Growth curves models in two lines of Japanese quail selected for high body weight.

Emam, A. M.

ABSTRACT

This study was carried out at the Poultry farm of the Agricultural Experiments and Research Center, Faculty of Agriculture, Fayoum University. A total number of 598 Japanese quail chicks from the same hatch at the eighth generations of selection for high body weight at 28 days of age (BW_{28}) were used to draw the growth curves for two lines using Gompertz, Richards and Logistic growth functions. Line significantly affected all studied body weights (BWs) except BW at hatch favoring selected line. Males had significantly higher BW_7 and BW_{14}than females which had significantly higher BW_{42}.

The selected line had the highest asymptotic weight parameter (β_0) and relative growth rate (β_2) values than the control line for both sexes. The selection program has affected clearly on increasing body weight and growth pattern in the selected line compared to the control line. The β_2 values were higher in males under all models indicting that male birds have grown faster than females and reached earlier their weight at inflection point (IPW) and β_0.Regardless of growth model, the selected line had higher age at inflection point (IPT) and IPW values than the control line in both sexes. Females had higher IPT and IPW values than males reflecting that females reached mature weight after males. Selection for high BW_{28} modifies all studied growth curves and alter their parameters in both sexes favoring the selected line. Also, sexual dimorphism had a pronounced effect on studied growth curves.

All studied models have considerably high and similar coefficient of determination (R^2) values (close to 1) which ranged from 0.9938 to 0.9995.Gompertz was the best model to describe the growth curve of females and males in both lines which had the lowest AIC, BIC, Mean square error (MSE) values and the highest R^2value.

Key words: Selection, high body weight, growth curves, Gompertz, Richards, Logistic and Japanese quail.