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## Production performance of improved backyard rural poultry in NICRA village of Dhubri district of Assam

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#### Abstract

Altogether 200 nos. of day old Vanaraja chicks were distributed equally among 10 numbers of farmers selected randomly in the flood affected NICRA village of the Dhubri district. The farmers were randomly on the basis of their experience of rearing local poultry and who kept atleast 10 numbers of local poultry of different ages at their traditional system. The data on body weights, age at sexual maturity, annual egg production, mortality, fertility, hatchability etc. were recorded during the study period. The body weights were found to be  $497.23 \pm 4.23$ ,  $1376.06 \pm 14.75$ ,  $1754.74 \pm 23.04$  and  $2304.63 \pm 31.06$  g respectively at 2, 5, 10, 12 and 18 months of age in Vanaraja Chicken. The overall mean age at first egg recorded as 177.04 and 201.31 days in case of Vanaraja and Indigenous chicken respectively. The mean annual egg production in Vanaraja and indigenous chicken were found to be 137.12 and 72.16 numbers respectively. The percent fertility in Vanaraja and indigenous were found to be 91.14 and 91.62 respectively. The Vanaraja chicken is well adopted in rural condition of Assam and can provide nutritional and livelihood security to a great extent to rural poor and tribal people.

**Keywords:** Rural poultry, Vanaraja, body weight, egg production, fertility

#### Introduction

Rural poultry keeping has been a tradition among the rural and tribal community of Assam since the time of immemorial. Mostly women and children are involved in this operation. They keep a small flock of chicken in their backyard for their household consumption of meat and eggs and also to meet their day to day petty expenses. More than 90% of the consumers prefer to eat eggs and meat of local chicken because of their taste and health benefits. The birds are hardy, resistant to most of the diseases and can withstand most of the natural calamity. They are let loose during daytime and confined during night time. In the recent past, improved backyard varieties (like Vanaraja, Gramapriya, Srinidhi, Giriraja etc.) developed mostly by public sector and a few by private sector (like Kroiler, *Rainbow Rooster*) are substantially contributing to the total chicken egg and meat production of the country (Chatterjee and Rajkumar, 2015) [1]. The Vanaraja is a improved dual type backyard poultry developed by PDP, Hyderabad, which is also popular among the farming community of Assam like others. The birds perform well in different agro-climatic zones of Assam and produce more meat and good number of eggs in comparison to *Desi* chicken. Keeping this point in mind, Vanaraja birds were distributed among the farmers of NICRA (National Initiatives on Climate Resilient Agriculture) village of Dhubri district. Therefore a study was undertaken to know the production performance of Vanaraja chicken with following objectives:

1. To record the average body weight
2. To know the age at first egg
3. To record the annual egg production
4. To record mortality
5. To study percent fertility and hatchability

#### Materials and methods

The study was carried out during March/2011 to December/2012. Twenty numbers of Vanaraja day old chicks were distributed to each of the 10 numbers of farmers, selected randomly from the flood affected NICRA village of the Dhubri district. Thus a total of 200 numbers of day old chicks were utilized, which were procured from College of Veterinary Science, Khanapara, Guwahati.

The farmers were selected randomly on the basis of their experience of rearing local poultry and who kept at least 10 numbers of local poultry of different ages at their traditional system. The chicks were brooded under hover brooder (locally made with a bamboo cage fitted with four electric bulbs) up to 15-20 days of age. The chicks were provided with *ad libitum* broiler starter feed and clean drinking water during brooding stage. Then the chicks were let loose and provided with supplemental feeding during morning and evening for few days until they accustomed with natural scavenging. The birds were vaccinated against Ranikhet disease vaccine (*Lasota strain*) on 5<sup>th</sup> and 24<sup>th</sup> day and Gumboro diseases vaccine (Intermediate strain) on 14<sup>th</sup> day of age through intra-ocular method. The data on average body weight at 8, 20, 40 and 52 weeks of age, age at first egg, annual egg production, mortality at various ages, fertility and hatchability (%) were recorded. The data so collected were computed and were subjected the standard statistical analysis as per Snedecor and Cochran (1994)<sup>[11]</sup>.

