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SCIENTIFIC JOURNAL OF
ZOOLOGY

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Original article

Comparative study on some egg quality traits among four close-bred stocks of Japanese quail

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A R T I C L E I N F O

A B S T R A C T

Present study was conducted to evaluate some egg quality traits among four close-bred stocks (CBS) of Japanese quail at Avian Research and Training (ART) Centre, University of Veterinary and Animal Sciences, Lahore, Pakistan. For this, a total of 144 quail eggs having 36 eggs of each CBS (Major, Kaleem, Saadat and Zahid) were subjected to egg quality analysis. Data were recorded regarding egg weight (g), yolk index %, Haugh Unit and shell thickness (mm). Statistical analysis of data according to Completely Randomized Design through one-way ANOVA technique and comparison of mean using Duncan's Multiple Range test revealed significant different among four CBS. Significantly higher Egg weight (g) and shell thickness (mm) was observed in CBS M as compared to K, S and Z. Better Haugh unit score was found in CBS Z as compared to rest of CBS. However, no significant effect of CBS on yolk index was also observed. It is concluded that four CBS of Japanese quail had significant effect on egg weight, shell thickness and Haugh unit score except yolk index.

1. Introduction

The Japanese quail because of its unique properties of easy maintenance, faster growth rate, short generation interval, better egg production and high resistance to disease made him best avian research model in the field of biological science (Lohani and Ahmad, 2013). An extensive research work was performed to enhance its production potential. Literature regarding economical traits of different breeds of quail is numerous but such a systematic study regarding egg quality traits among different strains or CBS is still silent. So present study was conducted to evaluate some egg quality parameters among four close-bred stocks of Japanese quail.

2. Materials and methods

Present study was conducted at Avian Research and Training Centre, University of Veterinary and Animal Sciences, Lahore, Pakistan to evaluate some production performance traits among four close-bred stocks of Japanese quail parent for the duration of 4 weeks. Birds were maintained at standard managemental conditions fed with quail breeder diet according to NRC (1994).

2.1. Parameter studied

Average Feed intake / birds: - it was calculated by averaging the daily feed intake / bird with the help of electrical weighing balance capable of measuring up to 0.5g.
Body weight: - it was recorded at the start of experiment with the help of weighing balance capable of measuring up to 5g accuracy.
Production %: - It was recorded to evaluated production potential of bird.
FCR /g egg mass: - it was calculated by dividing feed intake into egg mass.
Average egg weight (g): - it was recorded simple averaging daily egg weight (g).
Livability %: - it was calculated to examine livability pattern of bird.

2.2. statistical analysis

Data were analyzed according to Completely Randomized Design (CRD) through one-way ANOVA technique (Steel et al., 1997). For further interpretation of data General Linear Model (GLM) Procedures were used. Comparison of means were worked out using Duncan (1955)'s Multiple Range (DMR) test with the help of SAS (Statistical Analysis System) 9.1for windows.

3. Results

In the present experiment significant differences were observed in egg weight among four close-bred stocks; CBS M had the highest egg weight (14.15g) whereas the lowest in Z (11.66g). That might be due to genetic variance among different close-bred stocks. Similarly, in another study (Ashok and Reddy, 2010) significant differences in egg weight was observed among three strains of quail.
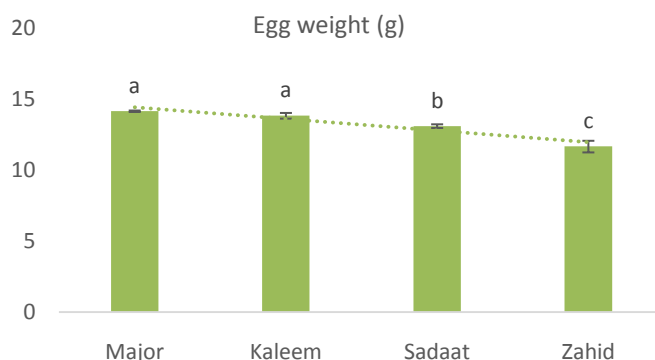
In the present study significant differences were observed in shell thickness among different four close-bred stocks; CBS M had the highest shell thickness (0.21mm) whereas the lowest (0.18mm) in S and Z. This could be due to higher egg weight of CBS M requiring more time in reproductive tract especially in uterus for calcification and pigmentation. Similarly, some other scientist found significant effect of strains on egg quality parameters of Japanese quail (Praharaj et al., 1989; Oroian et al., 2002).

