Production Performance of Vanaraja Bird under Traditional System of Rearing In Assam

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Abstract
Backyard poultry farming is an age-old practice among rural people of North-Eastern Region of India including Assam. It is a potent tool for livelihood promotion of the rural people of Assam. Commercial layer farming is practically non-existent in Assam (Sapcota and Mahanta, 2007). Backyard poultry farming by and large was a low input or no input venture (Singh and Johari, 1990; Saha, 2003). Besides income generation, backyard poultry helps in alleviation of malnutrition of the rural people through production of valuable animal protein and empowers rural women. In spite of low productivity, the contribution of backyard poultry towards Indian egg production is about 30 to 40 per cent (Panda et al., 2008). In Assam, the eggs and meat of indigenous chicken fetch fair prices as compared to that of commercial chicken. Backyard poultry do not require large investment to start and maintain as compared to commercial poultry (Alders et al., 2009). Vanaraja, a dual purpose chicken has become popular among the rural people of as one of the income generating activity especially for the rural women (Niranjan et al., 2008a).

In the context of the above, the present study was undertaken to compare the performance of Vanaraja with that of indigenous chicken under rural backyard system of rearing in Jorhat and Nagaon districts of Assam.

Key words: Vanraja, Assam

Introduction
Backyard poultry farming is an age-old practice among rural people of North-Eastern Region of India including Assam. It is a potent tool for livelihood promotion of the rural people of Assam. Commercial layer farming is practically non-existent in Assam (Sapcota and Mahanta, 2007). Backyard poultry farming by and large was a low input or no input venture (Singh and Johari, 1990; Saha, 2003). Besides income generation, backyard poultry helps in alleviation of malnutrition of the rural people through production of valuable animal protein and empowers rural women. In spite of low productivity, the contribution of backyard poultry towards Indian egg production is about 30 to 40 per cent (Panda et al., 2008). In Assam, the eggs and meat of indigenous chicken fetch fair prices as compared to that of
commercial chicken. Backyard poultry do not require large investment to start and maintain as compared to commercial poultry (Alders et al., 2009). Vanaraja, a dual purpose chicken has become popular among the rural people of as one of the income generating activity especially for the rural women (Niranjan et al., 2008a).

In the context of the above, the present study was undertaken to compare the performance of Vanaraja with that of indigenous chicken under rural backyard system of rearing in Jorhat and Nagaon districts of Assam.

**Materials and Methods**

A study was conducted on Kaliapani development block of Jorhat district and Bejia gaon development block of Nagaon district of Assam. Forty farmers from each district were selected through Participatory Rural appraisal technique on existing poultry rearing system. Thus, a total of 80 family poultry farmer were selected on the basis of their interest on rearing practices. A questionnaire was designed and tested to collect data on farm size, production system of indigenous chicken and its effect on income generation, supplementary income, and nutrition on farmer, marketing of produces, problem and prospects of indigenous poultry. The selected farmers were evaluated through the use of pre-tested standard proforma. Training on motivation cum capacity building towards improved family poultry farming and skill development training on poultry were conducted to improve the knowledge level of the farmer by imparting scientific skills on management, feeding, breeding and health care. Pre-trained 80 farmers were divided into 16 groups consisting 5 members in each group and were provided with 50 numbers of Vanaraja day old chicks to each group.

Chicks of Vanaraja and indigenous chicken were reared under intensive system with brooding up to 3rd week of age. After brooding birds were let loose during the day time by the farmers and offered on an average 35 g of feed per bird in terms of crushed maize, boiled rice, broken rice and kitchen waste etc. and the rest of their requirement was met by scavenging themselves in the form of insects, worms, seeds of grasses, tender leaves of grasses etc. All the chicks were vaccinated against Ranikhet and infectious bursal disease. Regular deworming was done against endoparasites. Body weights at day old, 4, 8, 12, 16, 20 and 24 weeks of age, Age at First Egg (AFE) and egg weights at 40 and 72 weeks of age were recorded. The physical qualities of egg like egg weight, size and yolk weight was determined as per standard method. Statistical analysis of data was done as per the methods described by Snedecor and Cochran (1994).

**Results and Discussion**

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Entire household in the present study was involved in family chicken production and practiced semi-intensive rearing system. The study revealed that 80% of the respondents said that their chickens did not receive enough feed, indicating that nutrition is a major constraint in family poultry production. Health management of the birds was mainly through ethno veterinary medicine as only 12% of the respondents used conventional drugs. The entire poultry keepers were not aware about vaccination against Newcastle and Infectious bursal diseases. In the present study, disease problem accounted 70% of mortality followed by predators (15%), theft (11%) and other cause including unfavourable weather condition and accident (4%). Chickens were kept mainly as a subsidiary source of income, meat and egg.

### Table 1: Mean (± SE) body weight (g) gain of Vanaraja and indigenous chicken at different ages

<table>
<thead>
<tr>
<th>Age in weeks</th>
<th>Vanaraja</th>
<th>Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male (± SE)</td>
<td>Female (± SE)</td>
</tr>
<tr>
<td>Day old</td>
<td>34.36 ± 0.82a</td>
<td>31.36 ± 0.62b</td>
</tr>
<tr>
<td>4</td>
<td>502.17 ± 41.14a</td>
<td>434.13 ± 29.79b</td>
</tr>
<tr>
<td>8</td>
<td>925.22 ± 47.32a</td>
<td>861.96 ± 44.66b</td>
</tr>
<tr>
<td>12</td>
<td>1096.96 ± 44.12a</td>
<td>957.61 ± 53.48b</td>
</tr>
<tr>
<td>16</td>
<td>1218.26 ± 55.56a</td>
<td>1162.61 ± 38.57b</td>
</tr>
<tr>
<td>20</td>
<td>1561.96 ± 34.17a</td>
<td>1443.70 ± 46.76b</td>
</tr>
<tr>
<td>24</td>
<td>1991.96 ± 70.70a</td>
<td>1489.57 ± 65.17b</td>
</tr>
</tbody>
</table>

Means with different superscripts within a row differ significantly (P<0.05).

