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Ambreen Hamadani
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

NA Ganai
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Mudasir Andrabi
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Safeer Alam
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Haidar Ali Ahmad
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Ishraq Hussain
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Tariq Raja
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Corresponding Author
Ambreen Hamadani
Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir, Jammu and Kashmir, India

Effects of various factors on body weights of Corriedale sheep

Ambreen Hamadani, NA Ganai, Mudasir Andrabi, Safeer Alam, Haidar Ali Ahmad, Ishraq Hussain and Tariq Raja

Abstract
Corriedale is an important breed of sheep which has shown good performance in the temperate agroclimatic conditions of Jammu and Kashmir. In order to evaluate the effects of various non genetic factors on body weights at various ages of this breed, least square analysis was performed. In this regard data for the past 52 years (1969-2021) were collected from SKUAS-Kashmir's University farm. The effects of sex, season of birth, year of birth and dam parity were evaluated. The effect of sex was significant for bodyweights at all ages with males being significantly heavier than females at all ages under study. The effect of year was significant for most years for weaning weight, 6-season bodyweight, 9-season bodyweight and 12-season bodyweight. It was significant only for the decade following 2006 and five years following 1996 in case of birthweight. The effect of parity was only significant in case of birthweight with pleuriparous ewes producing lambs of higher birthweight than primiparous ewes. Most lambs at the farm are born during spring season. The effect of the season of birth was generally non-significant with the exception of weaning and 12-season weight. It is concluded that non genetic factors in general have a significant effect on the bodyweights of sheep and their effects cannot be ignored during selection of animals and improving management practices could go a long way in improving the performance as well.

Keywords: least square means, non-genetic factors, effects of year, sex, parity

1. Introduction
Jammu and Kashmir offer favorable agro-climatic conditions for sheep husbandry. Due to this the UT harbors tremendous potential for developing sheep genetic resources. Also, the population of J&K is primarily mutton consuming and there is an incessant demand for meat. Despite this there is a yawning gap between demand and supply of sheep and sheep products. Due to this a large number of sheep are imported on an annual basis from other states which puts a burden on the economy as well. To mitigate this problem, a number of foreign breeds have been imported from time to time from other. One such breed is Corriedale which was imported into the University farm of Sher-e-Kashmir University of Agricultural Sciences and Technology of Kashmir. This breed, which is a dual-purpose breed known for its mutton production and carcass quality, performed well under the ago-climatic conditions of J&K. This breed has in fact shown good performance worldwide with its some 100 million heads spread worldwide (Gootwine *et al*., 2020) [2]. It was developed by crossing Merino with British breeds.
Non-Genetic factors have significant effects on the overall bodyweights of animals and understanding their impact on production traits can help in improving the traits as well (Momoh *et al*., 2013) [13]. Even for selection and breeding, the data first needs to be adjusted for non-genetic factors before proceeding with eh estimation of breeding values Babar *et al*., 2004 [1]. Keeping all this in view, the present study was undertaken to evaluate the effect of factors like sex, parity, year of birth and season of birth on body weights at various ages.

2. Materials and Methods
2.1 Data Collection
Data for Corriedale breed for the last 40 years was collected from Mountain Research Station for Sheep and Goat, Shuhama. Economically important traits like birth weight, weaning weight, 6-season weight, 9-season weight, 12-season weight etc. were taken into consideration for the research.

2.2 Flock management

The University Research Station, Mountain Research Station for Sheep and Goat, Shuhama, is located approx. 22 km from Srinagar at an altitude of about 5300 ft. above sea level. It has temperate climate with cold winters. The average daytime temperature is about 2.5 °C and night-time temperatures are sub-zero, during January with moderate to heavy snowfall. Daytime July temperature is an average of 24.1 °C.

The station follows semi-migratory, semi-intensive mode of rearing where sheep are shifted to alpine pasture at an altitude of 11800–14000 ft during summers (mid-June to mid-September). The sheep are stall-fed during winter. Veterinary healthcare and dosing regularly and vaccination cover against diseases like Foot and Mouth Disease, Enterotoxaemia, and Sheep Pox is also provided. Animals are dipped twice in one year. Ewes mated at 18 seasons of age from late September to November and generally give birth in Spring.

2.3 Least Squares Estimates

All effects used in the study were grouped as shown in Table 1. Least squares were applied to find the effect of year, parity, season of birth and sex. These were estimated using the linear model with fixed effects using the *lsmeans* library in R (Length, 2017) [9]. The model was evaluated for fixed effects of sex, year, parity and season. The significance of each effect was also tested.

