Comparative performance of Vanaraja, Srinidhi and Desi chicken under traditional system among tribal community of Assam


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ABSTRACT

A study was conducted covering a total of one hundred chicken farmers in tribal dominated Boko Block of Kamrup district in Assam to assess different productive and reproductive traits of Desi, Vanaraja and Srinidhi birds under field condition. Information was obtained on mean body weight at various ages, age at first egg, annual egg production, fertility and hatchability and mortality rate. Body weight, egg production and egg weight were significantly (P≤0.05) higher in Vanaraja and Srinidhi birds compared to Desi chicken. The age at first egg was significantly (P≤0.05) higher in Desi chicken while compared with Vanaraja and Srinidhi under traditional system of management. However no significant (P≤0.05) difference was found between Vanaraja and Srinidhi in their body weight and egg production at various ages. Higher mortality percent in Vanaraja (12.23±1.62) and Srinidhi (11.34±1.23) were recorded during 0 to 5 week. No significant (P≤0.05) differences were found among all three groups of birds in fertility and hatchability.

Key words: Body weight, Desi chickens, Egg production, Mortality, Srinidhi, Vanaraja.

INTRODUCTION

Desi chickens are traditionally reared by the tribal and resource poor rural people of Assam since time immemorial. These birds provide supplementary source of income and nutritional security to the rural masses. Eggs and meat of Desi chicken are tastier than other poultry and hence they are fetching premium prices. Though they are hardy, resistant to common avian diseases and adopt well in adverse climatic condition, their productivity is much lower due to poor genetic potential. Under this circumstance, various ICAR institutes have developed some multicoloured improved dual type poultry varieties which are suitable for backyard rearing like as Desi chicken. Vanaraja and Srinidhi are also such kind of birds, which are popular across India. Information on the productivity of these birds are scanty, hence the present study was undertaken to evaluate various productive and reproductive traits with the following objectives:

1. To study body weight at different ages
2. To find out the age at sexual maturity
3. To assess egg production and egg weight at different stages
4. To determine the fertility and hatchability
5. To study the mortality rate

MATERIALS AND METHODS

The study was carried out during the period from December, 2013 to December, 2014 in the tribal dominated Boko Block of Kamrup district in Assam covering a total of one hundred numbers of poultry farmers under the Tribal Sub-plan Project. Ten numbers of farmers were selected randomly from each of the ten selected villages. Each farmer was supplied with ten numbers of Vanaraja and ten numbers of Srinidhi day old chicks. The farmers were selected on the basis of their experience in keeping Desi chicken at least 10-15 numbers in their backyard. The Vanaraja and Srinidhi chicks were brooded under hover brooder up to 21-25 days of age. During brooding, the chicks were provided with ad libitum broiler pre-starter crumbs and clean potable drinking water. The chicks were also vaccinated against Ranikhet and Gumboro diseases as per standard vaccination schedule. After proper brooding, the chicks were let loose during day time with supplemental feeding for 3-4 days until they were able to feed through natural feed resources.

The body weights at 8, 20, 40 and 52 weeks of age, age at first egg, egg weights at 32, 40 and 52 weeks of age, egg production up to 32, 40 and 52 weeks of age were recorded. Mortality rate was recorded at 0 to 5, 6 to 30 and 31 to 52 weeks of age.

For study of fertility and hatchability, 500 numbers of eggs, 250 numbers from each variety of Vanaraja and Srinidhi were collected within a period of one week from different stocks and were set in the incubator of a reputed private hatchery in Guwahati. The fertility was tested on 7th day of incubation by candling and infertile eggs were removed from the incubator. The percent hatchability on TES
RESULTS AND DISCUSSION

The mean body weights at 8th, 12th, 20th, 40th and 52nd weeks were significantly (P≤0.05) higher in Vanaraja and Srinidhi chicken than Desi chicken (Table 1). However there was no significant difference in the mean body weight between Vanaraja and Srinidhi birds at similar ages. The significantly (P≤0.05) higher mean body weights recorded in Vanaraja and Srinidhi birds than Desi chicken might be due to superior germplasm utilized in the development of Vanaraja and Srinidhi. Islam et al. (2014) also reported similar mean body weights in case of Vanaraja and indigenous chicken in backyard system of rearing. In contrast to the present findings, Deka et al. (2014) recorded lower mean body weight of Vanaraja birds at 20 weeks of age. The higher mean body weights recorded in the present study might be due to supplemental feeding and better management practices.

