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Original Research Article

Growth Performance of Vanaraja Birds under Different System of Management

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A B S T R A C T

A study was conducted to evaluate the growth performance of Vanaraja bird in different system of management. All chicks were brooded up to 8 weeks of age in nursery and thereafter transfer to deep litter, semi intensive and backyard system of management. There is significant variation in growth rate, feed intake and FCR in different management system. At 20th weeks of age average body was 1782.40±12,07g, 1773.79±11.10 g and 1736.67±7.85 g in deep litter, semi intensive and backyard system of management respectively. Weight gain was highest in deep litter system of management. Feed consumption was179.65 g during nursery management. Significant role of management system on daily feed consumption was observed.

Keywords

Vanaraja, FCR, Management system

Introduction

Poultry production systems in India are characterized by the simultaneous existence of the traditional extensive system of backyard production and the modern intensive system of production. Vanaraja is dual purpose multi-coloured bird for poultry production. Vanaraja closely resembles the jungle (Desi) fowl in colour and plumage pattern of backyard farming in villages and tribal habitations. The Vanaraja variety does not need any special diet supplement once left free in the backyard. It will feed on worms and other food materials available to it unlike the poultry bird when special care is needed to be taken. Vanaraja has been a hit in the rural environments and local population has accepted it for a backyard farming. Keeping in view the above facts, the present study is aimed at assessing the effects of three different housing systems (deep litter, semi-intensive and free-range) on growth, production performance of Vanaraja birds under agro-climatic condition of Chotanagpur.

Materials and Methods

A total of one hundred fifty (150) day-old chicks were taken and maintained for eight weeks (brooding period) on similar feeding and management conditions. After two months of brooding period birds were randomly divided into three groups Intensive, semi-intensive and backyard system. In each group fifty (50) birds were kept. The birds which were supplied to the

farmers for their evaluation under backyard system were housed only at night. Under backyard system, birds were provided with some amount of supplementary feed in the form of kitchen waste, broken rice or wheat in the morning and allowed to walk to a distance in search of feed and these birds used to come back at dusk. Chicks were fed standard balanced feed as per NRC (1994) recommendation.

Results and Discussion

Body weight

Effect of different management systems on body weight at weekly intervals was studied. Body weight of day old chicks was 37.63±0.25 g and at 8th week of age body weight was 470.40±2.83 g under nursery management. The findings observed in this study are in accordance with the observations of Singh *et al.,* (2000) and Singh (2003) who reported comparatively lower body weight of day old chicks. The body weight of birds under deep litter system was found to be almost similar in comparison to semi intensive system during most of the experimental weeks though not significant from each other. The mean body weight of birds under backyard system of management were significantly lower in comparison to deep litter and semi intensive system of management during most of the experimental periods. The present findings are in close conformity with findings of Chatterjee *et al.,* (2002), Niranjan and Singh (2005) and Khan *et al.,* (2012).

The difference in results might be attributed to difference in breed-strain of birds, feed supplement, management system and other environmental factors.

Body weight gain

Gain in body weight from 0-20 weeks of age were to be observed at weekly interval. Effect of management system on body weight gain was observed to be non-significant during most of the experimental periods. The similar results have been reported by Skinner *et al.,* (1990) and Marandi (2001)

Table.1 Average body weight (g) of Vanaraja birds during nursery management (0-8 weeks)

Periods	Body weight (g)
Day-old	37.63±0.25(150)
1st week	59.30±0.50(150)
2nd week	96.87±1.01(150)
3rd week	147.50±1.75(150)
4th week	205.04±2.19(149)
5th week	269.13±31.81(148)
6th week	335.38±2.91(148)
7th week	402.13±2.91(148)
8th week	470.83±2.84(148)

Figure in parenthesis indicate number of birds

Table.2 Average body weight (g) of Vanaraja birds at various ages reared under different management systems

Periods	Treatment groups			
	T_1(Deep Litter)	T_2(Semi-Intensive)	T_3(Backyard)	F value
8th week	467.66±4.78(47)	469.50±4.74(48)	476.60±5.35(49)	0.79^{NS}
9th week	551.11±4.29(47)	560.88±4.50(48)	556.78±4.23(49)	0.47^{NS}
10th week	658.00±4.31^{a}(46)	665.29±4.56^{a}(48)	647.63±4.42^{b}(49)	4.05*
11th week	786.76±4.82^{a}(45)	775.17±4.82^{a}(48)	752.86±4.34^{b}(49)	6.31**
12th week	884.00±5.55^{a}(45)	888.77±5.53^{a}(46)	858.24±3.73^{b}(49)	10.96**
13th week	1004.31±6.44^{a}(45)	1002.72±6.29^{a}(47)	968.38±4.01^{b}(48)	12.74**
14th week	1116.04±6.40^{a}(45)	1115.19±6.40^{a}(47)	1075.58±4.41^{b}(48)	14.77**
15th week	1222.80±6.23^{a}(45)	1224.13±7.46^{a}(47)	1184.63±4.83^{b}(48)	13.08**
16th week	1332.49±7.37^{a}(45)	1334.34±8.82^{a}(47)	1290.13±5.30^{b}(48)	11.97**
17th week	1442.00±8.59^{a}(45)	1444.98±8.59^{a}(47)	1400.58±6.07^{b}(48)	9.09**
18th week	1552.18±9.74^{a}(45)	1554.13±10.91^{a}(47)	1505.88±6.58^{b}(48)	8.89**
19th week	1665.96±11.11^{a}(45)	1661.02±11.64^{a}(47)	1621.50±7.10^{b}(48)	5.86**
20th week	1782.40±12.07^{a}(45)	1773.79±11.10^{a}(47)	1736.67±7.85^{b}(48)	5.42**

