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Egg quality characteristics of native chicken variety maintained at college of poultry production and management, Hosur

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Abstract

Egg quality characteristics of indigenous chicken variety maintained at College of Poultry Production and Management, Hosur were studied at Poultry Farm Complex (PFC), Veterinary College and Research Institute (VC&RI), Namakkal during the period between April 2020 and April 2021. The external egg quality traits like egg weight, shell colour, cleanliness, surface area, specific gravity and shape index and internal egg quality traits like albumin index, albumin weight, albumin percent, Haugh unit, yolk index, yolk colour, yolk percent, shell thickness, shell weight and shell percent were studied and the results are presented.

Keywords: native chicken, egg quality characteristics, egg weight

Introduction

Indigenous chickens are those chickens that belong to an area where they have evolved and they are also called native chicken or local chickens (FAO, 2001) [1]. The egg quality is the most important factor for popularization of the backyard farming. The success of poultry farming is largely depends on the total number of good quality eggs produced especially in layers and dual-purpose birds. The evaluation of external and internal quality of the egg is essential as consumer prefer better quality eggs. Eggs quality is the characteristics of an egg that affect its acceptability to consumer. Hence, the present study was aimed at assessing on egg quality traits in native chicken variety maintained at College of Poultry Production and Management, Hosur for backyard farming.

Materials and Methods

The present study was carried out in 460 females and 60 male chicken of the native chicken variety and reared under open sided deep litter system up to 52 weeks of age. A total of 72 eggs were collected from above birds at 40 weeks of age and various external and internal egg quality traits were studied.

Measurements of traits

- 1. Egg weight:** The egg weight was measured in gram (g) with the help of electronic balance with 0.1g accuracy
- 2. Egg length:** The egg length was measured in centimeter (cm) with the help of Vernier caliper
- 3. Egg width:** The egg width was measured in centimeter (cm) with the help of Vernier caliper
- 4. Shell weight:** The shell weight was measured in gram (g) with the help of electronic balance with 0.1 g accuracy
- 5. Shell thickness:** Shell thickness was measured after removing the shell membrane from the shell. It was measured with the help of screw gauze at three places viz. one at middle and two from both the ends and then average value was recorded and expressed in millimeter (mm).
- 6. Yolk weight:** The yolk weight was measured in gram (g) with the help of electronic balance with 0.1 g accuracy.
- 7. Yolk height:** The yolk height was measured in millimeter (mm) with the help of Spherometer.

8. **Yolk width:** The yolk width was measured in centimeter (cm) with the help of Vernier caliper.
9. **Albumin weight:** The albumin weight was measured in gram (g) with the help of electronic balance with 0.1 g accuracy.
10. **Albumin height:** The albumin height was measured between the yolk and outer edge of the thick albumin in millimeter (mm) with help of Spherometer.
11. **Albumin width:** The albumin width was measured in centimeter (cm) with the help of Vernier caliper. The widths of thick albumin from two different places were taken and average width of thick albumin was estimated.
12. **Egg shape index:** The shape index of egg was obtained by dividing the maximum width by maximum length of egg and multiplied the quantity by 100.
13. **Haugh unit:** This is used to assessing the albumin quality is by its Haugh unit. This method is an expression relating to egg weight and thick albumin height measured between the yolk and outer edge of the thick albumin by using Haugh meter. The HU calculated by using the following formula.

$$\text{Haugh unit (HU)} = 100 \log (H + 7.57 - 1.7 W^{0.37})$$

Where H = Albumen height (mm), W = Egg weight (g)

14. **Yolk index:** Yolk index is the ratio between height and width of yolk of egg
15. **Albumin index:** Albumin index is the ratio between height and average width of thick albumin of egg.

Statistical analysis

Egg quality traits were done using descriptive method of statistical analysis system.

Results And Discussion

The overall averages for various egg quality characteristics of native chicken maintained at CPPM, Hosur is presented in Table 1 and 2.

External Egg Quality

The average estimate of external quality traits are presented in Table.1. The overall egg weight was 51.4 ± 0.34 with similar findings were observed in Bhutanese chicken, Aseel and Kadaknath chicken by Dorji, (2013) [2] and Haunshi *et al.* (2013) [4]. The shape index of egg is higher than findings of Indigenous chicken and chicken with normal shank in Bangladesh by Ferdaus *et al.* (2015) [3]

Table 1: External egg quality characteristics (at 40 weeks) of native chicken variety maintained at CPPM, Hosur

Parameters (n=72)	Value
Egg weight	51.4 ± 0.34
Colour	
1. Brown	95.84%
2. Lightly brown	4.16%
Cleanliness	Clean and neat
Surface area	71.3 ± 0.34
Specific gravity	1.1 ± 0.00
Shape index	77.4 ± 0.35

Internal Egg Quality

The average estimate of internal egg quality traits are presented in Table.2. The albumin weight recorded in this study was 29.8 ± 0.20 g which coincides with findings of

Haunshi *et al.* (2013) [4], where albumin weight of 29.63 ± 0.66 g was observed in Aseel bird at 56 weeks of age. The albumen weight is higher than the albumin weight of Indigenous Dwarf chicken and Chicken with normal size shank of Bangladesh which was recorded as 17.13 ± 0.11 g and 18.39 ± 0.14 g respectively by Ferdaus *et al.* (2015) [3]. The albumin index was observed as 0.07 ± 0.00 and similar findings were also observed by Vij *et al.* (2015) [7] in Harringhata black chicken and in Kaunayen chicken of Manipur Vij *et al.* (2016), [8], Dorji, (2013) [2] and Haunshi *et al.* (2013) [4] found that the albumin percent of 50-55 in Bhutanese indigenous chicken and Aseel, Kadaknath chicken respectively.

The average yolk index and weight observed in present study were 0.40 ± 0.00 , 15.0 ± 0.10 g and similar findings were observed in indigenous chicken by Ferdaus *et al.* (2015) [3], Vij *et al.* (2015) [7] and Kumar *et al.* (2013) [5]. The colour of the yolk was 8.1 which is higher than observed in indigenous chicken and Chicken with normal shank by Haunshi *et al.* (2013) [4] and Ferdaus *et al.* (2015) [3]. The shell weight, shell thickness and shell percent was 5.1 ± 0.13 g, 0.33 ± 0.00 mm and 10.84 ± 0.24 respectively and were higher than findings of Ferdaus *et al.* (2015) [3], Haunshi *et al.* (2013) [4] and similar findings with Rajakumar *et al.* (2013) [6].

Table 2: Internal egg quality characteristics (at 40 weeks) of native chicken variety maintained at CPPM, Hosur

Parameters (n=72)	Value
Albumin index	0.07 ± 0.00
Haugh unit	67.4 ± 0.12
Albumin weight (g)	29.8 ± 0.20
Albumin percent	58.49 ± 0.07
Yolk index	0.4 ± 0.00
Yolk weight (g)	15.0 ± 0.10
Yolk percent	30.67 ± 0.26
Yolk color	8.1 ± 0.08
Shell thickness (mm)	0.33 ± 0.00
Shell weight (g)	5.1 ± 0.13
Shell percent	10.84 ± 0.24

Conclusion

The indigenous chicken as a repository of unexploited germplasm holds the feature of poultry industry which calls for exploitation and subsequent development through and articulated and well-planned improvement programme rather than gradual adulteration with indiscriminate mating with exotic strains as presently done by backyard farmers.

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