Effect of Genetic Parameters on Some Growth Performance Traits of Harnai Sheep

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Abstract: Present study was performed to estimates the genetic parameters forsome growth performance traits of Harnai sheep. The data was recorded for the period of 2004-2013 from the Multi-purpose research centre Yetabad, District, Baluchistan. The performance traits including birth, yearling, weaning and fleece weight was recorded for the estimation of genetic parameters. There was no significant difference was observed parity and Ram wise among some growth performance traits of Harnai sheep. While the results for heritability, estimation for birth weight, yearling weight, weaning weight and fleece weight was observed low to medium for some growth performance traits of Harnai sheep. It is concluded that low heritable and correlative traits mainly affected by the management, nutritional and temporary environmental conditions, hence improvement can be achieved through the better selection.

Keywords: Harani sheep, growth traits, heritability.

INTRODUCTION

Pakistan possess 29.1 million sheep population, which contributes 38,000 tonnes of milk, 657,000 tonnes of meat, while the production of skin and wool is 11,001 and 44,1 million respectively, [1]. Sheep production contributes high share to the subsistence the social livelihoods and economic of ever growing population of human beings.There are 4 well known breeds are found in Baluchistan province, Baluchi, Beverigh, Hernai and Rakhshani, [2]. Hernai sheep is fat-tailed medium sized breed, commonly found in Ziarat, Hernai, Sinjawi and Loralai regions of Baluchistan, Pakistan. Hernai breed of sheep mostly rear for wool and meat production, [3]. Heritability estimates is major tool for predicating the amount of genetic progress for the improvement of particular trait of animal.It is necessary to estimates the heritability of performance traits for the improvement breeding strategies and production of farm animals, [5].

MATERIALS AND METHODS

The available data regarding the growth performance traits of Harnai sheep including birth weight, yearling weight, weaning weight and fleece weight of was collected from the Government Multipurpose sheep research Centre Yetabad, District Loralai, Balochistan, for the period of 10 years from 2004 to 2013 on especially designed proforma. The collected data were typed on computer and analyzed for the estimation of heritability.

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The Heritability estimates for some growth performance traits of Harnai sheep was worked out using the formula as suggested by [6].

RESULTS

The parity wise result of some growth performance traits including birth weight, yearling weight and fleece weight of harnai sheep is presented in Table **1**. The parity wise results showed that there was no significant difference among some growth performance traits of Harnai sheep in all 7 parities.

The ram wise results for some growth performance traits including birth weight, yearling weight, weaning weight and fleece weight of Harnai sheep presented in Table **2**. The Ram wise results showed that there was no significant difference among offspring of all under studied Rams.

The results for heritability estimates for some growth performance traits of Harnai sheep including birth weight, yearling weight and fleece weight of Hanrnai sheep presented in Table **3**. The results for heritability estimates was observed low for some growth performance traits of Harnai sheep.

DISCUSSION

It was observed from the present study that, due to high level of inbreeding there was no significant effect was found parity and Ram wise among some growth performance traits of Harnai sheep. Same results are also showed in the research of [7-9], they had reported no significant effect among growth performance traits of Lohi, Buchi and Madras Red sheep, they stated that

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Table 1: Parity Wise Results of some Growth Performance Traits of Harnai Sheep

Parity	Birth weight (kg)	Yearling body weight (kg)	Weaning weight (kg)	Fleece weight (kg)
1	2.15±0.16^{a}	20.00±2.58^{ab}	13.29±0.39 ^{a}	1.13±0.16 ^{a}
2	2.27±0.12^{abc}	21.20±1.31 ^{ab}	13.59±0.48 ^{b}	1.23±0.23^{bc}
3	2.16±0.38^{ab}	22.70±1.15 ^{a}	13.80±0.58 ^{a}	1.36±0.12 ^{cde}
4	2.63±0.29^{abc}	22.50±2.55^{ab}	13.31±0.51^{b}	1.23±0.14 ^{a}
5	2.66±0.27^{abc}	23.40±2.76^{a}	13.45±0.27^{ab}	1.36±0.12 ^{e}
6	2.58±0.28^{abc}	20.60±2.91 ^{a}	13.55±0.24 ^{b}	1.23±0.14 ^{e}
7	2.27±0.12^{abc}	20.20±1.32^{ab}	13.59±0.19 ^{ab}	1.14±0.16 ^{de}
Overall	2.39±0.23	21.08±2.08	13.51±0.38	1.24±0.15

Superscript with different letters indicates significant difference LSD ($p<0.05$).

