

Original Research Article

Socio-economic Status of Equine Owners, Shelter Management Practices and Morphometry of Equines in District Anantnag of Kashmir Valley

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ABSTRACT

Keywords

Ashwagandha,
Alternaria alternata,
management,
fungicides, organic
manure,
biofertilizer

The study was conducted to ascertain the socio-economic status of equine owners, shelter management practices and morphometry of equines in six equine rearing blocks of district Anantnag of Kashmir valley. The average land holding capacity of farmers in the district was 2.48 kanal/family and livestock strength/family averaged 3.80 ± 0.42 . Family size ranged from +3 to +5 members/ family indicating existence of small families with an average of 4.55 members/ family. The average literacy percentage among equine owners was 1.98 ± 0.11 highest in Dachnipora followed by Breng and Khevripora. The average of pucca house was 26.64% while kucha house was 73.36%. Proportion of shared shelters was significantly ($P < 0.05$) higher in Dooroo, Khevripora, Breng and Achabal than Dachnipora and Shangus. Average age of the adult horses and lactating mares was 8.73 ± 0.20 and 7.76 ± 0.71 years. Mean age of the foals was 1.90 ± 0.33 , 1.33 ± 0.21 and 1.85 ± 0.26 years respectively, in Achabal, Dachnipora and Khevripora. Mean BCS of district Anantnag was 4.86 ± 0.13 , higher in Shangus followed by Dooroo, Breng, Dachnipora, Khevripora, and Achabal. Adult equines were found to carry a body weight between 242.31 ± 1.91 kg in the district. From the present study it was concluded that the equine owners were socioeconomically weak and reared equines in order to add to their earnings. Equines reared were found non-descript with average body weight and BCS. Since equines provide material avenues to the farmers and play an important role in socio economic upliftment of both rural and sub urban society, careful and scientific practices must be ensured to maintain healthy and vigorous equine.

Introduction

The socio-economic significance of horse contributes to the dynamism of rural economies especially those areas where modern means of transportation are still a dream. These areas provide characteristic specificity to this class of animal and as such basis of classification are rendered. On the basis of their geographical localization; two breeds of horses (Marwari and Kathiawari) and ponies (Bhutia, Spiti, Manipuri and

Zanskari) have been characterized in India (Pal *et al.*, 2013). In Jammu and Kashmir, equines are owned mainly by socially and economically deprived, landless, marginal and small farmers that play a very important role in the socio-economic life of the population (Fazili and Kirmani, 2011). The equines in the state play an important role in tourism industry including pilgrim tourism. The Amarnath (Kashmir) and Vaishnu Devi

(Jammu) yatra (Pilgrimage) by millions of Hindus every year would not have been possible without this quadruped (Fazili and Kirmani, 2011). In hilly areas of the state, these animals are used by the army in carrying men and material where vehicular traffic is still inaccessible due to rugged topography and poor infrastructure. Ponies in the state are sole source of transport for transhumance and migration of livestock undertaken by Gujjars and Bakerwals (Anonymous, 2014). With very scanty literature available on role of equines on socio-economic upliftment of rural economies in Jammu and Kashmir, this work was conceived in consonance with the equine shelter management practices and morphometry which are discussed detail.

Materials and Methods

Present study was conducted in district Anantnag which ranks first in equine population in state according to 19th livestock census, (2012) contributing 11.56% of total equine population of the state. For present study a cross sectional face to face survey was carried out in six equine rearing blocks of Anantnag. Data was collected from 150 randomly selected equine owners from Anantnag through a questionnaire based on various aspects of horse rearing like farmers family size, occupation, total income, land holding, number of animals reared, shelter management, number of equines reared with their age and approximate body weight description. Body weight was calculated using body measurements according to Gina, 2010 and age was calculated according to Loch and Bradley (1998). Body condition score was calculated according to Rasmus *et al.*, 2015. Data collected were processed and analyzed as per Snedecor and Cochran (1994) by using descriptive statistical method for analysis of variance

and significance of mean differences (DNMRT). The significance between different proportions was tested using test of proportions.

Results and Discussion

Equines, besides being used as pack animals in army and other security agencies in the difficult hilly terrains, continue to play a pivotal role in agriculture, transport and tourism in Jammu and Kashmir. In this endeavour current survey with regard to access socio-economic status of equine owners, shelter management practices and morphometry of equines in district Anantnag of Kashmir Valley was undertaken. In all 150 households, 25 from each 06 survey blocks of the district Anantnag were contacted who reared 204 adult horses, 24 lactating mares and 27 foals were examined.