### Results and discussion

The body weights were found to be 497.23±4.23, 1376.06±14.75, 1754.74±23.04 and 2304.63±31.06 g respectively at 2, 5, 10, 12 and 18 months of age in Vanaraja Chicken (Table 1). The corresponding body weights in case of Indigenous chicken were significantly ( $P \leq 0.05$ ) lower than the Vanaraja chicken. The significantly higher body weights in Vanaraja birds might be due to infusion of superior germ plasm and balanced feeding (Broiler starter) during their early

part of life. The present findings were in accordance with findings of Deka *et al.* (2014)<sup>[3]</sup>, who recorded body weights of Vanaraja male and female as 1561.96 and 1443.70g respectively and indigenous male and female as 694.35 and 639.57g respectively at 20 weeks of age under similar system of rearing. also reported body weights of indigenous male and female chicken as 1335.91 and 1061.37g respectively at 10 months of age among tribal communities of Assam. In contrast to the present findings, several workers reported much higher body weights in Vanaraja (Zuyie *et al.* (2009)<sup>[12]</sup> and indigenous chicken (Islam *et al.* (2014)<sup>[4]</sup> under free range system of rearing. The lower body weights for Vanaraja and indigenous chicken in present study might be due to variation in agro-climatic condition and shortage of scavenging feed resources.

The overall mean age at first egg recorded as 177.04 and 201.31 days in case of Vanaraja and Indigenous chicken respectively is presented in Table 1. The results indicated that Vanaraja chicken matured earlier than the indigenous chicken of Assam. There was significant ( $P \leq 0.05$ ) difference between the two genotypes in respect of mean age at first egg might be due to difference in genetic constituents of two varieties of birds. The present findings were similar with the findings of Deka *et al.* (2014)<sup>[3]</sup> in Vanaraja and Islam *et al.* (2014)<sup>[4]</sup> in indigenous chicken. In contrast to the present findings Niranjana *et al.* (2008)<sup>[9]</sup> reported much lower values in Vanaraja (164.79 days) and indigenous (184.70 days) chicken respectively.

**Table 1:** Performance of Vanaraja and Indigenous chicken in free range system.

Sl. No.	Parameters	Vanaraja Chicken	Indigenous Chicken
		Body weight (g)	
1.	2 months	497.23±4.23 <sup>a</sup>	285.12±1.34 <sup>b</sup>
	5 months	1376.06±14.75 <sup>a</sup>	693.14±3.13 <sup>b</sup>
	10 months	1754.74±23.04 <sup>a</sup>	1024.31±10.21 <sup>b</sup>
	12 months	2064.63±31.06 <sup>a</sup>	1123.47±12.11 <sup>b</sup>
	18 months	2462.12±37.06 <sup>a</sup>	1204.23±15.12 <sup>b</sup>
2.	Age at first egg (days)	177.04±2.03 <sup>a</sup>	201.31±2.03 <sup>b</sup>
3.	Annual egg production (no.)	137.12±4.32 <sup>a</sup>	72.16±2.03 <sup>b</sup>
		Egg weight (g)	
4.	8 months	45.01±1.12 <sup>a</sup>	27.45±0.11 <sup>b</sup>
	10 months	51.87±1.82 <sup>a</sup>	33.02±0.09 <sup>b</sup>
	12 months	55.23±1.62 <sup>a</sup>	35.98±0.14 <sup>b</sup>
	18 months	56.16±1.11 <sup>a</sup>	36.29±1.31 <sup>b</sup>
		Mortality (%)	
5.	Up to 2 months	11.23±2.03 <sup>a</sup>	6.22±1.51 <sup>b</sup>
	2 to 8 months	5.06±1.12 <sup>a</sup>	2.07±0.23 <sup>b</sup>
	9 to 12 months	1.53±0.42 <sup>a</sup>	1.16±0.12 <sup>a</sup>
	13 to 18 months	1.23±0.32 <sup>a</sup>	1.03±0.42 <sup>a</sup>
6.	Fertility (%)	91.14±3.34 <sup>a</sup>	91.62±3.05 <sup>a</sup>
7.	Hatchability (%) on TES	87.07±3.02 <sup>a</sup>	89.07±4.11 <sup>a</sup>

