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Assessment of Laying Performance of Golpayegan Native Hens in Comparison of Commercial Hyline Variety

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Abstract

This experiment was conducted to study the effect of dietary metabolizable energy (ME) and protein levels on performance of Iranian native hens population by using 240 laying hens in a 5 * 3 factorial arrangement with three diets (2700 Kcal/Kg ME and 16.5 % protein, 2750 Kcal/Kg ME and 17 % protein, 2800 Kcal/Kg ME and 17.5 % protein) and five breeds (two population of Golpayegan native hens, Isfahan native hen and Marandi native hen in comparison of Hyline commercial variety) in a completely randomized design with four replicates per treatment and four birds per each. The egg production and egg mass were higher and FCR was lower in Hyline variety compared to Marandi hens ($P < 0.05$). Hens on the diet containing 2800 Kcal/Kg ME and 17.5 % protein had higher egg production and egg mass compared to 2700 Kcal/Kg ME and 16.5 % protein diets ($P < 0.05$). Hens fed on the diet containing 2800 Kcal/Kg ME and 17.5 % protein had higher egg yolk weight ($P < 0.05$). The diets containing 2700 Kcal/Kg ME and 16.5 % protein resulted in the highest eggshell strength in Hyline variety and the highest yolk weight for Marandi native hens ($P < 0.05$). The concentration of malondialdehyde in egg yolk of Marandi group was higher than other birds ($P < 0.05$). Cholesterol content in egg yolk on the diet containing 2700 Kcal/Kg ME and 16.5 % protein was higher than the other diets. The serum uric acid and liver alkaline phosphatase enzyme were higher for the diet containing 2800 Kcal/Kg ME and 17.5 % protein ($P < 0.05$). The C18:2 fatty acid content in egg yolk of Hyline hens was higher ($P < 0.05$) than other birds (except Marandi group). Hens on the diet containing 2700 Kcal/Kg ME and 16.5 % protein had the highest C18:2 fatty acid content in their egg yolks ($P < 0.05$).

In conclusion, high egg production for the Golpayegan native hens, similar to Hyline variety, will be achieved by use of diet containing 2700 Kcal ME and 16.5 percent protein, and for Isfahanian and Marandi native hens diet with 2750 Kcal ME and 17 percent protein resulted in high egg production.

Key words: Native hen, Laying performance, Energy requirement, Protein requirement, Egg quality