The average land holding capacity of farmers in district Anantnag was 2.48 kanal/family and is presented in table 1. The average land holding was much lower than reports recorded earlier (Ganai *et al.*, 2004, Bhat *et al.*, 2010). A wide variation was observed in land holdings ranging from 0.64 - 6.52 kanals/family. The results corroborate with reports of Hassan *et al.*, 2016. The small land holding could be attributed to rearing of equines by marginal farmers of the state and partly due to divisions of ancestral land over a period of generations. Livestock strength/family in district Anantnag averaged 3.80 ± 0.42 (Table 1), which corroborates well with the findings of Bhat *et al.*, (2010), however Hassan *et al.*, 2016a and 2016b reported average livestock strength of equine rearing farmers 5.37 and 5.69/family in district Budgam and Baramulla respectively. Livestock strength reported in present study were much lower than earlier reports of Ganai *et al.*, (2004)

which may be attributed to adoption of different farming practices by the equine owners in the present study. Equine population in Anantnag was recorded to be 1.99 horse/family. Each family in Breng, Shangus and Dooru blocks of Anantnag owned about 2 equines/family as compared to 1 equines/family in rest of surveyed areas which may be attributed to usage of equines for cart pulling, agricultural purposes and also may be due to hilly terrain of the study areas. Percentage of equines with respect to total livestock strength was high in Breng (164) followed by Achabal (110) blocks of Anantnag district, which probably could be attributed to very small land holdings in these blocks compared to the rest of the surveyed blocks.

Data with regard to family size ranged from +3 to +5 members/ family in Anantnag district (Table 1), indicating existence of small families with an average of 4.55 members/ family, indicating existence of small families. The average literacy percentage among equine owners was 1.98 ± 0.11 (Table 1) highest in Dachnipora followed by Breng and Khevripoora which may be attributed to higher education facilities in urban areas of districts compared to rural areas. The low literacy rate may be attributed to the fact that only poor, landless and marginal farmers were rearing equines.

The overall literacy rate in Anantnag reported by census (2011) is 62.42%. Average income of equine farmers in district Anantnag was 17906.66 ± 621 (Table 1), highest in Dachnipora followed by Dooru, Khevripora, Shangus, Breng and Achabal respectively. The probable reason for this may be attributed to intense agricultural practices in Dachnipora, Dooru and Shangus areas and flourishing tourism in Khevripora block of district Anantnag. The present results fall in line with the earlier

observations of Hassan *et al.*, (2016a and 2016b).

Percentage of different human and animal shelter types possessed by the farmers of district Anantnag are presented in Table 2. The average of pucca house was 26.64% while kucha house was 73.36%. Statistically significant ($P < 0.05$) higher percentage of pucca animal shelters were found in Dachnipora, Breng and Shangus blocks than rest of the study blocks. Proportion of kucha shelters was higher in Dooru followed by Khevripora, Achabal, Shangus, Breng and Dachnipora blocks, respectively. Our observations corroborate well with the observations of Hassan *et al.*, (2016a and 2016b). Since most of the farmers the districts possessed equines as well as livestock, shelters observed were either separate or shared for equines and other livestock species. The proportion of separate equine shelters (Table 3) in district Anantnag was significantly lower ($P < 0.05$) in Breng, Dooru and Khevripora in comparison to Shangus and Dachnipora with non-significant difference between shelter status in Dachnipora and Shangus as well as between Achabal, Breng, Dooru and Khevripora blocks. Proportion of shared shelters was significantly ($P < 0.05$) higher in Dooroo, Khevripoora, Breng and Achabal than Dachnipora and Shangus. Our observations corroborate well with the observations of Hassan *et al.*, (2016a and 2016b). Contrarily to our observation, Swai and Bwanga (2008) reported that 74% ($n=107$) equine owners did not provide any shelter to their equines in Tanzania while Wylie *et al.*, (2013) reported that only 4% or more animals were provided housing, which increased during winter season.