### Table 2: Performance traits of Vanaraja and indigenous chicken

<table>
<thead>
<tr>
<th>Trait</th>
<th>Vanaraja</th>
<th>Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at first egg (in days)</td>
<td>178.13 ± 0.79a</td>
<td>191.25 ± 1.46b</td>
</tr>
<tr>
<td>Egg Production/Year/Hen</td>
<td>145.75 ± 1.44a</td>
<td>54.62 ± 1.13b</td>
</tr>
<tr>
<td>Egg Weight 40 Weeks (g)</td>
<td>51.08 ± 0.36a</td>
<td>36.12 ± 0.62b</td>
</tr>
<tr>
<td>Egg Weight 72 Weeks (g)</td>
<td>59.06 ± 0.42a</td>
<td>41.07 ± 0.48b</td>
</tr>
</tbody>
</table>

Means with different superscripts within a row differ significantly (P<0.05).

The Mean (± SE) body weight gain of Vanaraja and indigenous chicken at different ages (Table 1) revealed that at 24 weeks of age Vanaraja male and female attained an average body weight of 1991.96 ± 70.70 and 1489.57 ± 65.17 g respectively, whereas the corresponding weight of indigenous male and female were 908.48 ± 17.80 and 848.70 ± 29.47 g respectively. The dressing percentage of Vanaraja and indigenous chicken at 24 weeks of age was recorded as 64.20 ± 0.45 and 62.13 ± 0.65 per cent respectively. Vanaraja adult female weighed 2070 ± 150.94 and 2990.33 ± 149.07 g at 40 and 72 weeks.
The day-old male chicks of Vanaraja and indigenous were 34.36 ± 0.82 and 27.85 ± 1.009 g respectively. Ramana et al., (2010) reported comparatively lower body weight of Vanaraja and indigenous, which might be due to difference in managerial practices.

Vanaraja and indigenous chicken attained sexual maturity at an average age of 178.13± 0.79 and 191.25 ± 1.46 days respectively (Table 2). The present finding of Vanaraja corroborated the results of Sharma and Hazary (2002). Contrary to the present finding, Niranjan et al., (2008a) reported age at sexual maturity of 164.79 days for Vanaraja. There was significant difference in annual egg production of Vanaraja (145.75 ± 1.44) and indigenous chicken (54.62 ± 1.13). Niranjan et al., (2008b) also reported almost similar egg production of 149.47± 4.46 numbers for Vanaraja upto 72 weeks of age. Broodiness was not observed in Vanaraja chicken.

The egg weight of Vanaraja was recorded as 51.08 ± 0.36 and 59.06 ± 0.42 g at 40 and 72 weeks of age respectively and it was 36.12 ± 0.62 and 41.07 ± 0.48 g in indigenous chicken. Numerically higher egg weight at 40th week (57.06 g) and 72nd week (62.35 g) was recorded by Niranjan et al. (2008b) in Vanaraja chicken. The shell colour of both types of chicken egg was brown and the yolk was larger in size with dark yellow colour. Since egg weight is highly heritable trait, the difference among the groups might be due to utilization of exotic germ plasm for the development of Vanaraja bird (Sharma et al., 2006). Egg weight variation in different genetic groups was reported by many authors (Pradhi et al., 1998; Chatterjee et al., 2007 and Niranjan et al., 2008b)). The average weight of egg yolk of Vanaraja and indigenous was found to be 18.70 ± 0.56 and 15.8 ± 0.68 g respectively. The differences in yolk weight among the groups might be attributed to the differences in genotype, managemental and feeding programmes adopted (Prasad et al., 1987).

Vanaraja was found to be less prone to environmental stress in the present study. During the study period mortality of Vanaraja and indigenous birds were 4.55 ± 0.38 and 4.85 ± 0.51 per cent respectively. Ranikhet disease, which was believed to be the main constraint affecting scavenging chickens in India, was not the major cause of mortality in the vaccinated scavenging chicken in the present study. The main cause of death was predator.

The meat and eggs of Vanaraja were preferred by the local consumers and found very demandable in the market owing to its similarity of the typical appearance of the indigenous bird. There was record of selling @ Rs.5 to 6/-per egg and Rs.120 to 150/- per Kg live weight of Vanaraja bird by the farmer locally.
with equal market demand and good realization. According to the consumers, aroma and taste of eggs and
meat from these chickens were similar to indigenous bird.

The benefit cost ratio of Vanaraja (3.47) was recorded significantly higher in comparison to indigenous
chicken (2.42). Better ratio was might be due to better productive and reproductive performance of the
dual purpose Vanaraja as compared to the indigenous chicken.

**Conclusion**

Subsidiary occupation by taking up Vanaraja multi-coloured birds ranging from 20 to 30 birds per family
with little hand feeding gave a fairly handsome return with bare minimum night shelter. This variety has
potential to perform well under traditional system of rearing where natural vegetation would be the
excellent source of food with low or no expenditure on its maintenance.

It was concluded that Vanaraja chicken could be effectively managed for egg and meat production with
low expenditure under scavenging condition by rural women under agro-climatic condition of Assam as
an entry point for promoting gender balance especially in rural areas.

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