Means bearing different superscripts in a row differ significantly ( $P \leq 0.05$ )

The mean annual egg production in Vanaraja and indigenous chicken were found to be 137.12 and 72.16 numbers respectively (Table 1). The results in the present study showed that the annual egg production in was significantly ( $P \leq 0.05$ ) higher in Vanaraja than indigenous chicken, which might be due to the genetic difference between two varieties of chicken. The present findings were comparable with the findings of Sankhyan and Thakur (2016)<sup>[10]</sup>, who recorded the Hen Day Egg Production (HDEP) in Vanaraja and indigenous chicken as 131.97 and 84.25 numbers respectively up to 72 weeks of age. However Niranjana *et al.*, (2008b)<sup>[9]</sup> also reported higher egg production of 149.47 numbers for

Vanaraja upto 72 weeks of age. The difference in egg production as reported by different workers might be due to difference in feeding and management.

The significantly ( $P \leq 0.05$ ) higher mean egg weights were recorded in Vanaraja than indigenous chicken at different ages might be due to higher body weight, as egg weight is directly proportional to the body weights of chicken. The present findings were corroborated the finding of Kalita *et al.* (2011)<sup>[5]</sup> and Kumar *et al.* (2005)<sup>[7]</sup> in indigenous (35.27g) and Vanaraja (58g) chicken respectively. However in contrast to the present findings Sankhyan and Thakur (2016)<sup>[10]</sup> reported higher values both in case of Vanaraja (59.68g) and

indigenous (48.65g) chicken at 52 weeks of age under intensive system in Himachal Pradesh.

The mean percent mortality rate in Vanaraja and indigenous chicken up to 72 weeks of age is presented in Table 1. The mortality rate was significantly ( $P \leq 0.05$ ) higher in Vanaraja during first 2 months and 2 to 8 months than the indigenous chicken. The higher early chick mortality both in case of Vanaraja and indigenous chicken might be due to cold shock because of faulty brooder management and predator attack. However after 8 months of age, the mortality percent reduced and the values were not significantly varied between two varieties. The present findings were comparable with the results of Islam *et al.* (2014)<sup>[4]</sup> in Vanaraja and indigenous chicken of Assam who reported percent mortality as 11.23 and 7.04 respectively during 0 to 5 weeks of age. Kumaresan *et al.* (2008)<sup>[8]</sup> also recorded 8.4% of mortality up to 5th week of age in case of Vanaraja birds.

The percent fertility in Vanaraja and indigenous were found to be 91.14 and 91.62 respectively (Table 1). Similarly percent hatchability (on TES) recorded as 87.07 and 89.07 respectively in Vanaraja and indigenous chicken. There were no significant ( $P \leq 0.05$ ) differences of percent fertility and hatchability on TES basis between the two genotypic groups. In contrast to the present findings, Sankhyan and Thakur (2016)<sup>[10]</sup> reported lower percent fertility and hatchability (on TES) in Vanaraja and indigenous of Himachal Pradesh. The higher percent fertility in both Vanaraja and indigenous chicken might be due to proper maintenance of the male-female ratio in the flock. However *et al.* (2012a)<sup>[12]</sup> reported fertility percent as  $76.33 \pm 5.23$  in indigenous chicken of Assam.

### Conclusion

From the above study it may concluded that performance of Vanaraja chicken is much better than indigenous chicken in terms of body weight, egg production and survivability under free range system. Therefore rearing of Vanaraja birds in small scale can be a subsidiary source of income and food for the rural and tribal people of Assam.

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