Equines were examined for morphometric parameters like age, body condition score and body weight, since body weight and

BCS are the indicators health status of the animal. Average age of the adult horses and lactating mares was 8.73 ± 0.20 and 7.76 ± 0.71 (Table 4) years in district Anantnag. In district Anantnag, average age of animals was higher in Breng followed by Dooru, Shangus, Khevripora, Dachnipora and Achabal. Burk *et al.*, (2008) reported that the average age of eventing horses in their study was 11.1 ± 0.3 years. Less age of the animals observed in Anantnag in present study might be due to the fact that the animals are used for draft purposes and exhibit best vigor and performance when young however, similar to present observation, Mekuria *et al.*, (2013) reported

that 53.3% equines in their study aged between 5 and 15 years. Also 45.2% equines were reported to fall in age group of 6 to 10 years in a study carried out by Amante *et al.*, (2014). Similarly, Rao *et al.*, (2010) reported that the average age of horses and mules among the sample population was 7.91 and 7.08 years, respectively. Mean age of the foals was 1.90 ± 0.33 , 1.33 ± 0.21 and 1.85 ± 0.26 years (Table 4), respectively, in Achabal, Dachnipora and Khevripora, areas of district Anantnag with an overall district average of 1.69 ± 0.8 years, however foals were not available in Breng, Dooru and Shangus areas of Anantnag.

Table.1 Socio-economic status of equine owners in district Anantnag

District	Block	Land holding (Kanal /family)	Livestock strength	Equine population	Family size	Literacy (No of literate persons in family)	Monthly income
Anantnag	Achabal	0.64^a ± 0.19	1.52^a ± 0.37	1.68^{ab} ± 0.14	3.80^a ± 0.36	1.20^a ± 0.19	15120.00^a ± 1378.79
	Breng	0.88^a ± 0.26	1.24^a ± 0.33	2.04^{ab} ± 0.16	4.68^{ab} ± 0.44	2.64^b ± 0.36	16360.00^{ab} ± 1011.40
	Dachnipora	6.52^c ± 1.19	5.64^b ± 1.70	1.52^a ± 0.14	5.16^b ± 0.24	2.80^c ± 0.24	20320.00^b ± 1664.05
	Dooru	1.48^a ± 0.23	6.00^b ± 1.00	2.64^c ± 0.25	4.12^{ab} ± 0.32	1.40^{ab} ± 0.24	19320.00^{ab} ± 1099.57
	Khevripora	1.00^a ± 0.27	2.72^a ± 0.24	1.88^{ab} ± 0.12	4.76^{ab} ± 0.29	2.12^{bc} ± 0.24	19120.00^{ab} ± 2140.34
	Shangus	4.36^b ± 0.83	5.68^b ± 1.15	2.20^{bc} ± 0.28	4.80^{ab} ± 0.35	1.76^{ab} ± 0.24	17200.00^{ab} ± 1436.43
	Mean	2.48^A ± 0.30	3.80^A ± 0.42	1.99^A ± 0.08	4.55^A ± 0.14	1.98^A ± 0.11	17906.66^A ± 621.27

Means across rows in same column for different blocks in a particular district bearing different small case superscript differ significantly ($P < 0.05$).

Table.2 Animal and residential shelter type in Anantnag district

Anantnag	Block	Animal shelter		Residential Shelter	
		Pucca	Kucha	Pucca	Kucha
	Dachnipora	44.50 ^b	55.50 ^a	75.50 ^a	24.50 ^b
	Khevipora	12.50 ^b	87.50 ^a	55.41 ^a	44.59 ^b
	Breng	35.71 ^b	64.29 ^a	76.00 ^a	24.00 ^b
	Achabal	20.00 ^b	80.00 ^a	52.00 ^a	48.00 ^b
	Shangus	35.13 ^b	64.87 ^a	76.00 ^a	24.00 ^b
	Dooru	12.00 ^b	88.00 ^a	72.00 ^a	28.00 ^b
	Mean	26.64	73.36	67.81	32.18

Values (in %) across rows in same column for different blocks in a particular district bearing different small case superscript differ significantly (P<0.05)

Table.3 Animal shelter types in district Anantnag

District	Block	Shelter status	
		Separate	Shared
Anantnag	Achabal	40.55 ^b	59.45 ^a
	Breng	32.34 ^b	67.66 ^a
	Dachnipora	54.56 ^a	45.44 ^b
	Dooru	18.78 ^b	81.22 ^a
	Khevipora	20.25 ^b	79.75 ^a
	Shangus	64.00 ^a	36.00 ^b
	Mean	39.50^A	61.55^A

Values (in %) across rows in same column for different blocks in a particular district bearing different small case superscript differ significantly (P<0.05)

