



# Productive and Reproductive Performance of Vanaraja Birds Reared by Tribal Community of Dhemaji District of Assam

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## ABSTRACT

Productive and reproductive performances in terms of body weight, age at first egg, egg production, egg weight, fertility, hatchability and mortality of Vanaraja and Desi chicken of Assam were studied under traditional system of rearing and their respective values were compared between two varieties. The Vanaraja birds were given to rear under the demonstration programme of the Dhemaji KVK to the farmers of tribal communities like Bodo, Mising and Sonowal tribes of the district. The overall mean body weight was significantly ( $P \leq 0.05$ ) higher in Vanaraja than Desi chicken. The mean age at first egg was recorded as  $181.05 \pm 1.52$  in Vanaraja and in Desi chicken it was  $203.31 \pm 3.13$  d which was significantly ( $P \leq 0.05$ ) different. The mean egg production up to 32, 40, 52 and 72 wk of age in Vanaraja were recorded as  $32.13 \pm 0.11$ ,  $50.08 \pm 0.32$ ,  $89.29 \pm 1.02$  and  $181.12 \pm 1.53$  numbers, respectively and in case of Desi chicken, the corresponding values were recorded as  $11.21 \pm 0.03$ ,  $25.82 \pm 0.18$ ,  $42.57 \pm 0.72$  and  $76.27 \pm 0.85$ , respectively. The mean egg weight of Vanaraja at 32, 40 and 52 wk of age was also significantly ( $P \leq 0.05$ ) higher than Desi birds. However, there was no significant difference in mortality rates between two groups during 6 to 30 and 31 to 52 wk of age. There was also no significant ( $P \leq 0.05$ ) difference in fertility and hatchability percent between two genetic groups. Therefore, it may be concluded that Vanaraja birds were adapted well under traditional backyard rearing system among the tribal communities in Dhemaji district of Assam.

**Key Words:** Body weight, Desi chicken, Egg production, Hatchability, Traditional system, Vanaraja.

## INTRODUCTION

Livestock and poultry rearing is an imperative factor for improving the nutritional security of rural poor in India. The tribal population of Dhemaji district rear Desi type chicken in backyard system of rearing for household consumption and to meet the day to day daily expenses to some extent and these birds are low in egg and meat production.

To meet the growing demands of the population and to improve the per capita consumption among tribal people, backyard poultry farming with improved varieties of poultry in tribal areas is the best alternative. Traditionally Desi varieties are used for backyard poultry production whose production potential is very low, which is around 70-80 eggs per year. Vanaraja is a dual purpose bird developed at Directorate of Poultry Research (DPR), Hyderabad

having indigenous look with good growth and egg production performance. Keeping this fact in mind, a demonstration was planned for developing the rural poultry farming with improved poultry *viz.* Vanaraja as free range/ backyard farming to see the suitability of these birds in backyard system of rearing.

## MATERIALS AND METHODS

The present study was conducted during the period July, 2013 to December, 2014 by KVK, Dhemaji. For this study, 15 numbers of tribal farmwomen were selected randomly from the Silapathar Block and were given each with 15 nos. of month old Vanaraja birds. The farmwomen were selected on the basis of their experience on Desi poultry keeping and who possessed at least 15 nos.

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**Table1. Monthly mean ( $\pm$ SE) body weights of the Vanaraja and Desi birds under backyard system.**