** P < 0.01, * P < 0.05, NS= Non-Significant

Figure in parenthesis indicate number of birds

Mean under the same superscript in a row did not differ significantly

Table.3 Average body weight gain (g) of Vanaraja birds at various ages during nursery management (0-8 weeks)

Periods	Body weight gain (g)
0-1st week	21.77±0.81
1-2nd week	37.48±1.52
2-3rd week	50.62±1.14
3-4th week	57.54±1.22
4-5th week	63.97±1.20
5-6th week	66.38±1.22
6-7th week	66.75±1.45
7-8th week	68.69±1.53

Table.4 Average weight gain (g) of Vanaraja birds during various periods of growth at under different management systems

Periods	Treatment groups			
	T_1 (Deep Litter)	T_2(Semi-Intensive)	T_3 (Backyard)	F value
8-9th week	83.45±4.04^{a}(47)	91.38±3.13^{a}(48)	80.18±3.75^{a}(49)	2.26^{NS}
9-10th week	106.89±4.55(46)	104.41±3.78(48)	90.85±2.89(49)	2.25^{NS}
10-11th week	128.76±5.25^{a}(45)	109.88±3.51^{b}(48)	105.23±3.16^{b}(49)	3.60*
11-12th week	97.24±5.55^{a}(45)	113.60±4.48^{ab}(48)	105.38±3.54^{b}(49)	5.15**
12-13th week	120.31±5.78^{a}(45)	113.95±4.39^{b}(47)	110.14±3.68^{b}(48)	4.10*
13-14th week	111.73±5.10(45)	112.47±4.24(47)	107.20±3.52(48)	2.59^{NS}
14-15th week	106.76±5.15(45)	108.94±4.29(47)	109.05±3.62(48)	1.10^{NS}
15-16th week	109.69±5.51(45)	110.21±4.44(47)	105.50±3.48(48)	1.31^{NS}
16-17th week	109.51±5.16(45)	110.64±4.25(47)	110.45±3.59(48)	2.81^{NS}
17-18th week	110.18±5.19(45)	109.15±4.44(47)	105.30±4.24(48)	2.15^{NS}
18-19th week	113.78±5.99$^{a(45)}$	106.89^{b}±4.49(47)	115.62^{a}.±4.87(48)	3.87*
19-20th week	116.44±5.33 (45)	112.77±4.85(47)	115.62±4.87(48)	2.49^{NS}

Figure in parenthesis indicate number of birds

Mean under the same superscript in a row did not differ significantly

Table.5 Weekly feed consumption (g/ bird) of Vanaraja birds at various ages during nursery management (0-8 weeks)

Periods	Amount (g)
0-1st week	102.53(149)
1-2nd week	122.48(146)
2-3rd week	153.27(145)
3-4th week	176.12(144)
4-5th week	198.83(144)
5-6th week	207.19(144)
6-7th week	222.48(144)
7-8th week	254.30(144)
Average (0-8 weeks)	179.65(144)

Figure in parenthesis indicate number of birds

Table.6 Average feed consumption (g/week/bird) of Vanaraja birds at various ages during various periods reared under different system of management

Period (weeks)	Treatment groups		t-test
	T1 (deep litter)	T2 (semi intensive)	
9-12 week	1554.79(49)	803.66(47)	15.27**
9-16 week	3667.39(49)	1913.85(46)	17.28**
9-20 week	6325.30(49)	3322.82(45)	22.11**

Figure in parenthesis indicate number of birds, **=P< 0.01

Table.7 Feed Conversion Ratio (FCR) of Vanaraja bird during different periods of growth under different management systems

Periods	Treatment groups	
	Nursery management	
O-8 weeks	3.32	
	T1(deep litter)	T2(semi intensive)
9-12 weeks	4.83	2.53
9-16 weeks	4.86	2.54
9-20 weeks	5.38	2.85

Feed consumption

Significantly higher feed consumption was observed under deep litter system of management than that of semi-intensive system of management. The feed consumption in birds of semi-intensive system was lower due to less feed supplied because they also took their food by grazing and scavenging.

The present findings did not agree with the findings of McCartney (1977) and Wo (1985) who reported non- significant effect of type of management system on feed consumption in broiler chicks.

Feed conversion efficiency

Average feed conversion ratio during 9 to 12, 9 to 16 and 9 to 20 weeks of age was 4.83, 4.86 and 5.38 respectively under deep litter system of management. However, the values were 2.53, 2.54 and 2.85 respectively under semi intensive system of management. The present findings are in close agreement with the findings of Ahuja *et al.,* (1992) and Dou *et al.,* (2009). The difference in results might be attributed to difference in type of birds, amount of feed taken, management system and environment conditions.

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