

Original Research Article

Reproductive and Egg Quality Traits of Vanaraja Birds under Different System of Management

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ABSTRACT

The present study was carried out in Ranchi district of Jharkhand to carried out reproductive traits of Vanaraja bird of poultry. The study revealed that mean value of fertility was 86.31 ± 0.23 , hatchability percent on total egg set basis and fertile egg set basis was 64.18 ± 0.71 and 74.36 ± 0.63 respectively. Age of first lay was found 175 days in deep litter system of management. The corresponding value was 180 days and 186 days in semi intensive and backyard system of management. The study also also revealed significant difference in albumin (%), shell with shell membrane (%) and yolk index among different system of management.

Keywords

Vanaraja, fertility, hatchability

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. The Vanaraja variety is light in weight and long shanks and is capable of protecting itself. The female bird lays between 160-180 eggs in laying cycle.

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. The evaluation of external and internal quality of the egg is essential as

consumers prefer better quality eggs. Many factors influence the egg quality i.e., breed, strain, variety, temperature, relative humidity, rearing practices and season. The success of poultry farming largely depends on the total number of good quality eggs produced especially in layers.

Though many works have been carried out on egg quality traits, the information on varieties developed and being popularized for backyard farming in rural and tribal areas are limited. The present study is aimed at assessing the effects of three different housing systems (deep litter, semi-intensive and free-range) on production performance of Vanaraja 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. Reproductive performance and egg quality of Vanaraja birds were observed by standard procedure under different system of management.

Results and Discussion

Fertility

The fertility percentage of eggs of Vanaraja birds was 86.31 ± 0.23 per cent. The present findings are in close agreement with those reported by Kicka *et al.*, (1978). However, comparatively lower fertility percentage (74.85 %) reported by Singh (1981) and Kamar *et al.*, (1984).

Hatchability

On total egg set basis

The hatchability percentage in eggs of Vanaraja birds on total egg set basis was observed to be 64.18 ± 0.71 per cent. The hatchability per cent on total egg set basis

observed by the Pandian *et al.*, (2011) and Jha *et al.*, (2013) was almost similar to the present finding.

On fertile egg set basis

The hatchability percentage in eggs of Vanaraja birds on fertile egg set basis was observed to be 74.36 ± 0.63 per cent. The present findings are in close agreement with those reported by Reddy and Choudhary (1973) and Lylian *et al.*, (2001).

Age at first lay

The age at first lay of Vanaraja birds was found to be 175 days, 180 days and 186 days respectively in deep litter, semi-intensive and backyard system of management.

The present findings are in close agreement with the values reported by Singh *et al.*, (2002). The birds of deep litter and semi-intensive system of management started laying eggs at an early age than that of birds backyard system of management might be due to better feeding and managerial condition of birds maintained under deep litter and semi-intensive system of management.

Egg quality traits

Management systems had significant effect on albumin %, shell with shell membrane % and yolk index. However, its effect was non-significant on egg weight, yolk %, shape index, albumin index and shell thickness. The average value of weight of egg laid under deep litter, semi-intensive and backyard system of management were 54.78 ± 0.89 , 53.11 ± 1.00 and 52.83 ± 1.38 respectively. The present findings are in close conformity with those reported by Singh *et al.*, (2000) and Singh (2003) was less than observed in present investigation.

Table.1 Egg quality traits in the Vanaraja bird reared under different management systems

Parameters	Treatment groups			F-values
	T1(Deep litter)	T2(Semi- Intensive)	T3(Backyard)	
Egg weight	54.78±0.89	53.11±1.00	52.83±1.38	0.90 ^{NS}
Yolk (%)	25.88±0.68	24.93±0.62	24.83±0.53	0.88 ^{NS}
Albumin (%)	61.91±0.65 ^a	58.73±1.02 ^b	62.57±0.99 ^{bc}	4.44 ^{**}
Shell with shell membrane (%)	11.34±0.33 ^a	11.71±0.41 ^{bc}	10.00 ^b ±0.40	5.49 ^{**}
Shape index	71.10±1.23	76.61±1.00	76.46±0.93	0.10 ^{NS}
Albumin index	0.14±0.004	0.15±0.01	0.14±0.001	0.14 ^{NS}
Yolk index	0.44±0.002	0.44±0.01 ^a	0.45±0.002 ^b	3.51 ^{**}
Shell thickness (mm)	0.35±0.001	0.34±0.002	0.34±0.001	0.78 ^{NS}

Each value is the average of 18 observation

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

Table.2 Age at first lay, age at 50% production and total egg production up to 50% egg laying in the birds reared under different systems of management

Parameters	Treatment groups		
	T ₁ (Deep Litter)	T ₂ (Semi-Intensive)	T ₃ (Backyard)
Age at first egg production (days)	175(148)	180(148)	186(148)
Age at 50% egg production	240(148)	248(148)	265(147)
Total egg Production (Up to 50% egg laying)	162(148)	148(148)	135(147)

Table.3 Reproductive traits of Vanaraja birds reared under different managerial systems

Parameters	Mean±SE
Total egg set	237.50±7.5
Fertile eggs	205.00±7.00
Hatched eggs	152.50±6.5
Fertility %	86.31±0.23
Hatchability % TES (on total egg set basis)	64.18±0.71
Hatchability % FES (on fertile egg set basis)	74.36±0.63

Table.4 Survivability percentage of Vanaraja birds during experimental period reared under nursery management & different rearing system

Parameters	Nursery management	Treatment groups		
		T ₁ (Deep Litter)	T ₂ (Semi-Intensive)	T ₃ (Backyard)
No. of birds housed	150	48	48	48
No. of birds died	6	2	2	2
Mortality (%)	4	2.08	2.08	2.08
Survivability (%)	96	97.92	97.92	97.90
Overall mortality (%)	8			

The egg quality traits of eggs laid by birds of deep litter system was observed to be better than that of semi-intensive and backyard system of management.

Survivability

The survivability percentage of Vanaraja birds has been recorded at weekly interval under deep litter, semi-intensive and backyard system of management. The survivability percentages under deep litter, semi-intensive and backyard system of management were 97.92, 97.92 and 97.90 per cent respectively. Ramakrishna (1991) and Jha *et al.*, (2013) also reported comparatively higher viability percentage. The present findings indicate that the survivability of Vanaraja birds was better in deep litter system of management. This might be attributed to the good management provided at deep litter system of management. The perusal of results further revealed that the Vanaraja birds are more resistant under adverse climatic conditions.

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