

Genetic study of meat quality traits in a male broiler line

L.G. Gaya

2006. Faculdade de Zootecnia e Engenharia de Alimentos, Universidade de São Paulo, Pirassununga, SP, Brasil. PhD. thesis. Orienting Prof.: Dr. José Bento Serman Ferraz

This research was conducted to estimate genetic and phenotypic parameters of meat quality, performance, carcass and body composition traits in a male broiler line. Broilers studied belonged to a sib test program, in which data from sibs of the individuals to be selected in this line, called elite flock, are collected. Performance traits analyzed were body weight at selection, body weight at slaughter and ultrasound records of pectoral muscle. Carcass traits analyzed were breast meat weight, eviscerated body weight and leg weight, and the body composition traits analyzed were abdominal fat weight, liver weight and heart weight. Meat quality traits analyzed were initial pH, pH at 6 h after slaughter, final pH, initial range of pH decline, final range of pH decline, lightness, redness, yellowness, weep losses, drip losses, shrink losses, and shear force. (Co)variance components were estimated by the restricted maximum likelihood method, using the MTDFREML software. The numerator relationship matrix was composed of 107,154 individuals. For pH at 6 h after slaughter, final pH and lightness, moderate heritability coefficients were estimated; for the other traits these coefficients were low. Genetic correlation estimates obtained indicated a small association between meat quality traits and performance, carcass and body composition traits, except for the selection to body weight at selection, which seemed to be able to reduce water losses of meat. Genetic correlation estimates among meat quality traits could orient the understanding of the mechanisms related to meat quality in the analyzed line; drip losses, shear force and lightness seemed to be able to determine favorable correlated responses, so their use was recommended as selection criteria if there was a need for improving meat quality in the analyzed line. However, this necessity was not apparent, since the genetic trends of meat quality traits were small and favorable for meat quality in the broiler line analyzed.

Key words: Genetic correlations; Genetic parameters; Genetic trends; Heritability; Phenotypic correlations