

## **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**



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