

Egg Size of Saudi Local Layers as Affected by Line of the Bird (Body Weight at Sexual Maturity) and Dietary Fat Level

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Abstract :

Egg size is an important economic factor that determines the profitability of the producer. Most of the eggs produced by the local birds are small and do not command market price. Nutrition and Management may play an important role in altering the size of the egg. This study was conducted to evaluate the use of different weight groups at sexual maturity (line of the bird) and different levels of supplemental fat on performance and egg size of the Saudi local birds. To achieve that a 2 x 3 factorial arrangement was used on 120 local hens. These hens were assigned to 6 treatments namely 2 weight groups and 3 levels of added fat 0, 2 and 4% corn oil at the age of 22 weeks. Data obtained from week 22 to 28 were not included in the average performance of the birds due to the large number of missing data. Performance criteria and egg characteristics were used to test the hypothesis of the study. Result of the study showed a significant effect of linoleic acid (corn oil) on the average egg weight. There was a clear indication that as level of corn oil increased from 0 to 4%, size of the eggs increased accordingly. The effect of interaction between level of fat and line (weight) of the bird on egg weight was highly significant ($p < 0.001$). Brown birds (medium in weight) responded better to the higher level of linoleic acid in the diet with 51 g of egg weight compared to the lower level of dietary linoleic acid and the control in the same group, 48.11 and 47.29 g, respectively and also to the treatments of the other group (black, small in weight). Egg production, egg mass and feed efficiency were highly affected by the two lines and the interaction with fat level favoring the 4% corn oil (when fed to the larger line (Brown birds). Effect of added fat corn oil (linoleic acid) on egg characteristics was significant ($p < 0.01$) for yolk color and Haugh unit. Better Albumen quality was found with the higher level of fat (4% corn oil) but with less yellowish yolk color as measured by La-Roche fan. In conclusion and based upon the results of this study, it is suggested that linoleic acid play an important role in maximizing the egg size of the local birds and adding 4% corn oil without jeopardizing the energy content of the ration may be a good way of improving the egg size of the Saudi local brown birds during the onset and first part of the laying year.

Key Word :

Egg size, Saudi local chicken, linoleic acid (fat), body weight, line, performance

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