

GENETIC VARIABILITY OF BODY WEIGHT IN TWO GESE STRAINS UNDER LONG TERM SELECTION*

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Over the last decades, body weight has been one of the main performance traits in geese genetic improvement programs. The objective of this study was to estimate the genetic variances of body weight in two strains (denoted as W11 and W33) of geese. Selection of strain W11 is aimed, except body weight, at fertility and hatchability as well. Strain W33 has been improved mainly for increase of meat performance traits. Records of 3076 individuals of strain W11 and 2656 individuals of strains W33 were analyzed. Body weight at 8-th and 11-th week of life in three consecutive generations were studied. These populations have a typical hierarchical structure – one sire is mated with six dams. The classical selection index (the so-called SELEKT system described by Wezyk (1978)) was applied. An estimation of genetic variance was performed within strain-generation groups. The following single traits linear model was employed: $y = X\beta + Za + e$, where: y – vector of observations, β – vector of fixed effects of hatch periods (in case second trait, the body weight at 8-th week is included as linear covariable), a – vector of random additive genetic effects, e – vector of random residuals, X and Z – incidence matrices for fixed and random effects, respectively. These computations were performed by the use of the DFREML package programs (Meyer, 2000). Generally, heritability estimates (h^2) varied both for strains and generations. However, h^2 for body weights at 8-th week are considerably higher compared to the ones for the second measurement. The estimates for the 8-th week ranged from 0.49 to 0.56 (for W11) from 0.40 to 0.59 (for W33). Respective estimates for the second trait varied from 0.19 to 0.22 (W 11) and 0.07 to 0.25 (W33). It should be noted that for strain W11, genetic variance was reduced over generations studied whereas in the strain (W33) the variance is indirectly fluctuated. Relative high heritability of body weight at 8-th week shows an opportunity for effective selection. On the other hand, it may indicate more complex genetic backgrounds of the trait. For instance, the maternal effects can be considered in further studies.

Key words: body weight, geese, heritability, selection

References:

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