (16)	84.10 (53)	0.213
	No	19.00 (4)	4.80 (1)	23.80 (5)	15.90 (10)	
Consultancy linkage with veterinary hospitals	Yes	71.40 (15)	81.00 (17)	66.70 (14)	73.00 (46)	0.569
	No	28.60 (6)	19.00 (4)	33.30 (7)	27.00 (17)	

Table 2
Health related managerial practices followed by livestock farmers in Gurez

Variables		Surveyed zones			Overall Gurez	P value
		Lower Gurez	Middle Gurez	Upper Gurez		
Cleaning of sheds	Once/day	71.40 (15)	71.40 (15)	57.10 (12)	66.70 (42)	0.526
	Twice/day	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	
	Once/3 days	28.60 (6)	28.60 (6)	42.90 (9)	33.30 (21)	
Provision of ventilation in sheds	Inlet/outlet	90.50 (19)	86.40 (19)	95.50 (21)	90.80 (59)	0.580
	Window also	9.50 (2)	13.60 (3)	4.50 (1)	9.20 (6)	
Provision of drainage within sheds	Yes	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	1.000
	No	100.00 (21)	100.00 (21)	100.00 (21)	100.00 (63)	
Mineral mixture supplementation	Yes	0.00 (0)	14.30 (3)	4.80 (1)	6.30 (4)	0.154
	No	100.00 (21)	85.70 (18)	95.20 (20)	93.70 (59)	
Provision for isolation of sick animals	Yes	23.80 (5)	52.40 (11)	28.60 (6)	34.90 (22)	0.115
	No	76.20 (16)	47.60 (10)	71.40 (15)	65.10 (41)	
Technical knowledge about livestock farming	Good	0.00 (0)	4.80 (1)	0.00 (0)	1.60 (1)	0.362
	Average	23.80 (5)	38.10 (8)	33.30 (7)	31.70 (20)	
	Below average	76.20 (16)	57.10 (12)	66.70 (14)	66.70 (42)	

11.68% (73% of the overall) distributed the same among neighbours largely in kind. The farmers in Lower and Upper Gurez freely distributed the surplus milk probably due to poor or no nearby market availability as reported by 98% of the respondents, while in Middle Gurez 5% of the farmers marketed the surplus milk through local vendors.

Wool production (kg/animal/year) was highest

($P < 0.01$) in Upper compared to Lower and Middle Gurez. This might be probably in response of the animals to more harsh environmental conditions prevailing in the Upper Gurez. Mostly sheep were clipped twice in a year (95%); however, single clipping was being practiced only in Upper Gurez (14.3%) where the wool produced was used by the farmers mainly for domestic purposes (71%) due to

Table 3
Animal produce marketing practices adopted by livestock farmers in Gurez valley

Variables	Surveyed zones			Overall Gurez	P value	
	Lower Gurez	Middle Gurez	Upper Gurez			
Milk	Milk yield (L/animal/d)	2.07±0.07	2.87±0.19	2.23±0.19	2.39±0.14	0.025
	Milk yield (L/family/d)	2.13±0.09	3.07±0.29	2.47±0.14	2.56±0.17	0.038
	Milk consumed for					
	Partial domestic purpose	14.30 (3)	28.60 (6)	4.80 (1)	15.90 (10)	0.105
	Whole domestic purpose	85.70 (18)	71.40 (15)	95.20 (20)	84.10 (53)	
	Surplus milk disbursal					
	Production of milk products	0.00 (0)	40.00 (2)	33.30 (1)	27.30 (3)	0.452
	Distributed among neighbours	100.00 (3)	60.00 (3)	67.70 (2)	72.70 (8)	
	Milk marketing through					
	Retailer	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	—
	Cooperative	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	—
	Vendor	0.00 (0)	4.80 (1)	0.00 (0)	1.60 (1)	0.362
	No marketing	100.00 (21)	95.20 (20)	100.00 (21)	98.40 (62)	
Wool	Wool yield (kg/animal/year)	1.07±0.03	1.03±0.02	1.57±0.03	1.22±0.09	<0.001
	No. of clippings/year					
	Once	0.00 (0)	0.00 (0)	14.30 (3)	4.80 (3)	0.043
	Twice	100.00 (21)	100.00 (21)	85.70 (18)	95.20 (60)	
	Purpose of wool production					
	Self	38.10 (8)	42.90 (9)	71.40 (15)	50.80 (32)	0.065
	Sold in local market	9.50 (2)	23.80 (5)	0.00 (0)	11.10 (7)	0.047
	Both	52.40 (11)	33.30 (7)	28.60 (6)	38.10 (24)	0.243
Meat	Meat marketing					
	Self	23.80 (5)	47.60 (10)	33.30 (7)	34.90 (22)	0.265
	Sold in market	76.20 (16)	52.40 (11)	66.70 (14)	65.10 (41)	

non-availability of market for the wool produce. Sale of animals for meat was made once in a year or on specific occasions (marriage ceremony, festivals etc.) mainly from September to November with the aim to decrease the flock size before the onset of harsh winter season when the area experiences heavy snowfall and remains cut off from the outside world till May of next year. The livestock husbandry faces stiffest challenges of feed/fodder scarcity due to non-availability of grazing during the period. The majority of livestock farmers (65%) preferred to sell animals in district town markets, which although located at a far distance transport their livestock for earning more profit due to better bargaining strength there in addition to high demand for meat since food habits of the majority of the populace of Kashmir are predominantly non-vegetarian (Rather *et al.*, 2016). These observations are in close proximity to the findings reported by Lavania and Singh (2008) for goat marketing practices in southern Rajasthan.

From the observations of present study, it is concluded that the main contributing factors for high disease occurrence and mortality rates of livestock particularly in Lower and Upper Gurez included poor sanitary conditions within animals sheds, unawareness of

dietary supplementations and improper management of livestock. Besides, poor or no market facilities along with unorganised sector to channelize the livestock products were the major marketing constraints predisposing livestock enterprise to high risks. As such, livestock farmers require technical updating to increase the existing level of knowledge about improved animal health-care practices for better results. Moreover, there is urgent need to plan and execute programmes for facilitating marketing of their animal produce to make livestock rearing sustainable under the prevailing circumstances.

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