Age (month)	Mean body weight (g)					
	Vanaraja Male	Vanaraja Female	Vanaraja Overall	Desi Male	Desi Female	Desi Overall
1	343.06 $\pm$ 2.07	301.23 $\pm$ 1.06	326.02 $\pm$ 1.52a	203.26 $\pm$ 1.03	179.21 $\pm$ 0.98	163.04 $\pm$ 0.87 b
2	911.11 $\pm$ 3.45	692.04 $\pm$ 2.11	797.13 $\pm$ 2.73 a	383.52 $\pm$ 2.32	357.12 $\pm$ 2.74	361.01 $\pm$ 2.53 b
3	1452.03 $\pm$ 5.08	1153.07 $\pm$ 4.18	1293.16 $\pm$ 4.51 a	512.07 $\pm$ 4.04	467.16 $\pm$ 3.01	496.12 $\pm$ 3.48 b
4	1951.09 $\pm$ 6.01	1533.11 $\pm$ 4.97	1743.01 $\pm$ 5.06 a	663.07 $\pm$ 4.35	597.22 $\pm$ 4.12	648.07 $\pm$ 4.09 b
5	2413.33 $\pm$ 8.06	1772.05 $\pm$ 5.23	2087.28 $\pm$ 6.26 a	801.34 $\pm$ 5.12	739.14 $\pm$ 5.03	762.03 $\pm$ 5.12 b
6	2965.01 $\pm$ 10.24	2109.13 $\pm$ 7.34	2521.07 $\pm$ 8.67 a	903.05 $\pm$ 5.91	827.65 $\pm$ 5.87	853.14 $\pm$ 5.73 b

Means with different superscripts within a row differ significantly ( $p < 0.05$ )

of Desi birds at their house. Thus a total of 225 numbers of Vanaraja birds were distributed under the programme procured from the Government Duck & Poultry Farm, Jaysagar, Sivasagar, Assam. Each of the farmers was given with 13 female and 2 male birds to rear under backyard rearing system like their local poultry.

The body weight of all the birds were recorded before distribution to the farmers and also at monthly intervals up to maturity at an average of six month age, average age at the point of lay, mean egg weight at 32, 40 and 52 wk of age, mean egg production 32, 40, 52 and 72 wk of age. The mortality rates of birds at 6th to 30th and 31st to 52nd wk of age, fertility and hatchability percentage of eggs were also recorded for a period of one and half year. Data on above mentioned parameters were also recorded for the local indigenous poultry. Both types of poultry were reared in the farmers' backyard. Vaccination (F1 and R2B strain of RD) was done in both varieties and health status of the birds was monitored throughout the period.

The data were analyzed as per standard statistical methods (Snedecor and Cochran, 1994). The effect of genetic group on the different growth and production traits was studied. The individual means among genetic groups were tested by Duncan's New Multiple Range Test (DMRT) for their significance.

## RESULTS AND DISCUSSIONS

The overall mean body weights of Vanaraja birds at 2, 3, 4, 5 and 6 months of age recorded as 797.13 $\pm$ 2.73, 1293.16 $\pm$ 4.51, 1743.01 $\pm$ 5.06, 2087.28 $\pm$ 6.26 and 2521.07 $\pm$ 8.67g respectively, whereas 361.01 $\pm$ 2.53, 496.12 $\pm$ 3.48, 648.07 $\pm$ 4.09, 762.03 $\pm$ 5.12 and 853.14 $\pm$ 5.73g respectively for the Desi birds at their respective age under traditional system of management (Table1). The values for body weights of Vanaraja birds were significantly ( $P \leq 0.05$ ) higher than their corresponding values for Desi chicken might be due to the difference in genetic makeup of the birds. Islam *et al* (2014) also reported a comparable body weights at 8 and 20 wk of age in case of Vanaraja and indigenous chicken in Assam. Deka *et al* (2014) recorded much lower mean body weights in Vanaraja and almost similar mean body weight in indigenous chickens at 24 wk of age. In contrast to the present findings, Kumar *et al* (2005) and Zuyie *et al* (2009) recorded the body weights at 8 and 20 wk of age, which were much lower in Vanaraja in comparison with the present study. The higher body weights recorded in the present study might be due to the higher access of nutrients during the study period.

