

Abstract

In 2017, the study was carried out in 2 experiments according to the objectives. The 1st experiment was to determine suitable CP and ME dietary for Royal Project Black Bone chickens (RPF-BBC) during 6-10 and 11-16 weeks of age, and the effect of local feed (ground corn silage) supplementation to concentrate diet. The 2nd experiment was to test RPF-BBC production system on highland according to RPF GAP: Poultry Highland Farm.

To find out the appropriated dietary CP and ME levels for RPF-BBC during 6-10 weeks of age, 400 heads 1-day old chicks were raised together in the cage and fed with diet containing 21% CP, 2.9 kcal ME/g until 5 weeks of age. Then 360 heads of healthy chicks of both sexes (half-half) were selected and randomly divided into 4 dietary groups of 3 replicates each (30 birds of 15 male and 15 female/rep). They were fed with diets containing 2 CP levels, i.e. 19% vs. 17% and 2 ME levels (3.2 vs. 2.9 kcal ME/g) during 6-10 weeks of bird age. Feed and water were available for freely accessed. Body weight (BW) and feed intake were recorded at the end of week 10. Mortality, disability and other abnormalities were immediately recorded. The data were analyzed according to 2x2 Factorial Arrangement in CRD. The differences among treatments were compared using Duncan's New Multiple Range Test. The result showed no significant interaction ($P>0.05$) between CP and ME levels ($P>0.05$). When each factor was taken into consideration, it was found that 19% CP tended to give better BW gain, ADG and FCR than 17% CP, even though no significant differences were found ($P>0.05$). Chicken fed low ME level (2.9 kcal/g) consumed significantly more feed ($P<0.05$; 51.05 vs. 47.24 g/d) and tended to give better BW gain, ADG and FCR than the high ME level (3.2 kcal/g) but not significant different ($P>0.05$). The higher consumption of the group fed low ME diet might be due to the insufficient ME intake. Therefore they required more feed to meet energy requirement.

When each treatment was taken into consideration, it was found that the optimum diet for 6-10 weeks old RPF-BBC should contain 19% CP, 2.9 kcal ME/g because it gave higher BW gain, ADG and feed intake than the other 3 groups. Therefore, the chicken got higher nutrient intake which promoted better performance and lower feed cost as compared to the other groups (41.59 vs. 42.47-48.38 B/kg BW gain). The result agreed with Tangtaweewipat *et al.* (2016) which offered either high or low CP diet throughout the 13 weeks experiment.

To find out the diets containing suitable CP and ME level for RPF-BBC during 11-16 weeks of age, 482 heads 1-day old mixed sex chicks were fed with diet containing 21% CP, 2.9 kcal ME/g until 5 weeks of age. Then 406 heads of healthy chicks were selected and fed further with diet containing 19% CP, 2.9 kcal ME/g (according to the result of Exp. 1) until 10 weeks of age. Then 336 heads of healthy chicks were selected and randomly divided into 4 dietary groups of 3 replicates each (30 birds of 12 males and 16 females/rep). They were fed with 4 diets containing 2 CP levels (17% vs. 15%) and 2 ME levels (3.2 vs. 2.9 kcal ME/g). The result showed no significant interaction between CP and ME levels ($P>0.05$). When each factor was taken into consideration, it was found that CP level had no significant effects ($P>0.05$) on BW gain, ADG, feed intake, FCR and mortality rate. Chickens fed low ME diet (2.9 kcal/g) had significantly better performances. They consumed significantly more feed (64.80 vs. 61.94 g/d; $P<0.01$), thus gave significantly higher body weight gain (0.61 vs. 0.58 kg; $P<0.01$) and ADG (14.58 vs. 13.56 g/d; $P<0.05$) than those fed high ME (3.2 kcal/g) diet. But no significant effect was found on FCR and mortality rate ($P>0.05$). When each treatment was taken into consideration, it revealed that RPF-BBC consumed Diet 2 (17% CP, 2.9 kcal ME/g) had significantly better performances than the other groups ($P<0.05$), i.e. 0.64 kg BW, ADG 15.15 g/d, ADFI 65.63 g, FCR 4.34 and FCG 50.74 B/kg BW gain. Feeding low ME diet (2.9 kcal/g) at both CP level gave higher feed intake, thus provided higher nutrients, e.g. CP, Met and Lys. Therefore, it supported significantly higher performance than the high energy group.

From the results of the year 2016 and 2017, it can be concluded that the optimum diets for RPF-BBC during 1-5 weeks of bird age should contain 21% CP, 2.9 kcal ME/g, while during 6-10 weeks and 11-16 weeks of bird age should contain 19% CP, 2.9 kcal ME/g and 17% CP, 2.9 kcal ME/g, respectively.

The effect of local feed (ground corn silage) supplement to concentrate diet on farm trial was done by using 972 heads 2 weeks old mixed sexes RPF-BBC. They were allotted into 2 groups and being sent to 6 farms. Each farm raised 150-200 heads of chicks according to farm size and farmer capacity. Group 1 fed diet containing 21% CP, 2.9 kcal ME/g during 3-5 weeks of age. During 6-10 and 11-16 weeks of age, they were fed with diet containing 19% CP, 2.9 kcal ME/g and 17% CP, 2.9 kcal ME/g, respectively. Group 2 fed the same diet as Group 1, but from 2 weeks up they were provided ground corn silage as a free choice. The work was carried out by 6 highland farmers, living in 3 different elevation areas. Each farm has to practice RPF GAP: Black-

bone chicken Highland Farm guideline or has been certified by RPF GAP: highland poultry committee.

The result during 3-16 weeks of age revealed that the supplement of ground corn silage had no effect on production performance ($P>0.05$). RPF-BBC being raised at middle elevation (800-1,000 m above mean sea level, AMSL) tended to show better performance due to the better care of farmers.

RPF-BBC raised during 3-16 weeks of age by farmers according to RPF GAP: Poultry Highland Farm guideline at 3 different elevations, i.e. 800, 800-1,000 and higher than 1,000 m AMSL had similar performances, i.e. 1.79-1.94 kg BW, 17.31-19.51 g ADG, 5.51-6.42 kg feed intake, 2.54-3.95 FCR, and FCG was 34.74-47.11 B/kg BW gain.

Performance of RPF-BBC raised in certified RPF GAP: Poultry Highland Farm average from 3 elevations was better than non-improved farms. The evaluation of farmer satisfaction on outer inherited traits (7 black parts) showed no significant different before and after farm improvement. Farmers were high to highly satisfy with growth, feed efficiency and health of RPF-BBC as well as farm condition after the improvement even though it caused some investment and complication on improving.

