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EFFECT OF BIRD DENSITY ON EGG QUALITY TRAITS UNDER WIRE FLOOR SYSTEM OF REARING

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The influence of egg quality parameters and factors influencing them are required to bring progress in the productivity. Information on the influence of floor density on egg quality traits in layers reared under deep litter system and cage system are numerous and contradictory (Chand *et al.* 1977; Mathew *et al.* 1979; Bhat and Aggarwal, 1991 and Geo *et al.* 1992).

Research studies on the effect of floor densities on egg qualities in layers reared under wire floor system are limited or scanty. Therefore, the present study was aimed to investigate the influence of bird density on egg quality traits in White Leghorn strain cross layers (ILM-90) under wire floor system of rearing.

Materials and Methods

Single comb White Leghorn strain cross pullets (ILM-90) at the age of 18 weeks were used for the study. The experiment consisted of 99 birds on wire floor system of rearing with two floor areas of 1170 and 930 cm^2/bird each with three replicates of 15 and 18 birds respectively. All the birds belonged to a single hatch. The allotment of pullets to different treatment groups as well as to different replicates were made at random. Feed and water were provided *ad lib*. Uniform managemental practices were followed throughout the experimental period.

The data were collected for nine 28 periods. Data on egg weight, shape index, shell thickness, albumen index, yolk index and Haugh unit scores were recorded. The eggs from each replicate during the last three consecutive days of each period were weighed and recorded individually and mean egg weight was calculated. Three eggs from each replicate were taken at random during the last three days of each period and were marked, weighed individually and stored in refrigerator for internal quality studies on the next day. The breadth and length were measured using Vernier Calipers and height of thick albumen and yolk were measured using Ame's tripod stand micrometer. From these data albumen and yolk indices were calculated. Shell thickness was measured using Ame's shell thickness measuring gauge. Haugh unit scores were obtained directly from Ame's tripod stand micrometer. Ambient temperature (maximum and minimum) and relative humidity were recorded daily throughout the period of experimental study.

The data collected were subjected to statistical analysis (Snedecor and Cochran, 1967).

Results and Discussion

The analysed data on egg weight (gm), shape index, shell thickness (mm), albumen index, yolk index and Haugh unit score were presented in Table 1.

Table 1. Influence of bird density on egg quality traits in White Leghorn strain cross layers (ILM-90) under Wire floor system of rearing (overall mean)

	Wire floor system	
Floor areas tested cm^2/bird	930	1170
Birds/group	54	45
Egg weight (gm)	54.48	53.40
Shape index	74.97	75.24
Shell thickness (mm)	0.38	0.37
Albumen Index	0.09	0.08
Yolk index	0.45	0.45
Haugh unit score	81.71	81.96

The mean egg weights were not influenced statistically by the different treatment groups and the values fell in the normal range. Higher egg weight was observed in groups provided with less floor space. Chand, *et al.* (1977) and Mathew, *et al.* (1979) also observed higher egg weight in groups provided with less floor space.

The data on mean shape index were statistically comparable among the two different treatment groups and fell in the normal range indicating little influence of floor density on shape index. The findings of the study agrees with that of Chand, *et al.* (1977). Geo, *et al.* (1992) observed that the shape index ranged from 73.48 to 73.88 in their study conducted using the same strain cross layers (ILM-90).

The data on mean shell thickness of egg were not influenced by the two different treatment groups and the values were found to be within the normal range. Chand, *et al.* (1977) and Geo, *et al.* (1992) also reported lack of density effect on shell thickness.

The mean albumen index for different treatment groups fell in the normal range and there were no statistical difference among treatment groups. The albumen index value was higher for those groups provided with less floor space. This finding agrees with that of Anitha (1991); Geo, *et al.* (1992) and Chand, *et al.* (1997).

The data on mean yolk index values of eggs from birds reared on different floor densities did not reflect any appeciable difference. This suggested that floor space allowance for bird studied did not influence yolk indices and the values obtained were well within the normal range. The findings agree with those of Bhat and Aggarwal (1991); Anitha (1991) and Geo, *et al.* (1992).

Statistical analysis of the data on Haugh unit values measured showed that the differences observed among the treatment groups were not significant. Similar results were reported by Bhat and Aggarwal (1991) and Anitha (1991). Geo, *et al.* (1992) studying the influence of litter floor densities on egg quality traits using ILM-90 reported that the Haugh unit values ranged from 83.0 to 83.68 for the different treatment groups and were not found to be significant.

Summary

Egg quality studies of White Leghorn strain cross layers (ILM-90) reared in two different floor densities (930 and 1170 cm^2 per bird) under wire floor system of rearing were carried out. The results indicated that none of the quality traits studied was influenced by the different floor spaces.

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