The mean age at first egg recorded in Vanaraja (187.45±1.02 days) and Srinidhi (189.78±2.07 days) birds were significantly (P≤0.05) lower than Desi (198.31±2.03 days) bird (Table 1). The significant difference of mean age at first egg between Desi and Vanaraja or Srinidhi might be due to differences in the genetic constituent. The present findings corroborated the findings of Islam et al. (2014) in case of Vanaraja and indigenous chicken. However, Kalita et al. (2012) recorded lower values of age at first egg than the present value in case of indigenous chicken under intensive system of management. Deka et al. (2014) also recorded lower mean age at first egg in Vanaraja and indigenous chicken under backyard system.

The mean egg production of Vanaraja and Srinidhi birds were significantly (P≤0.05) higher than Desi chicken which might be due to differences in the genetic makeup of birds. No significant difference in mean egg production was recorded between Vanaraja and Srinidhi in similar ages. Kumaresan et al. (2008), who reported that annual egg production of Vanaraja birds under the backyard system of rearing was 1768±9. Chutia (2010) also found an overall mean for annual egg production of indigenous chicken of Assam which ranged from 53.8±0.23 to 58.4±0.26. In contrast to the present findings, Niranjan et al. (2008) also reported lower values for egg production (149.47±4.46 numbers) for Vanaraja up to 72 weeks of age. The data on mean egg weight also showed significant (P≤0.05) difference between the improved and Desi varieties; however there was no significant difference of the mean egg weights of the two improved varieties (Table 1). The Vanaraja and Srinidhi eggs were about 62 and 53 per cent bigger than the Desi eggs respectively at 52nd week of age. The present findings were in accordance with the findings of Islam et al. (2014) in Vanaraja and indigenous chicken and Niranjan et al. (2008) in Vanaraja chicken. In contrast to the present findings, Deka et al. (2014) reported much lower egg weight in Vanaraja under backyard system. The variation in egg weight might be due to supplemental feeding and differences in management.

The significantly (P≤0.05) higher mortality rates were recorded in improved varieties than the Desi chicks during early part of their (0-5 weeks of age) life. The lower

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Vanaraja</th>
<th>Srinidhi</th>
<th>Desi</th>
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<tr>
<td>Egg production (nos.) up to</td>
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<tr>
<td>32nd week</td>
<td>32.13±0.11 a</td>
<td>31.29±0.17 a</td>
<td>10.21±0.03 b</td>
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<td>40th week</td>
<td>53.08±0.32 a</td>
<td>50.93±0.28 a</td>
<td>27.82±0.18 a</td>
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<tr>
<td>52nd week</td>
<td>89.29±1.02 a</td>
<td>85.61±0.97 a</td>
<td>43.57±0.72 b</td>
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<td>Mortality (%)</td>
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<tr>
<td>0 to 5th week</td>
<td>12.23±1.62 a</td>
<td>11.34±1.23 a</td>
<td>7.04±0.86 b</td>
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<td>6 to 30th week</td>
<td>3.04±0.03 a</td>
<td>3.01±0.04 a</td>
<td>1.61±0.43 b</td>
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<tr>
<td>30 to 52nd week</td>
<td>1.03±0.02 a</td>
<td>1.74±0.01 a</td>
<td>1.06±0.53 a</td>
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<tr>
<td>Fertility (%)</td>
<td>91.28±0.43 a</td>
<td>91.02±0.39 a</td>
<td>90.46±0.47 a</td>
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<td>Hatchability (%) on TES</td>
<td>89.73±6.32 a</td>
<td>88.12±7.84 a</td>
<td>88.52±3.95 a</td>
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<tr>
<td>Hatchability (%) on FES</td>
<td>93.12±1.46 a</td>
<td>93.07±3.02 a</td>
<td>94.16±2.32 a</td>
</tr>
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mortality rate in Desi chicks than the improved chicks might be due to more hardiness and proper natural brooding by their broody mother. The higher mortality rate in improved chicks might be due to cold shock, huddling because of faulty brooding arrangements. The mortality at later part of life was mostly due to predators in all the cases and there was no significant ($P \leq 0.05$) difference among three groups (Table 1).

The present findings were well in agreement with the findings of Bhattacharya et al. (2005) and Niranjan and Singh (2005) who had reported the mortality rate in the range of 0-15 percent for birds reared under similar conditions. Islam et al. (2014) also reported similar results in case of Vanaraja and indigenous chicken under same system of management. However Zuyie et al. (2009) reported much lower mortality in Vanaraja chicken.

The fertility and hatchability per cent recorded were also found to be non significant ($P \leq 0.05$). The present findings were in accordance with the findings of Islam et al. (2014). Kalita et al. (2012) also reported higher rate of hatchability (81-100%) in indigenous chicken of Assam. In contrast to the present findings, Kumar et al. (2005) reported lower hatchability as 72.6 per cent in Vanaraja birds under traditional system of rearing in Manipur.

**CONCLUSION**

From the present study it could be concluded that Vanaraja and Srinidhi birds are adopted well in agro-climatic condition of Assam and can be reared in small scale backyard system.

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