ESTABLISHING THE DIETARY LEVELS RECOMMENDED OF CALCIUM AND AVAILABLE PHOSPHORUS FOR BLUE-BREASTED QUAIL AT THE EARLY GROWTH STAGE

Y.C.LEE, Y.C.HUANG, P.D.CHEN, H.W.WEI

*Department of Animal Science and Technology, National Taiwan University,*

*No. 50, Lane 155, Section 3 Keelung Road, Taipei 106, Taiwan;*

The aim of this study is to establish the dietary levels recommended of calcium (Ca) and available phosphorus (AP) for blue-breasted quail (BBQ) at the early growth stage by response surface methodology (RSM). A main experiment was conducted by using the RSM and then verified by utilizing a factorial design. In both experiments, BBQs were fed with different levels of Ca and AP diets during the 2~4 week of age and the growth performance and tibia indices were analyzed. In the experiment 1, the RSM model predicted that BBQ would show the best body weight gain, tibia strength and tibia ash retention when the dietary level of Ca and AP was 1.26 and 0.48%, respectively. Since the R-squared value of RSM model was low for individual indices, the accuracy of the RSM prediction was re-tested by a 3 x 3 factorial design. The results of experiment 2 showed that no significance differences in body weight gain and tibia indices between groups except a group receiving a very high Ca/AP ratio diet exhibited significantly poorer body weight gain (P < 0.05) compared to the rest of groups, and this did not match up the RSM prediction. It implied that limitation existed in applying RSM to establish the dietary recommended supplement of Ca and AP for BBQ. In addition, results also showed that BBQ would acquire the best growth performance when 0.80% of Ca and 0.30% of AP existed in feed. The data can be as a reference for raising BBQ.

Key words: Blue-breasted quail, Calcium, Available phosphorus, Recommendation, Response surface methodology