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# Evaluation of Performance of Different Japanese Quail (*Coturnix Coturnix Japonica*) Varieties

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## Abstract

The study was conducted to assess three varieties (CARI, PES and WB) of Japanese quails (*Coturnix Coturnix Japonica*) during the growing and laying periods. In this trial, 360 quails consisting of three varieties each 120 quails were distributed in three treatments with six replicates each consist of 20 chicks. The diets were prepared *iso-nitrogenous* and *iso-caloric*. The performance and egg production parameters were studied from 0 to 22 weeks of age. There were no significant differences ( $P > 0.05$ ) found on body weight gain, feed consumption and feed conversion ratio among varieties from 0 to 6 weeks. The age at first egg was found to be early in the CARI variety 43days. The peak egg production level ( $79.83 \pm 0.64\%$ ) during fourth laying cycle in the PES at the age of 18-22 weeks followed by CARI ( $71.62 \pm 0.62\%$ ) and WB ( $49.28 \pm 0.43\%$ ). The results of the present study indicated that, the three varieties performance and production were significantly there was no difference.

**Keywords:** Japanese quail varieties, performance, percent hen day egg production.

Japanese quail have become an important livestock under animal husbandry sector. Japanese quail are hardy birds that thrive in small cages and are inexpensive to keep. Japanese quail have been widely used for biological and genetic studies (Tsudzuki, 1994) because of its small body size, ease in handling and also a large number of birds can be kept in a limited space. Their sexual maturation is rapidly accomplished and turnover of generations are rapid. Because of high egg production, many offspring can be available from certain number of parents. Being an oviparous bird, it is, also, useful for embryological experiments (Ayasan and Okan, 2001). They are fairly disease resistant. Japanese quail mature in about 6 weeks and are usually in fully egg production by 50 days of age, with proper care hens lay about 220-240 eggs in their first laying cycle. The research studies indicate that grouping a single male with two

or three females will generally give high fertility. The birds extensively used for egg and meat production.

## MATERIALS AND METHODS

A experiment on comparative evaluation of different varieties of quail (Central Avian Research Institute (CARI), Poultry Experimental Station (PES) and White Breasted (WB) were conducted in the Poultry Experimental Station, Department of Poultry Science, College of Veterinary Science, Hyderabad. A total of 360 day-old quail chicks includes three varieties each with 120 day old quails were distributed in a completely randomized design in three treatments and six replicates with 20 quails in each replicate were housed in each battery brooder cell (4 sqft). Feed and water were offered *ad lib* and the birds were raised under ideal managerial conditions. The experimental diets during growing period (0-6

weeks) and laying period (6-22 weeks). The crude protein and metabolizable energy levels in the growing and laying periods were 24%, 2900 kcal/kg and 20%, 2900 kcal/kg diets were prepared. The data on body weight, feed consumption, feed conversion ratio and livability from 0-6 weeks at weekly intervals were recorded. Age at first egg and percent hen day egg production of four laying periods (each laying period is 28 days) were also recorded from 6 to 22 weeks of age.

The data were analyzed using General Linear Model procedure of Statistical Package for Social Sciences (SPSS) 15<sup>th</sup> version and comparison of means was done using Duncan’s multiple range test (Duncan, 1955) and significance was considered at P<0.05.

## RESULTS AND DISCUSSION

### Performance parameters

The data on body weight gain, feed consumption and feed conversion ratio of three varieties of quails were presented in Table 1. The data indicated that, the body weight gain of three varieties of quails body weight gain did not influence significantly (P>0.05) during growing period (0-6 weeks) of age. These results are in agreement with the findings of Sharma and Panda (1978) observed during 1,2,3,4,5 and 6 weeks of age the body weight gain was 9.68, 16.56, 26.08, 27.07, 24.69 and 28.98g in brown line and 11.56, 16.42, 26.21, 22.33, 23.34 and 26.25 g respectively, in WB line by Sreenivasaiah *et al.*(1997). In addition, the overall mean weight gains attained during 1, 2, 3 and 4 weeks of age were 28.3, 46.2, 46.8 and 50.1g respectively (Aggrey and Cheng, 1994) and 2.58, 3.90, 4.76 and 4.49g in males and 2.99, 4.89, 5.95 and 4.59g in females as reported by Mohammed *et al.* (2006).

The feed consumption from 0-42 days of age were not significantly (P>0.05) influenced by the three varieties. Some similarities were seen in cumulative feed consumption pattern during the growth phase. However, the trend was not specific. During 0-6 week, lowest cumulative feed consumption (320.88±1.16g) was recorded in WB which was followed by CARI (376.95±0.76 g) and PES (385.00±1.68g) respectively. Sharma and Panda (1978) reported mean feed consumption upto 8 weeks of age as 11.7 and 11.1 g per bird per day in deep litter and battery systems of rearing. The cumulative feed consumption was 6 g at

day-old, 5 g at 4 days, 18g at 8 days, 41 g at 12 days, 237.48 g upto 4 weeks of age, 481.16 g upto 6 weeks and 2.678 kg upto 120 days of age (Sreenivasaiah and Joshi, 1987).