3. Results and Discussion

The overall Least Squares means were 3.659±0.124, 16.463±0.501, 20.55± 0.664, 23.482±0.614 and 27.907±0.704. The intercept of bodyweights at all ages were significant. The values arrived at us are more or less similar to those reported by Umeel *et al*. (2018) [18] in Munjal Sheep, Kumar *et al*. (2018) [18] in Harnali sheep, Rather (2019a) [17] in Kashmir Merino, Khan *et al*. (2020) [7] in Corriedale Sheep, Hamadani *et al*. (2021) [4] in Kashmir Merino sheep and Mahala *et al*. (2019) [10] in Avikalin Sheep. However lower weights were reported by Venkataramanan (2013) [19] in farm bred Nilagiri sheep and Sandyno sheep. Variations in body weights as reported by various authors are mostly due to breed differences which was also suggested by Mandal *et al*., (2015) [12]

The effect of sex was significant for bodyweights at all ages with males being significantly heavier than females at all ages under study. Sex was also reported to be significant by Khan *et al*. (2020) [7], Mallick *et al*. (2017) [11] in Bharat Merino and Venkataramanan (2013) [19] in Nilagiri sheep and Sandyno sheep.

The effect of year was significant for most years for weaning weight, 6-season bodyweight, 9-season bodyweight, and 12-season bodyweight. It was significant only for the decade following 2006 and five years following 1996 in case of birthweight. Significant effect of year of birth was also reported by Kumar *et al*. (2018) [3, 8] in Harnali sheep. Rather (2019a, 2019b) [17, 16] in Kashmir Merino sheep also reported significant, period of birth, sex of lamb. The effects of year can be contributed by a number of factors which include both managemental as well as climatic factors. An inference that may be drawn from this is that by improving the managemental conditions, the performance of the animals can be improved which may lead to higher returns to the farmer.

The effect of parity was only significant in case of birthweight with pleuriparous ewes producing lambs of higher birthweight than primiparous ewes. However, a highly significant effect was reported by Nirban *et al*., (2015) [14] in Marwadi, Parihar *et al*., (2017) [15] in Magra sheep and Mahala *et al*. (2019) [10] in Avikalin sheep. Dams of greater parity have better milk to feed young lambs. This also helps in the reduction of neonatal losses (Gowane *et al*., 2018) [3]. Most lambs at the farm are born during spring season. Some lambs, however, were born out of season however the effect of the season of birth was generally non-significant with the exception of weaning and 12-season weight. Effect of season of birth was also found to be non-significant by Mahala *et al*. (2019) [10] for 6-month body weight.

Table 1: Grouping of Animals for Least Squares analysis.

Factor	Group
Year of birth	10 five-year Periods
Sex	2 groups (Male and Female)
Parity of ewe	2 groups (Primiparous and Pleuriparous)
Season of birth	2 groups (Dec-Feb and March-June)

Table 2: Least Squares Means of sheep at various ages. Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.

	Birthweight ***	Weaning ***	6 season ***	9 season ***	12 season ***
Year					
1965-75	3.79±0.1123	16.5± 0.451	24.1±0.553	20.8±0.598	28.7±0.633
1976-80	3.7±0.0640	14.3±0.249***	22.4±0.305***	18.5±0.330***	26.1±0.350**
1981-85	3.67±0.0689	13.6±0.269***	21.9±0.330***	17.6±0.357***	25.3±0.378***
1986-90	3.78±0.1269	13.3±0.494***	22.8±0.605*	18.8±0.654*	26.7±0.693
1991-95	3.68±0.0446	13±0.191***	23.1±0.234	19.6±0.253	27.3±0.268
1996-00	3.55±0.0435*	12.7±0.179***	21.8±0.219***	17.9±0.237***	25.5±0.251***
2001-05	3.58±0.0401	12.9±0.169***	21.3±0.207***	18.6±0.223***	23.8±0.237***
2006-10	3.42 ±0.0414**	11.5±0.172***	20.8±0.211***	17.8±0.228***	23.4±0.241***
2011-15	3.54±0.0431*	12.6±0.188***	20.5±0.231***	17±0.249***	24±0.264***
2016-20	3.66±0.0565	12.3±0.362***	17.6±0.444***	14.3±0.479***	20.3±0.508***
Sex					
Female	3.59±0.0359	13.1±0.151	21.3±0.185	17.9±0.200	24.7±0.212
Male	3.68±0.0372***	13.4±0.157**	21.9±0.193*	18.2±0.208*	25.6±0.221***
Parity					
primiparous	3.56±0.0620	13.1±0.2625	21.6±0.322	18±0.348	25.2±0.369
pleuriparous	3.71±0.0206*	13.4±0.0862	21.7±0.106	18.2±0.114	25.1±0.121
Season					
Dec-Feb	3.63±0.0378	13.5±0.159	21.4±0.195	18.1±0.211	24.7±0.223
March-June	3.64±0.0369	13±0.156***	21.8±0.191	18±0.207	25.6±0.219**

4. Conclusion

It is concluded that non genetic factors in general have a significant effect on the bodyweights of sheep and their effects cannot be ignored during selection of animals and improving management practices could go a long way in improving the performance as well. Also, dams of higher parity produce offspring of higher body weights.

