



## NUMBER, QUALITY AND COMPOSITION OF EGGS IN LINES OF JAPANESE QUAIL DIVERGENTLY SELECTED FOR SHAPE OF THE GROWTH CURVE

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The HG (high gain) and LG (low gain) lines of Japanese quail have been divergently selected for the shape of the growth curve without significantly affecting mature body weight (Hyánková *et al.*, 2001). Previous experiments showed that the shape of the growth curve significantly modified food intake, food conversion and carcass composition (Hyánková *et al.*, 2001, 2008). The aim of the present study was to analyze the relation between the shape of the growth curve and the reproduction traits. We focused on the number, quality, size and composition of eggs.

HG and LG quail (105 per line) used for the study were the progeny of generation 32 obtained from a single hatch. The husbandry was essentially similar to that provided during selection (Hyánková *et al.*, 2001). At 49 d of age, quail were randomly distributed into colony cages (3 females/cage). Egg number per cage was recorded daily from 7 to 31 weeks of age, i.e. during the first 6 months of lay (1 month = 4 weeks). Each egg was classified as either normal or defective (e.g. double yolk, shell-less membrane, soft shelled or extra-calcified). At the end of each month, the eggs produced on two successive days (73 – 100 eggs per line) were weighed, and the yolk, albumen and shell were separated and weighed.

The total egg production was relatively high in both lines. With the exception of the first four weeks of lay, both lines produced more than 21 eggs per quail per month. However, the egg production of the LG line was superior by about 1 or 2 eggs/quail/month than that of the HG line. The higher LG egg production was associated with a higher proportion of double yolk eggs during the whole experimental period (15.2% *vs.* 1.6%). Significant line differences were also noted in the size and composition of eggs. Compared to the LG line, the HG line laid considerably smaller eggs (13.3 g *vs.* 12.2 g, respectively) during the whole period of lay. These differences were associated with a higher content of albumen in LG *vs.* HG eggs (7.6 g *vs.* 6.7 g, i.e. HG/LG\*100 = 88.2%).

The present study showed that genetic change in the shape of the growth curve significantly influenced the phenotypic manifestation of reproductive traits. The fast growth rate immediately after hatching (typical for LG *vs.* HG quail) negatively influenced quality of eggs (a higher proportion of double yolk eggs). On the other hand, a high growth rate during the linear part of the growth curve (typical for HG *vs.* LG quail) was associated with a lower production of egg mass (a lower number and size of eggs).

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