The feed conversion ratio (kg of feed consumed /kg weight gain) was no significant (P>0.05) differences during 0-6 weeks of age. The values ranged between 1.931±0.008 and 1.937±0.02. Contrary to the findings of present studies, feed efficiency ratio during 1, 2, 3 and 4 week varied from 1.71 (Hyankova *et al.*, 1997) to 3.18; 1.78 (Marks, 1993) to 2.76 (Hyankova *et al.*, 1997); 1.28 (Marks, 1993) to 2.57 (Hyankova *et al.*, 1997) and 1.30 (Marks, 1993) to 3.86 ((Hyankova *et al.*, 1997), respectively.

**Table 1: The comparative performance of three varieties of quails of body weight gain (g) cumulative feed consumption (g/bird) and feed conversion ratio**

Variety	Age in weeks		
	0-4	5-6	0-6
<b>Body weight gain (g)</b>			
CARI	88.536±0.61	54.250±0.46	186.761±0.86
PES	87.937±0.40	50.962±0.68	179.786±0.58
White breasted	85.449±0.68	52.512±0.59	175.111±1.09
N	6	6	6
<b>Cumulative feed consumption (g)</b>			
CARI	168.65±0.94	116.750±1.20	376.95±0.76
PES	167.00±0.69	120.500±1.08	385.00±1.68
White breasted	161.50±0.48	101.625±1.03	320.88±1.16
N	6	6	6
<b>Feed conversion ratio</b>			
CARI	1.855±0.03	2.200±0.03	1.931±0.008
PES	1.871±0.03	2.416±0.04	1.937±0.02
White breasted	1.865±0.04	1.476±0.04	1.934±0.02
N	6	6	6

Mean bearing atleast one common superscript in a column do not differ significantly (P<0.05)

### Production parameters

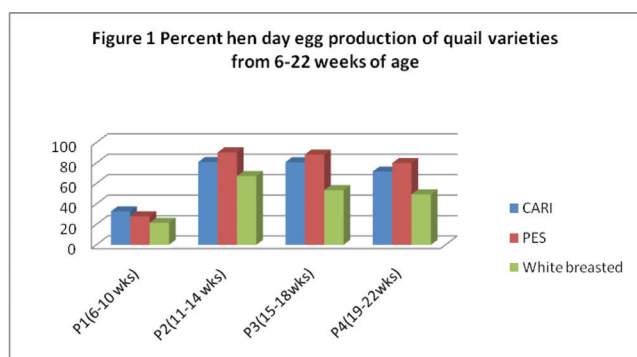
The age at sexual maturity in the quail varieties were 43, 46 and 49 days in the CARI, WB and PES respectively. Similarly, the mean age at first egg in Japanese quails varied from 35 to 63.4 days (Junpiao *et al.*, 2004).

**Table 2: Percent hen day egg production of quail varieties from 6-22 weeks of age**

Variety	Hen day egg production (%)			
	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
CARI	32.67±0.56	80.89±1.08	80.75±1.04	71.62±0.62
PES	27.85±1.04	90.27±1.03	88.23±1.13	79.83±0.64
White breasted	21.42±1.18	67.14±0.72	53.39±0.80	49.28±0.43
N	6	6	6	6

Mean bearing atleast one common superscript in a column do not differ significantly ( $P < 0.05$ )

P<sub>1</sub> - period 1 (6-10 wks), P<sub>2</sub> - period 2 (11-14 wks), P<sub>3</sub> - period 3 (15-18wks) P<sub>4</sub> - period 3 (19-22wks)



The egg production advanced with age from 6 to 22 weeks of age then it started reducing. (Table 2 and Fig. 1). However the egg production initiated with range 21.42±1.18 - 32.67±0.56 at 6 -10 weeks of age and at 19 - 22 weeks of age the production was higher in PES (79.83±0.64%), CARI (71.62±0.62%) and WB (49.28±0.43%) respectively. The means for egg production of Japanese quails upto 16, 20 and 22 weeks of age, reported by various scientists varied from 21.70 to 67.71 (Yoshihito and Okamoto, 2003) upto 16 weeks and from 49.00 (Chopra and Singh, 1994) to 92.40 eggs (Bhanja *et al.*, 2006) upto 20 weeks of age.

## CONCLUSION

The results lead to a conclusion that the evaluation of three varieties in terms of body weight gain, feed consumption and feed conversion ratio were not influenced significantly ( $P > 0.05$ ) during the growing period. However, during laying period the percentage of hen day egg production was numerically higher in PES variety than other varieties.

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