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Short communication

A comparison of some egg geometry parameters in 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 geometry parameters in four close-bred stocks Major [(M), Kaleem (K), Saadat (S) and Zahid (Z)] of Japanese quail at Avian Research and Training Centre UVAS, Lahore. For this purpose, 144 eggs (36 eggs from each CBS) were subjected to egg geometry parameters (shape index, surface area and volume). Statistical analysis according to CRD with one way ANOVA technique, comparison of mean by using DMR test with the help of SAS 9.1 revealed significant differences among four close-bred stocks regarding surface area and volume. However, shape index remained non-significant.

1. Introduction

The Japanese quail, due to its easy maintenance (Shanaway, 1994) short generation interval (3 to 4 generations/year) (Tarhyela et al., 2012) better growth rate coupled with better egg production (Minvielle, 1998) and short incubation period (17 days) make it a unique research model in the field of science. Strains have a significant effect on productive and reproductive traits in Japanese quail; however literature regarding its egg geometry and quality parameters is still silent. The present study was planned to compare some egg geometry parameters on four close bred stocks.

2. Materials and methods

The research was conducted at Avian Research and Training Centre, University of Veterinary and Animal Sciences, Lahore Pakistan to evaluate some egg geometry traits among four close-bred stocks [Major (M), Kaleem (K), Saadat (S) and Zahid (Z)] of Japanese quail. A total of 144 eggs (36 from each CBS) were subjected to egg geometry traits.

2.1. Parameters studied

Following parameters were calculated according to Sreenivasiah (2006):
Shape Index (%) : It was calculated by following formula

$$\text{shape index (\%)} = \frac{\text{egg breadth}}{\text{egg length}} \times 100$$

Surface area (cm2) : It was calculated by following formula
Surface area (cm2) = kW0.67
k = 4.558;   W = weight of egg (g)
Volume (cm3): It was calculated by following formula
Volume (cm3) = 0.913W
W = weight of egg (g)

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 GLM (General Linear Model) procedures were used. Means were work out by using Duncan (1955) Multiple Test Range (DMR) with the help of (SAS, 2002-2004) (Statistical Analysis System) 9.1 for windows.

3. Results and discussion

In the present study, significant differences were observed in Egg surface area and volume among four close bred-stocks of Japanese quail. CBS M had highest surface area (26.91 cm2) whereas lowest in S (23.62 cm2) that might be due to the higher egg weight of the CBS M, having slightly elongated shape largely due to increase in long axis than short axis. Similarly, in another study significant effect of strains on egg surface area was observed in two strains of quail (Genchve, 2012).

In the present scenario, CBS M had greater egg volume (12.92cm3) as compared to CBS S (10.65cm3),this may be due to genetic variation among four close bred stocks and also egg volume is largely depend on oviduct's length. Similar findings were also reported by Genchve (2012) who found significant differences in egg volume between two strains of quail (Pharaoh and Manchurian Golden). However no significant effect of shape index was observed in present study.

Table 1
Comparison of egg geometry parameters in four CBS of Japanese Quail.

*CBS / Parameters	Major	Kaleem	Sadaat	Zahid	P-Value
Shape Index (%)	76.29 ± 1.29	78.27 ± 1.84	79.53 ± 1.42	78.09 ± 2.38	**NS
Surface Area (cm^2)	26.91 ± 0.06[a]	26.49 ± 0.25[a]	23.62 ± 0.55[c]	25.55 ± 0.17[b]	<.0001
Volume (cm^3)	12.92 ± 0.04[a]	12.63 ± 0.18[a]	10.65 ± 0.37[c]	11.96 ± 0.12[b]	<.0001

Note: - Different alphabets on values show significant difference at P<0.05
* Close bred-stock
** Non significant

4. Conclusion

From the above discussion it can be concluded that CBS had significant effect on egg surface area and volume. However, no significant effect of CBS on egg shape index was observed in present study.

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