

PRODUCTION PERFORMANCE AND EGG WEIGHT OF VANARAJA LAYER BIRD IN CHHATTISGARH

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Abstract: To study the twelve months production performance of Vanaraja, birds were reared under deep litter system from six to eighteen month of age. Annual egg production per bird (up to 18th month of age) was observed as 118 eggs. The overall average of the percent hen day production of the twelve months period was found as 32.64%, however the averages of first three months and first six months of laying were observed as 34.23% and 37.33%, respectively with highest production at 12th month of age. In the twelve month of laying period average monthly egg production per bird was recorded as 9.79. The egg production increased in first six month followed by gradual decline. The effect of age and phase of laying on egg production and egg weight were found significant ($p \leq 0.05$). In the one year of laying period the average egg weight was obtained as 54.65 g and highest egg weight at 17th month of age. The effect of age and phase of laying on egg weight was found significant ($p \leq 0.05$).

Keywords: Egg production, Egg weight and Vanaraja.

Introduction

Vanaraja is a multi-colored, medium sized dual purpose bird. It is a cross strain of chicken suitable for backyard farming in rural and tribal areas with high immune status. The pullet is able to produce good number of eggs utilizing locally available feed ingredients and adopting to prevailing ecological conditions. The male and female parents of Vanaraja are the strain crosses, evolved by blending of genes responsible for egg and meat production from both indigenous and exotic sources. The exploitation of genetically diverse stocks for improving economic traits, such as body weights and annual egg production is one of the approaches in the breeding programs of chicken. The improved performance of crosses and the parental breeds/ strains/ lines, for economic poultry production is well known (Cole and Hutt, 1973). Variable amount of heterosis may be exhibited by various crosses depending upon the specificity and divergence among the parental lines and environment (Orzaco and Campo, 1975). The knowledge of performance of a breed or variety with respect to various economic

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traits in the chicken is important for the formulation of breeding plans for further improvement in production traits. However, the present study was undertaken to study the egg production performance and egg weight of vanaraja parent line in one year of laying period.

Materials and methods

Ethical approval

The experiment was approved by the Institutional Animal Ethics Committee constituted as per the article number 13 of the CPCSEA-rules, laid down by the Government of India.

Egg Production

Data for egg production and egg weight were collected from flock of Vanaraja parent line maintained at college of veterinary science and animal husbandry, Anjora, Durg, Chhattiagarh, India. Data recording were started from 175 birds. Egg production and egg weight data were taken from six months to eighteen months of age. The egg production was expressed in three periods, that is from 6 month (24 weeks) to 9 (36 week), 12 (48 week) and 18 month (72 week) of age. Egg production trait was recorded in terms of month wise total egg production, per cent hen day egg production, monthly egg production per bird, cumulative egg production per bird and cumulative per cent of egg production.

Month wise total egg production was taken as total egg production in each month by total no. of laying hen at that particular month. Per cent hen day egg production is egg production by hundred birds in one day. Monthly egg production per bird Calculated by formula

$$\frac{\text{Total egg production during the month}}{\text{Average no. of laying birds during the month}}$$

Cumulative egg production per bird was calculated as progressive total of monthly egg production per bird. Percentage of cumulative egg production at given age was calculated as-

$$\frac{\text{Cumulative egg production at given month}}{\text{Cumulative egg production of all months}} \times 100$$

Because there may be variable number of layers during different months and on different days within a month, the daily egg production was expressed as daily per cent egg production which was arrived as

$$\frac{\text{Total egg produced on that day}}{\text{No. of layers on that day}} \times 100$$

From the daily per cent egg production, monthly per cent egg production was calculated (on an average basis) and then data were used for statistical analysis.

Egg weight

For recording of egg weight fresh eggs were collected from farm and weight was measured by using electronic weighing balance. Monthly egg weights were calculated on an average basis from daily egg weight.

In order to study the effect of laying phases on egg production and egg weight, the entire period of egg production was divided into three phases. First phase involve first four months of laying, second phase involve 5th to 8th month of laying and third phase consist of 9th to 12th month of laying.

Statistical analysis

The means and standard errors of the result of various tests were computed using Analysis of variance. Statistical procedures and tables were used from Snedecor and Cochran (1967).

Result and discussion

Egg production

Egg production performance of Vanaraja parent line from 6 month to 18 month of age (one year production) is presented in Table 1. Annual egg production in first year of laying that is up to eighteen months of age was found as 117.52 eggs, whereas the egg productions at ninth and twelfth months of age was observed as 41.08 and 78.39 eggs, respectively.

