

## Evaluation of Reproductive traits in three strains of Japanese Quail

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### Abstract

A study was undertaken to evaluate the reproductive performance in two plumage colour variant strains of quail, viz; Brown, White Breasted and a dark Cinnamon Brown (commercial) strain. A total of 694 straight run active chicks were obtained in three hatches at weekly intervals from the three strains. Sex was determined at six weeks of age and female progenies were separated and data on reproductive traits were recorded. The Brown strain exhibited superior egg weights ( $P < 0.05$ ) than the other two strains. The commercial strain came into egg production earlier and produced significantly ( $P < 0.05$ ) more number of eggs than the other two strains.

**Key words:** egg production, egg weight, Japanese quail

### Introduction

In the past decade commercial quail farming witnessed a tremendous growth in our country and became a viable alternate farming due to their delicious meat and rich nutritive value. During this period a number of breeding-cum-commercial quail units were established dealing with production of specialized meat and egg type strains to meet the needs of quail growers.

"The Japanese quail belongs to the order Galiformes, genus Coturnix, and species japonica. The scientific name for Japanese quail is Coturnix japonica, different from the common quail (Coturnix Coturnix). The Japanese quail is found in Japan, Korea, Eastern China, Mongolia and Sakhalin as migrating birds" (Mizutani, 2003).

"The plumage colour of the wild type which was domesticated and commercialized is predominantly dark cinnamon brown. However, adult females have pale breast feathers that are speckled with dark coloured spots. Adult males have uniform dark rust-red feathers on the breast and cheek. Sex differences in plumage color appear about 3 weeks of age" Mizutani (loc. It).

Many plumage colour variants of Japanese quails were reported by (Traux and Johnson, (1979); Somes, (1976 and 1979); Roberts et al., (1978)). All the above referred studies were confined primarily in investigating the mode of inheritance of these plumage colour variants but very few attempts were made to study the production performance Minvielle et al., (2007).

The present study was undertaken to evaluate the reproductive performance in two plumage colour variant strains of quail, viz; Brown (BS), White Breasted (WBS) and a dark cinnamon brown (commercial) strain (CS).

### Materials and Methods

A total of 694 straight run active chicks were obtained in three hatches at weekly intervals from the three strains. Sex was determined at six weeks of age and female progenies were separated and data on reproductive traits age at first egg (AFE), egg weight at ten weeks of age (EW10), egg weight at seventeen weeks of age (EW 17) and egg production (EP) as numbers of eggs laid between 8-17 weeks were recorded. The data was corrected for non genetic effects, viz; hatch and sex effects by least square technique as per Harvey, (1966).

### Results

The mean values, standard error, standard deviation along with coefficient of variation for reproductive traits is presented in table 1.

The age at first egg ranged from 51-53 days in the three strains. On an average, the commercial strain laid the first egg at 51 days followed by white breasted and brown, 51.94 and 53.20 days, respectively. The egg production (70 days) varied from 39 to 49 eggs among the three lines with a difference of 10 eggs. The highest number of 49 eggs was recorded in the commercial followed by brown and white breasted strain which recorded 43 and 39 eggs, respectively.

Table-1. Means, Standard error, standard deviation and coefficient of variation for different body weights of Japanese quail

Traits	strain	n	Mean± S.E(g)	S.D	C.V%
AFE	BS	62	53.20 ±0.32a	2.49	4.68
	WBS	33	51.94±0.53b	3.06	5.90
	CS	87	51.04±0.09c	0.87	1.69
EW10	BS	62	9.50±0.05a	0.40	4.22
	WBS	33	9.19±0.05b	0.28	3.01
	CS	87	9.23±0.03b	0.28	3.06
EW17	BS	62	11.04±0.07a	0.55	5.01
	WBS	33	10.63±0.06b	0.35	3.27
	CS	87	10.43±0.02c	0.20	1.98
EP NO.	BS	62	43.60±0.47a	3.71	8.51
	WBS	33	39.01±0.68b	3.91	10.03
	CS	87	49.61±0.56c	5.22	10.52

Means with similar superscripts within each trait were not significant (P< 0.05)

The egg weight at 10 weeks of age ranged from 9.19 g to 9.50 g with the highest weight of 9.50 g recorded in brown strain followed by commercial and white strains. The egg weight at 17 weeks of age was found to be highest with an egg weight of 11.04 g in brown strain followed by white breasted and commercial strain which recorded 10.63 g and 10.43 g, respectively.

**Discussion**

The lines under investigation differed significantly (P<0.05) for AFE and 70 day EP. The commercial strain matured earlier than the other two strains and produced 10 eggs more than WBS and 6 eggs more than BS. Though the BS matured two days latter than the WBS, it produced 4 eggs more than WBS. The AFE obtained were in agreement with the findings reported by EL-Ibriary (1966) Praharaj et. al., (1990) and Kundu et. al., (2003), whereas the values obtained for egg production were lower than that reported by Strong et al., (1978) for the corresponding period of measurement in normal coloured quails.

The egg weight at 10 weeks of age, 9.50 g of BS significantly (P<0.05) differed with other two lines, whereas the egg weight of the other two lines were not different. The three strains differed significantly (P<0.05) for egg weight at 17 weeks of age and the highest egg weight of 11.04 g was recorded in BS followed by the other two strains. The results obtained for egg weight were consistent for similar reports in literature for the corresponding period of measurement.

The present study indicated that the BS exhibited

superior egg weights (P<0.05) than the other two strains. The commercial strain came into egg production earlier and produced significantly (P<0.05) more number of eggs than the other two strains.

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