EFFECT OF GENETIC AND EVIRONMENT FACTORS ON SOME PRODUCTIVE TRAITS OF BIBRIK SHEEP

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ABSTRACT: *Present study was carried out to analyze the correlation estimation of some productive traits of Bibirk sheep. The data was collected from Government sheep farm Yetabad, Baluchistan for the period of ten years (2004-2013). The data regarding productive traits including ram, sex and season wise birth weight and yearling was brought under study. The Ram-wise result revealed that there was no significant difference among birth weight and yearling weight and sex-wise birth weight and yearling was found higher in male as compared to female animals, while season-wise birth and yearling weight was found higher in spring season as compared to winter. The results for correlation estimates between some productive traits of Bibrik sheep was found low, medium to high positive for simple, genetic, environmental and phenotypic correlation. It is concluded that low values for correlation estimates between some productive traits may be due to inbreeding and additive genetic effect.*

Key words: Bibrik sheep, genetic, environment, productive traits

INTRODUCTION

Pakistan is rich in small ruminant population with 28.4 million sheep population that is major source of income for large number of people [1]. There are 28 recognized sheep breeds are present in Pakistan and Bibrik is one of 4 sheep breeds present in Baluchistan. Bibrik is fat tailed sheep breed commonly found in Dera Bugit and other parts of Baluchistan. Bibrik sheep has white color with black and brown head mainly kept for mutton and wool purpose and both have horns on their head [2]. The knowledge of genetic parameters such as correlation, regression and heritability is required to predicating of estimated breeding values of individual animals. However there are many environment related factors that may also influence on the production performance of animal herd. Hence the said traits affecting the economic viability are related with body weight, productive weaning weight, yearling weigh [3]. It has been reported that birth weight and yearling body weight are major tools in the selection for future breeding plans and policies. Information about environmental and genetic association among birth weight of lamb, yearling weight and adult weight are important traits for improving the sheep production in Pakistan [4]. Due to lack of information about productive traits Bibriks sheep and effect of genetic factors on it production, present study was designed to estimates the correlation among productive traits of Bibrik sheep.

MATERIAL METHOD

In order to observed the effect of genetic and evironment factors on some productive traits of Bibrik sheep. The data was maintained and collected from Government sheep farm Yetabad, Baluchistan. The data wascollected for the period of ten years (2004-13) and were utilized to estimates the correlation between some productive traits of Bibrik sheep.

Season Effect

To observe the effect of seasons the season were divided into two season Spring and Winter

Correlation Estimates

The correlation estimates among some productive traits of Bibrik sheep was observed using the formula as suggested by (Becker, 1985).

The correlation coefficient between the performance traits will be worked out according to the formula:

$$r_{xy} = \cfrac{\Sigma xy - \cfrac{(\Sigma x)(\Sigma y)}{n}}{\sqrt{\left[\left(\Sigma x^2 - \cfrac{(\Sigma x)^2}{n}\right)\right]\left[\left(\Sigma y^2 - \cfrac{(\Sigma y)^2}{n}\right)\right]}}$$

Where:

r	=	Coefficient of correlation
Σxy	=	Sum of the product of x and y variables
Σx	=	Sum of the x variable
Σy	=	Sum of y variable
Σx^2	=	Sum of the squared value of x
Σy^2	=	Sum of the squared value of y
$(\Sigma x)^2$	=	Square of sum of y variable
n	=	Number of records/ observations

RESULTS

The Ram-wise results for birth weight and yearling body of Bibrik sheep sheep

The Ram-wise results for birth weight and yearling body of Bibrik sheep showed non-significant difference among the offspring of Ram's. Details are presented in Table-

Tabel-1. Ram-wise results for birth and yearling body weight

Ram-wise	Birth weight	Yearling body weight
01	2.20±9.07	30.91±3.36
02	3.37±5.40	30.80±4.37
03	3.22±4.92	35.75±2.40
04	2.91±6.92	31.70±2.41
05	2.71±7.19	30.17±3.73
Overall	**2.74±6.70**	**31.87±3.25**

Sex and season-wise results for birth weight and yearling body of Bibrik sheep sheep

The sex-wise results for birth weight and yearling body weight of Birbrik sheep was observed higher in male as compared to female, while season was higher birth weight and yearling body was observed higher in spring season as compared to the winter season. Details are mentioned in Table-2.

Tabel-2. Sex and season-wise results for birth weight and yearling body of Bibrik sheep

Sex-wise	Birth weight	Yearling body weight
Male	3.00±2.14	38.55±1.27
Female	2.18±4.76	33.80±0.21
Season-wise	Birth weight	Yearling body weight
Spring	2.50±3.88	36.28±2.44
Winter	3.22±4.88	38.44±3.88

. Details are given in Table-3.

Table- 3. Results for correlation estimates between some productive traits of Bibrik sheep

Simple correlation	Birth weight x yearling body weight	0.99
Genetic correlation	Birth weight x yearling body weight	0.14
Phenotypic correlation	Birth weight x yearling body weight	0.74
Environmental correlation	Birth weight x yearling body weight	0.35

Results for correlation estimates between some productive traits of Bibrik sheep

Results for correlation estimates between birth weight and yearling body weight of Bibrik sheep was found low to medium and positive except simple correlation was observed highly positive

DISCUSSION

In current study ram-wise results was found non-significant for birth and yearling weight of Bibrik sheep. The findings of [5], [6] and [7], are controversial to the findings of current study, who had reported that ram wise birth and yearling body was observed significantly higher in Krakul, Lohi western range sheep breeds respectively. The findings of our study are also in opposition to the findings of [8], who have reported significant difference among the offspring's of Ram's in Thali sheep. Mention difference among the studies may be due to breed variation. The findings of our study are in agreement with the findings of [9] and [10] who has reported non-significant difference among Ram's offspring and birth and yearling body weight was found higher in male lambs as compared to female lambs and lambs have higher birth and yearling weight which were born in spring as compared to other season in Turkish Marino, Bibrik and Baluchi sheep respectively. Same statement repeated by [11], who has reported found non-significant difference in offspring's of Rams, while male lamb was observed heavier than the female and lambs which were born in spring having higher birth weight as compared to those born in winter season in Kermani sheep. The result for correlation estimates was observed low medium and positive. The results of our study are controversial than the findings of [12], who had reported high and positive correlation among birth weight and yearling body weight of Hissardale sheep. The findings of our study are also lower than the results of [12] and [9], who has reported higher values for simple, genetic, environmental and phenotypic correlation among birth and yearling body weight of Turkish Marino, Bibrik and Baluch sheep. The above mention difference may be due to genetic potential of breed and some authors has been reported that low values of correlation among productive traits can also be due to

inbreeding within the herd. It has also been stated that high level of inbreeding can cause inbreeding depression in herd.

CONCLUSION

It has been concluded form above findings that high level of inbreeding has depressing effect on the productive traits of herd, hence selection should be performed for further future breeding plans.

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