عنوان مقاله:

The comparison of standard multiple-trait and structural equation modeling approaches for the estimation of genetic and phenotypic parameters of growth traits in Arman sheep

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خلاصه مقاله:

The current investigation was performed to compare the performance of standard multivariate and structural equation models for the estimation of genetic parameters of growth traits in Arman sheep. Data was collected on ۲۱۹۴ Arman lambs in ۱۳ years (۱۹۹۹ to ۲۰۱۲) at Abbasabad Sheep Breeding Station, Khorasan Razavi province, north-eastern Iran. The studied growth traits were body weight at birth (BWT), weaning (WWT), six months (۶MWT), nine months (۹MWT), and yearling weight (YWT). The predictive abilities of three multivariate animal models comprising standard (SMM), temporal recursive (TRM), and fully recursive (FRM) models were evaluated by applying two statistical criteria including the mean square of error (MSE) and Pearson's correlation coefficient between the observed and predicted records ($r(y,\hat{y})$). In general, TRM performed better than SMM and FRM. The lowest MSE and the highest $r(y,\hat{y})$ were found under TRM. All the posterior means for the structural coefficients were statistically significant. Spearman's rank correlation coefficients between the estimated breeding values for the body weight traits were also computed across all, ۵۰% top-ranked, and ۱۰% top-ranked animals. Comparisons of these correlations between posterior means of estimated breeding values of individuals for the growth traits under SMM and TRM revealed that taking the causal relationships among these traits into account could result in significant re-ranking of the animals according to the estimated breeding values; showing that TRM had more advantage over SMM for the estimation of genetic parameters and the breeding values of the studied traits in Arman sheep.

کلمات کلیدی:

animal model, body weight, causal relationship, Predictive Ability, sheep