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Original article

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

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ARTICLE INFO

Article history:

Received 11 November 2013

Accepted 22 November 2013

Available online 29 November 2013

Keywords:

Japanese quail

CBS

Hatchability

Fertility

Infertile

Dead germ

Dead in shell%

ABSTRACT

The aim of study was to evaluate some hatching 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 purpose, a total of 144 hatching eggs having 36 eggs of each CBS (Major, Kaleem, Saadat and Zahid) were procured from ART-Centre Hatchery and subjected to break out analysis. Data were collected regarding hatchability, fertility, infertile eggs, dead germs and dead in shell %. Statistical analysis of data in Completely Randomized Design through one-way ANOVA technique and comparison of mean using Duncan's Multiple Range test with the help of SAS 9.1 revealed significant differences among four CBS. Significant higher hatchability and fertility % was observed in CBS M as compared to others whereas significantly lower infertile eggs % was observed in CBS M as compared to rest of CBS. However, no significant effect of CBS on dead germ and dead in shell % was observed. It is concluded that CBS had significant effect on hatchability, fertility and infertile egg % among four CBS of Japanese quail.

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1. Introduction

The Japanese quail due to its unique characteristics of easy maintenance, short generation interval (4-5 generations / year), faster growth rate, better egg production and high resistance to disease make it a complete research model in the field of animal science (Lohani and Ahmad, 2013). From last three decades a lot of research work was done to increase the genetic potential of bird. The growth performance improved significantly, economical traits especially carcass parameters improved almost double. Literature regarding its growth performance, production performance and egg quality traits are numerous but such a schematic study regarding its hatching traits among difference strains or CBS are still silent. So present study was planned to evaluate some hatching traits 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 hatching traits among four close bred stocks i.e., Major, Kaleem, Saadat and Zahid. For this, 144 hatching eggs having 36 of each CBS were procured from ART Centre hatchery and subjected to break out analysis.

2.1. Parameter studied

Hatchability %: - It was calculated by following formula

$$\text{Hatchability \%} = \frac{\text{No. of Chicks}}{\text{No. of Eggs set}} \times 100$$

Fertility %:- It was calculated by following formula

$$\text{Fertility \%} = \frac{\text{No. of Fertile eggs}}{\text{No. of eggs set}} \times 100$$

Infertile egg %:- It was calculated by following formula

$$\text{Infertile eggs \%} = \frac{\text{No. of clear eggs}}{\text{No. of eggs set}} \times 100$$

Dead germ %:- It was calculated by following formula

$$\text{Dead germ \%} = \frac{\text{No. of dead germs}}{\text{No. of eggs set}} \times 100$$

Dead in shell %:- It was calculated by following formula

$$\text{Dead in Shell \%} = \frac{\text{No. of dead in shells}}{\text{No. of eggs set}} \times 100$$

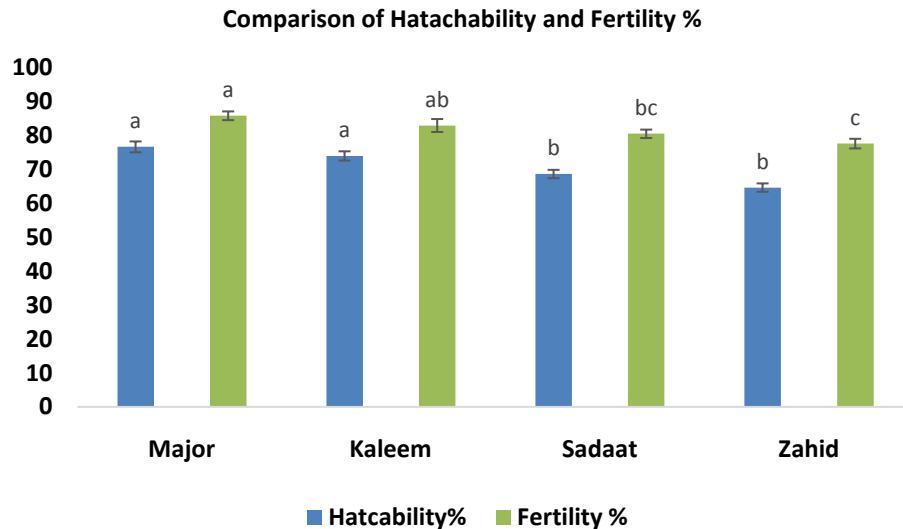
2.2. Statistical analysis

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

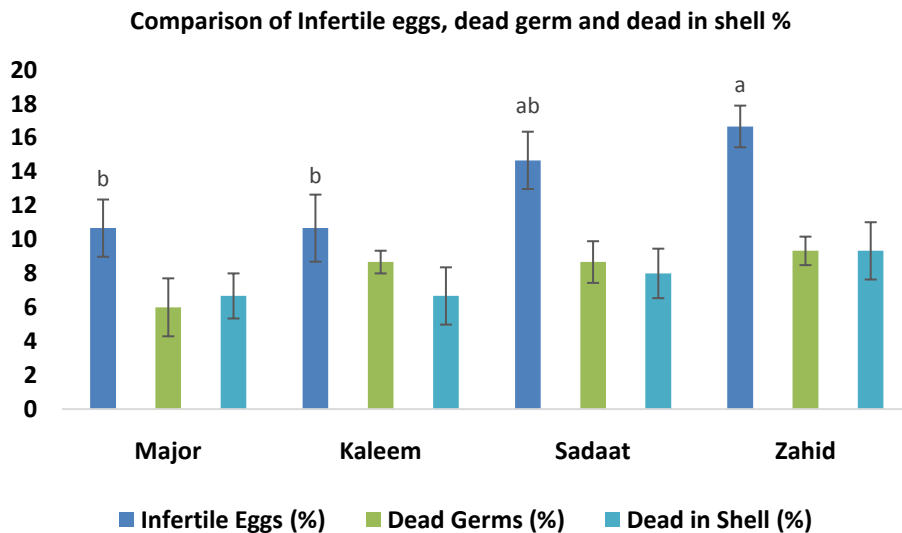
3. Results and Discussion

In the present scenario, significant differences were observed in hatchability % among four close-bred stocks; CBS M had the highest (76.67%) hatchability % whereas lowest in Z (64.67%). That might be attributed to differences in egg quality traits among close-bred stocks. Similarly, significant effect of strains on hatchability % was observed between two genotypes of guinea fowl (Bernacki et al., 2013).

Significantly higher fertility (85.85%) in CBS M as compared to Z (77.64%) might be attributed to non-genetic factors i.e., pre-incubation and incubation requirements. However, no significant effect of strains on fertility % was also observed between two strains of quail (Vali et al., 2005).



Significantly higher infertile eggs (16.67%) in CBS Z as compared to M and K (10.67%) might be due to non-genetic factors i.e., nutrition, management and mating system. Contrarily, non-significant differences in infertility % between two strains of quails was observed (Vali et al., 2005). However, no significant effect of dead germ and dead in shell % was observed in present study.



4. Conclusion

It is concluded that CBS had significant effect on hatching traits in terms of hatching, fertility, infertile egg % in Japanese quail. However, no significant effect of CBS on dead germ and dead in shell % was observed.

Acknowledgement

Author is extremely thankful to the administration at ART Center specially Mr. Sohail Ahmad for providing research facilities and Punjab Agriculture Research Board (PARB) for providing financial assistance in this regard.

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