Table 1: Age wise details for egg production for twelve month of laying period

S. No.	Months	Age in Months	Total Egg Production	Avg. No. of Laying Birds	% Hen Day Production	Monthly Egg Production/Bird	Cumulative Egg Production/Bird	Cumulative % Egg Production
1	Sept-10	6	1519	175	28.93	8.68	8.68	7.39
2	Oct -10	7	2336	173	45	13.50	22.18	18.88
3	Nov-10	8	1739	172	33.7	10.11	32.29	27.48
4	Dec-10	9	1459	166	29.29	8.79	41.08	34.96
5	Jan-11	10	1912	161	39.58	11.88	52.96	45.06
6	Feb-11	11	1834	160.5	42.09	11.43	64.39	54.79
7	Mar-11	12	2227	159	46.69	14.01	78.39	66.70
8	Apr-11	13	1777	156	37.97	11.39	89.78	76.40

9	May-11	14	1173	146	26.78	8.03	97.82	83.23
10	Jun-11	15	804	135	19.85	5.96	103.77	88.30
11	Jul-11	16	912	132	23.03	6.91	110.68	94.18
12	Aug-11	17	872	127.5	22.79	6.84	117.52	100
Mean (9 months)			1763.25^a	171.5	34.23^a	10.27		22.17
Mean (12 months)			1860.86^b	166.64	37.33^b	11.20		36.46
Mean (18 months)			1547^c	155.25	32.64^c	9.79		

^{a,b,c}Means having different superscripts within a column differ significantly ($p < 0.05$)

The overall average of monthly egg production of the twelve months period was observed as 1547. The overall average of the twelve months period was found as 32.64%, whereas first third and sixth month of laying were 34.23% and 37.33%, respectively. The average monthly egg production per bird has been recorded as 9.79. The differences in egg production due to age have been found to be statistically significant ($p \leq 0.05$). There was gradual increase in the per cent hen day production from 6th to 12th month of age and thereafter there was gradual decline, with egg production being lowest at 15th month of age. The Average per cent egg production at different phases of laying is presented in Table 2. The per cent egg production was highest (42%) during the 2nd phase and lowest during the 3rd phase (23%). The phase wise differences were found to be statistically significant ($p \leq 0.05$)

Table 2: Percent egg production and average egg weight at different phases of laying

Phase	Avg Egg Production	Avg Egg wt. (g)
1 st phase	33.84 ^a	48.45 ^a
2 nd Phase	42.58 ^b	55.31 ^b
3 rd Phase	23.46 ^c	60.29 ^c

^{a,b,c}Means having different superscripts within a column differ significantly ($p < 0.05$)

The production reported by Niranjana *et al.* (2008) in Vanaraja (40 week) is close to the present finding. Lower daily per cent egg production were reported in Aseel peela (23-26

weeks) by Mohan *et al.* (2008), but higher production were observed in 55-58 week and 75-78 week of laying. Lower egg production reported by Malik and Singh (2011) in Coloured broiler sire line (40 weeks) in Tripura; and Kumar *et al.* (2011) Kadaknath (annual production) and coloured variant Krishna-J birds under backyard farming. Higher production reported by Malik *et al.* (2009) in CARI Shyama (annual) and in CARI-Nirbhik by Alam *et al.* (2011).

Egg weight

Age wise mean egg weight is shown in Table 3. The mean egg weight (g) ranged from 43.75 \pm 0.15 (at 6 month of age) to 62.47 \pm 0.16 (at 17 month of age). During the one year of laying period under study the overall mean egg weight was found as 54.65 g. The effect of age on egg weight has been noticed to be significant ($p \leq 0.05$) in Table 2. The highest egg weight (60.29 g) has been recorded during the last phase of production. Similar findings were reported by Niranjan *et al.* (2011) in Vanaraja male line at the age of 28 weeks, 32 weeks and 40 weeks; Singh *et al.* (2000) in Aseel breed and Negi *et al.* (2011) in White Leghorn, Austro Red and in Kalinga Brown. Present finding is in agreement with Kumar (2009), where significant effect of age on egg weight was reported.

Table-3: Egg weight at various ages

Age in Months	Egg Weight (Mean \pm SE)
6	43.75 \pm 0.15
7	47.65 \pm 0.08
8	50.02 \pm 0.10
9	52.38 \pm 0.11
10	53.65 \pm 0.11
11	54.73 \pm 0.12
12	55.18 \pm 0.09
13	57.67 \pm 0.11
14	58.01 \pm 0.13
15	59.78 \pm 0.13
16	60.89 \pm 0.17
17	62.47 \pm 0.16
Mean	54.65 \pm 0.12

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