

Comparison of different models to estimate genetic parameters for carcass traits in a commercial broiler line

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ABSTRACT. The effect of genetic and non-genetic factors for carcass, breast meat and leg weights, and yields of a commercial broiler line were investigated using the restricted maximum likelihood method, considering four different animal models, including or excluding maternal genetic effect with covariance between direct and maternal genetic effects, and maternal permanent environmental effect. The likelihood ratio test was used to determine the most adequate model for each trait. For carcass, breast, and leg weight, and for carcass and breast yield, maternal genetic and permanent environmental effects as well as the covariance between direct and maternal genetic effects were significant. The estimates of direct and maternal heritability were 0.17 and 0.04 for carcass weight, 0.26 and 0.06 for breast weight, 0.22 and 0.02 for leg weight, 0.32 and 0.02 for carcass yield, and 0.52 and 0.04 for breast yield, respectively. For leg yield, maternal permanent environmental effect was important, in addition to direct genetic effects. For that trait, direct heritability and maternal permanent environmental

variance as a proportion of the phenotypic variance were 0.43 and 0.02, respectively. The results indicate that ignoring maternal effects in the models, even though they were of small magnitude (0.02 to 0.06), tended to overestimate direct genetic variance and heritability for all traits.

Key words: Animal model; Carcass yield; Heritability; Likelihood ratio test; Maternal effect