

Abstract

Knowledge about growth pattern and parameters of growth curve is useful to planning breeding programs and selection criteria for next generation. Therefore, the aim of the current study growth performance and parameters of growth curve in Japanese and Italian quail have been evaluated during 5 consecutive generations. All of the chicks were identified using wing banding immediately after hatch and therefore pedigree generated. To this, genetic parameters were estimated for body weights (BWs) and average daily gain traits (ADGs) and parameters of growth curve for 5061 and 252 Japanese and Italian quail, respectively. All of the genetic parameters were estimated with six different models with/without including maternal effects. Generation, hatch and sex of the birds included in all of the models as fixed effects. Most of the heritability estimates for growth traits at different ages were high and close to each other (0.494 for hatch weight to 0.553 for BW30). The highest maternal heritability was estimated for hatch weight (0.098). Higher values also estimated for heritabilities of ADG traits at different age periods (ADG10-15 = 0.524 and ADG5-10 = 0.557) in Japanese quail. For Italian quail also estimates of heritabilities for growth traits were high (BW15 = 0.341 to BW35 = 0.525). In Italian quail, the highest estimate was for maternal heritability of BW20 (0.429). Heritabilities for ADG in Italian quail also altered from 0.375 to 0.424 for ADG0-5 to ADG30-35, respectively. In Italian quail, the highest values for maternal heritability was estimated for ADG25-30 (0.433). Genetic correlations between body weight traits (BW0 to BW45) and ADG traits with age at inflection point in Japanese quail were positive and varied between 0.327 to 0.364 and 0.313 and 0.343, respectively. Moreover, maternal genetic correlation between body weight traits with age at inflection point were positive and varied between 0.387 and 0.464. In addition. Maternal genetic correlations between ADG traits with age at inflection point were from 0.394 to 0.451. Results of modelling with artificial neural networks also suggest that the weight of the birds at 45 d of old (slaughter weight) could be predicted through early growth performances.

Key words: Age at inflection point, weight at inflection point, heritability, genetic parameters, artificial neural networks



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