The mean ages at first egg was recorded in Vanaraja and Desi chicken as 181.05 $\pm$ 1.52 and 203.31 $\pm$ 3.31 d, respectively (Table 2). The significantly ( $p < 0.05$ ) lower age at first egg in case of Vanaraja might be due to the superiority in

## Performance of *Vanaraja* Birds

**Table 2. Certain productive and reproductive parameters of Vanaraja and Desi birds.**

Sr. No.	Parameter	Bird varieties		Changes over Desi bird (%)
		Vanaraja	Desi bird	
1	Age at first egg (days)	181.05±1.52	203.31±3.31	(-) 11 %
2	Mature hen weight (g)	2137.26 ±22.13	1361.53 ±21.43	(+) 31.25 %
3	Mean egg production (no.)			
	Up to 32 wk of age	32.13±0.11a	11.21±0.03 b	(+) 190 %
	Up to 40 wk of age	50.05±0.32a	25.82±0.18 b	(+) 94 %
	Up to 52 wk of age	89.29±1.02a	42.57±0.72 b	(+) 110 %
	Up to 72 wk of age	181.12±1.53a	76.27±0.85b	(+) 137 %
4	Mean Egg weight (g)			
	Up to 32 wk of age	47.31±0.21a	37.85±0.04b	(+) 25 %
	Up to 40 wk of age	54.07±0.24a	42.06±0.07b	(+) 28.54 %
	Up to 52 wk of age	58.32±0.26a	46.08±0.13b	(+) 26.56 %
5	Survivability (%)			
	0 to 5th week	90.74±1.01a	93.93±1.05 a	
	6th to 30th week	96.05±0.09a	98.39±0.43a	
	31st to 52nd week	98.53±0.08a	99.13±0.53a	
6	Fertility (%)	91.02±3.92a	92.40±4.97a	
7	Hatchability (%) on TES	86.14±3.26a	88.52±3.95a	

Means with different superscripts within a row differ significantly ( $p < 0.05$ )

germplasm and nutritional status of the birds. Islam *et al* (2014) also recorded the similar findings in Vanaraja and indigenous chicken of Assam under backyard system. The present findings of Vanaraja were also comparable with the findings of Zuyie *et al* (2009) and Deka *et al* (2014). In contrast to the findings, Pathak & Nath (2013) recorded much lower values for Vanaraja and Desi chicken in Sikkim. The differences in the findings might be due to the better management and nutrition of the birds. The mean egg production values up to 32, 40, 52 weeks of age in Vanaraja birds were significantly ( $P \leq 0.05$ ) higher than the corresponding values of Desi birds, which were also supported by the findings of Islam *et al* (2014) and Kumaresan *et al* (2008).

The mean egg weights of two genetic groups at 32, 40 and 52 wk of age are presented in the Table 2. There was significant ( $P \leq 0.05$ ) difference between the values at different ages. The lower

values might be due to inferior genetic makeup in indigenous chicken of Assam. The findings were also corroborated with the findings of Islam *et al* (2014). Kalita *et al* (2012) also recorded the mean egg weight as 35.27±0.15g in case of indigenous chicken of Assam. There were no significant ( $P \leq 0.05$ ) differences in survivability between the two genetic groups at different ages. The findings were also supported by Islam *et al* (2014). The main cause of mortality during early part of their life were cold shock, yolk sac infection etc. The percent mortality was showing similar trends in both types of birds as with the advancement of age, it was decreased. No significant differences were observed in respect of survivability between two varieties of birds, which might be due to better resistance to many of the diseases. Islam *et al* (2014) also reported similar trends of mortality in Vanaraja and indigenous chicken of Assam. The values for fertility (%) and hatchability (%) on TES

recorded in case of Desi birds was higher than the Vanaraja birds. However, there was no significant difference in fertility and hatchability of the eggs of Vanaraja and indigenous birds. Almost similar types of findings were also reported by Kalita *et al* (2012).

### CONCLUSION

From the study, it was concluded that Vanaraja birds adapted well under traditional backyard rearing system among the tribal communities in Dhemaji district of Assam.

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