Table 2: Ram Wise Results of some Growth Performance Traits of Harnai sheep

Ram	Birth weight (kg)	Yearling body weight (kg)	Weaning weight (kg)	Fleece weight (kg)
1	2.56±0.42^{a}	22.00±3.83^{a}	13.68±0.37^{a}	1.38±0.18^{a}
2	2.42±0.42^{ab}	21.85±2.34^{a}	13.38±0.26^{b}	1.28±0.16^{bc}
3	2.44±0.38^{abc}	21.71±4.23^{a}	13.67±0.29^{a}	1.19±0.06^{cde}
4	2.36±0.31^{abc}	21.00±1.73^{ab}	13.30±0.54^{b}	1.35±0.13^{a}
5	2.41±0.40^{abc}	22.43±1.13^{ab}	13.51±0.32^{ab}	1.12±0.11^{e}
6	2.36±0.33^{abc}	22.00±2.24^{ab}	13.35±0.31^{b}	1.14±0.11^{e}
7	2.43±0.31^{abc}	21.28±0.95^{ab}	13.52±0.52^{ab}	1.16±0.25^{de}
8	2.37±0.20^{bc}	20.00±1.00^{bc}	13.52±0.42^{ab}	1.16±0.09^{de}
9	2.30±0.14^{bc}	19.28±1.25^{c}	13.64±0.56^{a}	1.23±0.11^{cd}
10	2.24±0.23^{c}	19.28±1.89^{c}	13.55±0.54^{ab}	1.40±0.22^{ab}
Overall	2.40±0.31	21.08±2.06	13.51±0.42	1.24±0.14

Superscript with different letters indicates significant difference LSD ($p<0.05$).

Table 3: Results Heritability Estimates of some Growth Performance Traits of Harnai Sheep

Traits	Overall Average	Heritability (h^2)
Birth Weight (kg)	2.40 ± 0.31	0.321
Yearly Weight (kg)	21.08 ± 2.06	0.382
Weaning Weight (kg)	13.51 ± 0.42	0.187
Fleece W eight (kg)	1.24 ± 0.14	0.44

due to high level of inbreeding there was no significant difference. The same statement repeated by [10, 11], they reported that inbreeding cause depressing effect on growth performance traits of Buchi and Mechri sheep. The results of [12, 13] are controversial to the results of present study, they had reported significant difference among parity and Ram wise growth performance traits of Baluchi and Black and white Danish sheep. Above contrast results of different researches may because of breed variation and management practices of farm with environmental conditions of these areas. It has also been stated that availability of better feeds with green grass and management conditions with proper environment

during pregnancy can also effect on the growth performance traits of sheep [14] In the present study results for heritability estimates of some growth performance traits was observed low to medium, these findings are in agreement with the findings of [15] and [8] who reported lower results for heritability estimation for birth weight, yearling weight, weaning weight and fleece weight. The findings our study is lower than the findings of [16, 17], they had reported higher heritability values for growth performance traits of different breeds. The above describe difference may associated with age of lamb, age of dam, sex and type of birth. The findings of [18, 19] are larger than the values of present study, they reported high values of heritability estimates for growth traits of Gansu Alpine Fine wool sheep. They reported that variation among the results may be due different breed under study with size of sample for calculating the heritability with environmental conditions. They reported effect of season has significant effect on the parity and Ram wise results of growth performance traits of animals. The results of current study are non-significant may be due to highly level of inbreeding in herd.

CONCLUSION

It is concluded that due to non-significant different among growth traits with lower heritability values selection process is advisable for better breeding plan.

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