

Ecotype of Indigenous Chicken Contributes to External and Internal Egg Quality Characteristics

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We aimed to characterize important external and internal egg quality traits of indigenous chicken and determine whether significant differences exist between ecotypes. A total of 262 eggs were collected in 5 consecutive days from mature indigenous chicken (IC) hens sourced from Bomet (n=43), Homabay (n=16), Siaya (n=36), Kakamega (n=26), Bungoma (n=27), Busia (n=18), Laikipia (n=52) and Kwale (n=44) counties. The birds were maintained in an intensive system at the Naivasha Poultry Research Unit and housed in deep litter pens in groups of between 5 and 10 hens from the same source per pen (Bomet=14, Homabay=16, Siaya=14, Kakamega=18, Bungoma=13, Busia=15, Laikipia=26 and Kwale=24). The external quality traits measured were egg weight (EW), egg length (EL), egg diameter (ED) and shape index (SI). Internal quality traits were albumen weight (AW), yolk weight (YW), Haugh units (HU) and yolk colour (YC). The overall mean EW, EL, ED, SI, AW, YW, HU and YC were 49.3 g, 53.6 mm, 40.7 mm, 76.0 %, 25.9 g, 17.2 g, 73.7 units and 10.9 points on the Roche scale, respectively. All traits displayed significant differences between ecotypes ($P < 0.05$). The EW of Kwale ecotype (42.4 g) was significantly lower than the rest while EL of Busia and Kwale ecotypes were longest (56.1 mm) and shortest (50.4 mm), respectively. Siaya ecotype had the widest eggs (41.3 mm), while Kwale had the narrowest (39.1 mm). Kwale ecotype, however, had the highest SI (77.7 %) while Busia had the least (73.1 %). Busia ecotype had the heaviest albumen and yolk (29.1 and 19.3 g, respectively) while Kwale had the lightest (22.3 and 15.8 g, respectively). On the other hand, whereas Bomet ecotype had the highest HU (79.8 units) and YC (12.8 points), Kakamega had the lowest HU (65.3 units) and Siaya the least YC (9.1 points). These differences may be exploited in breeding programs to improve IC egg quality.

Keywords: Ecotypes; Egg quality; Indigenous chicken