5. References

1. Babar ME, Ahmad Z, Nadeem A, Yaqoob M. Environmental factors affecting birth weight in Lohi sheep. Pakistan Veterinary Journal 2004;24:5-8.
2. Gootwine E, Fuller WB, Cliff L, Guoyao W. Genetics and breeding of sheep and goats. Animal Agriculture. Academic Press, 2020, 183-198.
3. Gowane GR, Swarnkar CP, Prince LLL, Kumar A. Genetic parameters for neonatal mortality in lambs at Semiarid region of Rajasthan India. Livest. Sci 2018;18:S1871-1413, 30031-3
4. Hamadani A, Ganai NA, Rather MA. Genetic, phenotypic and heritability trends for body weights in Kashmir Merino Sheep. Small Ruminant Research 2021;205:106542
5. Hamadani A, Ganai NA, Khan NN, Shanaz S, Ahmad T. Estimation of genetic, heritability, and phenotypic trends for weight and wool traits in Rambouillet sheep. Small Rumin. Res 2019;177(2019):133-140.
6. Hare WCD, Marshak RR, Dutcher RM, Croshaw Jr. JE. Bovine lymphosarcoma: A review of studies on cattle in the eastern United States. Can. Vet. J 1964;5(8):180-198.
7. Khan NA, Ganai NA, Alam S, Shanaz S, Hamadani A, Rather MA *et al*. Genetic evaluation of growth performance in Corriedale sheep in J&K, India. Small Ruminant Research 2020;192:106-197. https://doi.org/10.1016/j.smallrumres.2020.106197
8. Kumar S, Dahiya SP, Malik ZS, Patil CS, Magotra A. Genetic analysis of performance traits in Harnali sheep. Indian J Anim. Res 2018;52(5):643-648.
9. Length R. R package lsmeans: Least-squares means (predicted marginal means) 2017. https://www.rdocumentation.org/packages/lsmeans/versions/2.27-2
10. Mahala S, Saini S, Kumar A, Prince LLL, Gowane GR. Effect of non-genetic factors on growth traits of Avikalin sheep. Small Ruminant Research 2019;174:47-52 https://doi.org/10.1016/j.smallrumres.2019.03.006
11. Mallick PK, Pourouchottamane R, Rajapandi S, Thirumaran SMK, Venkataraman R, Nagarajan G. Influence of genetic and non-genetic factors on growth traits of Bharat Merino sheep in sub-temperate climate of Kodai hills of Tamil Nadu, India. Indian J Anim. Res 2017;51(2):365-370.
12. Mandal A, Karunakaran M, Sharma DK, Baneh H, Rout PK. Variance components and genetic parameters of growth traits and Kleiber ratio in Muzaffarnagari sheep. Small Rumin. Res 2015;132:79-85.
13. Momoh OM, Rotimi EA, Dim NI. Breed effect and non-genetic factors affecting growth performance of sheep in a semi-arid region of Nigeria. J Appl. Biosci 2013;67:5302- 5307.
14. Nirban LK, Joshi RK, Narula HK, Singh H, Bhakar S. Genetic and non-genetic factors affecting body weights in Marwari sheep. Indian J Small Rumin 2015;21(1):106-108.
15. Parihar K, Yadav SBS, Narula HK, Pannu U, Bais B. Factors affecting in growth performance and greasy fleece yield in Magra sheep under arid condition of Rajasthan. Int. J Agric. Sci 2017;9(15):4095-4096.
16. Rather MA, Magray S, Ahanger SA, Baba MA, Shah MM, Rather TA *et al*. Effect of some non-genetic factors and Fec-B gene introgression on performance traits of Kashmir Merino Sheep. Int. J Curr. Microbiol. Appl. Sci 2019b;8(8):444-449.
17. Rather MA, Shanaz S, Ganai NA, Baba MA, Hamadani A, Ahmad MS *et al*. Genetic, phenotypic and environmental trends for production and reproduction traits in Kashmir Merino Sheep. Int. J Livest. Res 2019a;9(12):2277-1964.
18. Umeel Y, Malik ZS, Dalal DS, Dahiya SP, Pati CS. Estimation of breeding values and genetic trend of production traits in Munjal sheep. Int. J Livest. Res 2018;8(08):1
19. Venkataramanan R. Genetic Evaluation of Growth Performance of Farmbred Nilagiri and Sandyno Sheep. Ph.D. Thesis submitted to Department of Animal Genetics and Breeding Madras Veterinary College, Tamil Nadu Veterinary and Animal Sciences University Chennai, India, 2013.