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Effect of Plumage Colour on The Productive and Physiological Performance of Two Lines of Turkey During Egg Production Period

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Abstract: Using 32 hens from two turkey lines; broad-breasted bronze (BBB) and bourbon red (BR), this study assessed how plumage colour affects egg production and physiological functions during (26-40) weeks of observation. A total of 32 hens, namely 16 hens from the BBB line and 16 hens from the BR line, were bred from 26 weeks up to 40 weeks of age. According to our results, BBB line significantly ($p \leq 0.05$) outperformed BR line in terms of body weight at first egg production, feed intake, and yolk diameter during the study period. A significantly ($p \leq 0.05$) higher feed conversion ratio, an increased egg mass, a higher production rate of hen-day eggs, and a higher rate of albumen was achieved by the BR line. It is, however, noteworthy that the age at first egg production, the egg weight, the egg mass, the yolk weight, the yolk percentage, the albumen weight, the shell weight percentage, the egg shell thickness, width, and length, the shape index, yolk height and yolk index were not significantly ($p \geq 0.05$) different between the two lines at 24 and 36 weeks of age. The levels of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) were not significantly ($p \geq 0.05$) different between the two lines at 24 and 36 weeks of age when eggs were produced. Both turkey lines presented in the current study can potentially be raised in Iraq, as well as used as hens to produce hatching eggs and for genetic improvement.

Keywords: Egg production performance, Egg quality traits, Turkey hens.

Introduction

Poultry farming projects have been increased to produce meat and eggs to lessen the effect of gaps in animal protein due to growing global dietary requirements for protein in conjunction with the increase in the human population worldwide. Along with chickens, ducks, and guinea pigs, turkeys (*Meleagris gallopavo*) play a significant role globally in meeting the world's demand for protein (Pogodaev *et al*., 2020). Currently, commercial turkeys are descended from a subspecies of turkeys native to southern Mexico, which have undergone hybridisation with wild turkeys from the east (Crawford, 1992). Eight types of American turkey were established with plumage colour as the primary criterion, and as a result, most of the modern commercial varieties have a significant body weight and fast growth rate due to the direct impact of body weight-based selection. Three of the commercial varieties, Beltsville Small White, Bourbon Red (BR), and Royal Palm, were registered in 1951, 1909, and 1971, respectively, while the other