**Breeding Layer Pure Lines at Poultry Research Institute of Ankara and Studies to Obtain Parents and Hybrids from Pure Lines**

This project was carried out two stages. In the first stage of the project; data on eleven pure lines selected from five consecutive generations (2011-2015) for age at first egg (AFE), body weight at first egg (BWFE), egg number to 43 weeks (EN) and egg weight (EW) were evaluated for selection studies at the Poultry Research Institute of Ankara. Hens selected for their single source (individual phenotypic values) and cocks their family values. Heritabilities and correlations were estimated from data of the selection lines. As a result of implementing the selection program based on animal model, while egg number was increasing, age at first egg and body weight at first egg were decreasing; egg weight was not change importantly. Estimated heritabilities were ranged from 0.27 to 0.46 for AFE, from 0.33 to 0.57 for BWFE, from 0.15 to 0.62 for EN, from 0.10 to 0.51 for EW. Predicted genetic correlations were ranged from -0.82 to 0.84 between AFE and BWFE, from -0.43 to 0.21between AFE and EN, from -0.85 to 0.26 between AFE and EW, from -0.93 to -0.51 between BWFE and EN, from -0.36 to 0.43 BWFE and EW, from -0.92 to 0.28 between EN and EW in pure lines. Genetic structure of pure lines was improved by increasing number of hen, using new recording and data assessment programs with high capacity computers for breeding value estimation, evaluating existent genetic variation in the best way. As a result of genetic progress, it can be said that egg production traits in 2015 better than it was in 1996.

In the second stage of the project; using these pure lines, obtained grandparents and parents which were produced as a result of double and three way crossing. The chicks of hybrid genotypes were growed at equal conditions environmentally controlled layer house and they were settled in cages for performance tests. With respect to selection criterion, superior hybrid genotypes were determined according to performance testing. Determination of genotypes with superior performance for egg production traits, 27 parent and 21 hybrid materials were tested and test results were found to be better than that of previous tests.