Shell Thickness (mm)
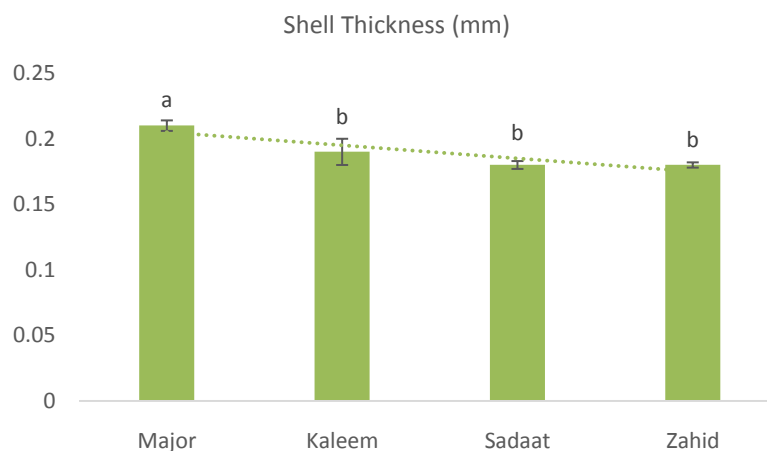
Significantly higher Haugh Unit score in CBS Z (105.80) as compared to M (102.95) might be attributed higher viscosity of albumen in the eggs of CBS Z resulted higher value for albumen height and correspondingly Haugh unit score. Similarly in another study (Altinel et al., 1996) significant effect of strains on Haugh unit score was observed. However, no significant effect of CBS on yolk index was observed in current experiment.

Haugh Unit
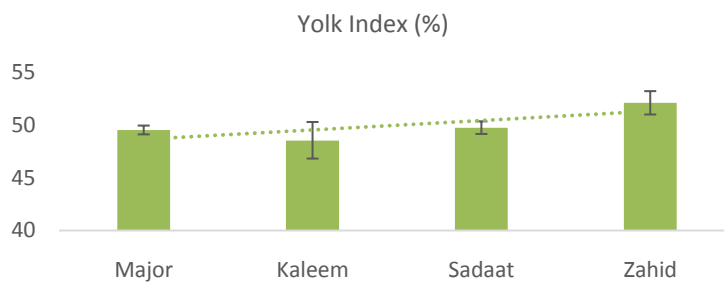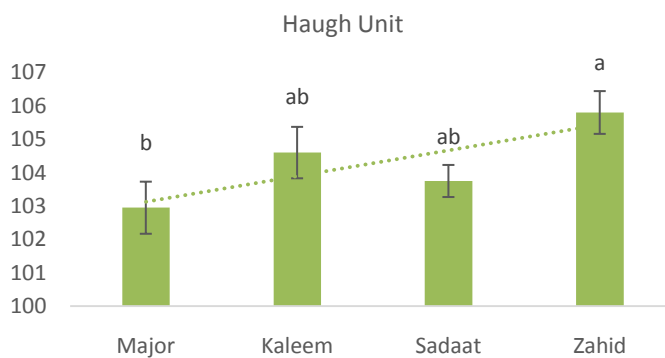
Yolk Index (%)

4. Conclusion

It is concluded that CBS had significant effect on egg weight, shell thickness and Haugh unit score. However, no significant effect of CBS on Yolk index was also observed in present study.

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