

Classical selection index vs animal model in the breeding value estimation of lambs

S u m m a r y

The research was carried out on 7,952 Merino Polish lambs born in the years 1997-2003, which were kept in 15 herds located in the Kujawsko-Pomorskie province. For each lamb, the phenotypic selection index was calculated as well as the breeding value, estimated based upon this index, using BLUP-AM. An explorative analysis of the trait was carried out using the multivariate analysis of variance with the least squares method. In the next stage, (co)variance components of selection index were estimated with the use of the AI-REML-AM method. It was found, based on the calculated AIC model selection criterion, that in order to estimate the components of (co)variance, one should use the linear model, which in addition to the direct effect, also takes into account the maternal effect and the permanent maternal environment effect. Heritability indices, obtained using this model were, respectively: direct heritability - 0.060, maternal heritability - 0.046, total heritability - 0.085. The obtained (co)variance estimators were used to estimate the breeding value by means of BLUP-AM. Then, values of the phenotypic selection index were correlated with the breeding value, which had been estimated based on this index using the BLUP-AM method. The highest correlation was found between the ranking of animals based on phenotypic index values and the ranking obtained by means of the BLUP-AM method with immediate effect taken into account - 0.766. Inclusion in the model of the maternal effect resulted in a change of the correlation coefficient to 0.396, and permanent maternal environment to 0.525.