Estimates of genetic parameters on economical traits in Khorasan Karakul sheep

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Introduction The main aim of sheep breeding is meat production in Iran. Karakul sheep are a dual purpose (meat and skin) breed in the eastern north of Iran. A high percentage of the sheep population is managed under a migratory system. Using the ranges as the major source of feed in harsh conditions, knowledge of genetic parameters for growth traits at various ages is needed (Bahreini *et al*. 2007).

Material and methods The data (4,167 records) used in the study, were collected at Karakul sheep Breeding station in Sarakhs on Razavi Khorasan province of Iran from 1995-2004. seven traits were considered: birth weight(BW),once month weight(W1), weaning weight(WW), 6 month weight(W6), 9 month weight(W9), yearling weight(YW), pre-weaning weight gain(G1) and post-weaning weight gain(G2) that the related mean and standard deviation were 5.17 ± 0.8, 12 ± 2.39, 24.8 ± 4.5, 33.5 ± 5.5, 39.3 ± 6.45, 42.7 ± 4.7, 0.211 ± 0.051, 0.085 ± 0.025 kilogram respectively. The JMP statistical package (JMP Ver. 7) and the method of unequal subclass analysis of variance were used to test the significance of the fixed effects. All of fixed effects were significant ($p<0.05$). Estimation of (co)variance components was carried out using the DF-REML (model 3) 1997 program. A simplex algorithm is used with 300 iterations. Effects of sex, age of dam, birth type and birth year were studied to design statistical model and they were significant ($p<0.05$) for growth traits. Variance component estimated in animal model by DF-REMEL software.

Results Direct heritability for body weights showed a tendency to increase with age measured (table 1). Because estimates of direct additive genetic variance component increased faster than the environmental variance components. Tendency for estimates of direct heritability to increase with age measured has also been reported in several studies (Yazdi *et al*. 1997). For all traits, estimates of maternal heritability were lower than the estimates of direct heritability. Estimates of maternal heritability tended to decline from birth to yearling weight. In general, the trend of increasing direct heritability and decreasing maternal heritability in Karakul sheep were the same in other breeds sheep reported in Iran. The present study estimates are within the range of literature.

Table 1 The mean values, number of observation, direct and maternal heritability for the different traits

trait	Mean(kg)	Number of records	$h^2a \pm se$	$h^2m \pm se$
birth weight	5.17 ± 0.8	4167	0.16 ± 0.03	0.03 ± 0.01
once month weight	12 ± 2.39	2648	0.15 ± 0.01	0.01 ± 0.00
weaning weight	24.8 ± 4.5	3157	0.17 ± 0.04	0.03 ± 0.01
6 month weight	33.5 ± 5.5	2098	0.13 ± 0.03	0.00 ± 0.00
9 month weight	39.3 ± 6.45	1614	0.11 ± 0.06	0.00 ± 0.00
yearling weight	42.7 ± 4.7	1247	0.13 ± 0.03	0.00 ± 0.00
pre weaning weight gain	0.211 ± 0.051	3157	0.21 ± 0.05	0.01 ± 0.03
post weaning weight gain	0.085 ± 0.025	1247	0.12 ± 0.01	-

Direct heritability(h^2a), maternal heritability(h^2m)

Conclusions The low direct heritability estimates in growth traits of Karakul sheep is probably because of the low nutritional level in station and poor quality of pasture in area. The results showed that maternal effects do not need to be considered in selecting for growth traits of after WW in Sarakhs Karakul sheep.

Reference
Bahreini Behzadi, M.R., Shahroudi, F. E. and Van Vleck, L.D. 2007. Jounal of Animal Breeding and Genetics 124, 296-301.
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