Abstract

This experiment was conducted to evaluate the effect of different photoperiods on performance of growing, laying and breeder Japanese quails. A total of five hundred 7 d Japanese quail were divided in a completely randomized design with 4 treatments including: 1- 8L:16D (8 hours of continuous light, 16 hours dark) during growing period and 16L:8D in breeding period i.e. 16 hours lighting 8 hours of darkness, 2-23L:1D (continuous lighting by 23 hours of lighting and 1 hours darkness) in both periods of growing and breeder, 3- Equal to the natural day length during winter (8 to 9 hours in growing period and 10 to 11 hours in breeder period), 4- 8L:16D Biomitent photoperiod (8 hours lighting, 16 hours of darkness during the growing period and 16L:8D i.e. 16 hours lighting, 8 hours of darkness in the breeder period). At the end of growing period, 23-hour light treatment increased weight gain, feed intake and feed conversion ratio (P<0.01). Biomitent photoperiod significantly decreased feed conversion ratio (P<0.01). During the growing period, 23L:1D photoperiod increased the relative weight of liver and ovaries (P<0.01). Biomitent photoperiod led birds to produce the highest antibody titer against sheep red blood cells and Newcastle virus (P<0.01). In the laying period, birds grown under 23-hour light have the earliest sexual maturity among treatments in this research, however, this difference was not significant between 16-hour and Biomitent photoperiod, quails in the 23-hour photoperiod matured faster than the natural light period (P<0.01). Biomitent photoperiod increased the percentage of egg production (P<0.01). 23-hour photoperiod increased feed intake, egg mass and feed conversion ratio in the laying period (P<0.01).

Keywords: quail, growing period, laying period, photoperiod, Biomitent photoperiod, natural photoperiod
Effect of different lighting programs on the performance of growing and breeder Japanese quail

Supervisor:
Dr. F. Bagherzadeh Kasmani

Advisors:
Dr. M. Mehri
Mahmoud Ghazaghi

By:
M. Fayezi Gharehoghalan

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