Table.4 Age (Years) of equines in district Anantnag

Type of equine	District Anantnag						Mean
	Ac	Br	Dp	Do	Kp	Sh	
Adult horse	8.00 ^a ±0.35	10.26 ^b ±0.52	8.04 ^a ±0.34	9.43 ^{ab} ±0.62	8.31 ^a ±0.41	8.36 ^a ±0.62	8.73^B ±0.20
Foal	1.90 ^a ±0.33	NA	1.33 ^a ±0.21	NA	1.85 ^a ±0.26	NA	1.69^A ±0.19
Lactating mare	NA	8.83 ^b ±0.70	6.33 ^a ±0.33	NA	8.14 ^b ±0.26	NA	7.76^B ±0.71

Note: Means within the rows with different lower case superscripts for different blocks differ significantly (p<0.05) Overall means of the district with different uppercase superscripts between the row differ significantly (p<0.05, NA = data not available, Ac- Achabal, Br- Breng, Dp- Dachnipora, Do- Dooru, Kp- Khevipora, Sh- Shangus.

Table.5 Body condition score of equines in district Anantnag

Type of equine	District Anantnag						Mean
	Ac	Br	Dp	Do	Kp	Sh	
Adult horse	4.00 ^a ±0.27	5.24 ^b ±0.29	4.68 ^{ab} ±0.34	5.28 ^b ±0.22	4.52 ^{ab} ±0.41	5.48 ^b ±0.26	4.86^B ±0.13
Foal	4.12 ^a ±0.47	NA	4.50 ^a ±0.32	NA	4.57 ^a ±0.36	NA	4.39^A ±0.22
Lactating mare	NA	5.25 ^a ±0.31	6.00 ^a ±0.32	NA	5.62 ^a ±0.53	NA	5.62^A ±0.23

Means within the same column with different lower case superscripts differ Significantly(p<0.05), Overall means of the district with different uppercase superscripts between the row differ significantly (p<0.05 Ac- Achabal, Br- Breng, Dp- Dachnipora, Do- Dooru, Kp- Khevripora, Sh- Shangus.

Table.6 Body weight (Kg) of equines in district Anantnag

District	Type of equine			
	Block	Adult Horse	Foal	Lactating mare
Anantnag	Achabal	246.70 ^{ab} ±4.86	175.39 ^a ±4.00	NA
	Breng	239.22 ^{ab} ±4.86	NA	235.00 ^a ±12.18
	Dachnipora	238.68 ^{ab} ±3.81	177.30 ^a ±4.90	227.00 ^a ±16.59
	Dooru	245.73 ^{ab} ±4.62	NA	NA
	Khevripora	234.05 ^a ±4.88	176.31 ^a ±4.00	201.42 ^a ±17.58
	Shangus	249.50 ^b ±4.84	NA	NA
	Mean	242.31^A ±1.91	176.66^A ±4.3	221.14^B ±15.45

Means within the same column with different lower case superscripts differ Significantly(p<0.05), Overall means of the district with different uppercase superscripts within the column differ significantly (p<0.05), NA = data not available.

Mean BCS of district Anantnag was 4.86±0.13 (Table 5), higher in Shangus followed by Dooru, Breng, Dachnipora, Khevripora, and Achabal. The mean BCS was significantly (P<0.05) lower than that of shangus and Breng while the mean values of Shangus, Breng, Dooru and Dachnipora were found to be comparable. The average BCS in foals and lactating ewes in district Anantnag was 4.39±0.22 and 6.62±0.23

respectively. Similar to our present observation on adult equines, Gallagher, *et al.*, (1992) reported an overall BCS of around 5.0 in racing thoroughbreds. Burk, *et al.*, (2008) also reported a BCS of 4.9±0.1 in one group of equines in his study. Our results corroborate well the observations of Hassan *et al.*, (2016b and 2016c) who recorded average BCS of 4-5 in adult equines in Budgam & Baramullah. Body

weight of the equines was accessed using body measurements as given by Gina (2010). Adult equines were found to carry a body weight between 242.31 ± 1.91 and 231.05 ± 4.42 kg in district Anantnag and district Ganderbal which was similar to the observations reported by Rao *et al.*, (2010) where the average body weight of horses among the study population was 231.07 kg. Hassan *et al.*, (2016b) recorded body weight of 255.86 and 260.86 in district Baramullah and Budgam. Average body weight of lactating mares and foals recorded in present study are comparable with earlier observations of Hassan *et al.*, (2016b and 2016c). However, contrary to present observation, Pal *et al.*, (2013) reported an average body weight of 350 kg in Marwari horses in Rajasthan. Less weight in present study could be due to breed differences since Marwari horses are large and hefty in built while as Jammu and Kashmir possesses small non-descript equines other than the Zanskari horses found in Ladakh region of the state.

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