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Research Article

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ABSTRACT

Twenty farmers were chosen from each of the district's six villages, and they received skill-based training on a variety of backyard poultry raising topics. Each participant received 25 Vanaraja & Grampriya chicks after being equipped with solid information. Grampriya and Vanaraja's mean body weight statistics at various week intervals. After the fourth week of life, crosses' body weight differs considerably ($p < 0.05$) from that of their parents. In several groups of poultry birds, the body weights of crosses were substantially ($p < 0.05$) greater than those of Hazra (Desi) birds and almost comparable to those of Vanaraja birds at various stages of sexual maturity. Grampriya matures at 158.32 days, Hazra (Desi) bird at 186.47 days, and Vanaraja at 141.62 days. Vanaraja, Hazra (Desi), and Grampriya had pullet egg weights of 38.75, 30.82, and 34.94 g, 55.87, 42.89, and 51.26 g at 40 weeks of age, and increases in egg weight of 17.12, 12.07, and 15.42 g, respectively. Vanaraja, Grampriya, and local Desi birds had hatchability percentages of 87.56%, 89.36%, and 85.72% on viable egg sets and 68.23%, 68.92%, and 64.74% on total egg set basis, respectively.

Keywords: Vanaraja, Grampriya, Desi, sexual maturity, and egg weight

INTRODUCTION

28% of India's GDP comes from the country's agricultural sector, of which 17% comes from poultry. India is now the world's third-largest producer of eggs and fifth-largest producer of broilers. According to Shrivastava (2011), the growth rate of the Indian poultry sector is 8 to 10% for eggs and 15 to 20% for broiler meat output. In contrast to the Indian Council of Medical Research's suggested level of 180 eggs and 9.00 kg of meat, the per capita availability of eggs and meat in India is 45 and 2.00 kg, respectively (Niranjan et al, 2008). The All India Coordinated Research Project on poultry breeding at Bihar Veterinary College Patna Center, funded by the Indian Council of Agricultural Research, New Delhi, has developed improved chicken varieties suitable for free range/backyard farming for rural and schedule areas in order to meet the growing demands of the population and improve the per capita consumption among the rural and tribal people. The majority of people in Bihar's landless Jehanabad District are scheduled tribal. There is a tremendous need for meat and eggs in non-vegetarian diets, yet the conventional methods of raising cattle result in low yield. Vanaraja, a poultry bird with great production potential, and a sustainable means of subsistence for rural areas. There are now 9345 backyard chicken farmers, 96,262 chickens, 4619 ducks, and 250 quail in the Jehanabad area (survey, 2012). A bird's growth and production characteristics provide information about its particular habitat, genetic makeup, and adaption (Ahmed and Singh 2007).

MATERIALS AND METHODS

Twenty farmers from each of the six villages in the Jehanabad district were chosen based on their expertise in home chicken production. Under the front-line demonstration mandate of KVK, Jehanabad, participants who were enlightened with sound information were given 25 Vanaraja & Grampriya chicks each person at no cost. Poultry provided the Vanaraja and Grampriya chicks that were distributed to the rural community. Division (AICRP), Bihar Agriculture University, Sabour, Bhagalpur; Bihar Veterinary College, Patna. Beneficiary units were visited

on a regular basis for health checks and to gather data on the growing performance and potential for egg production of the Vanaraja and Grampriya chick breed. Every chick was raised in a deep litter system for three months before being moved to a hamlet. Up to six months of age, the chick was given a beginning meal and kitchen waste materials. The layer ration during the laying times and the grower ration during the growth periods were then given. The experiment was carried out at Jehanabad, which is situated between latitudes 25°–25°15' North and longitudes 84°–30'–85°–15' East. It has a subtropical climate with scorching summers from March to May and evenly spaced rainfall throughout the southwest monsoon from June to October. The F1 and Lasota strains of the Ranikhet disease vaccine, the intermediate strain of the Gumboro (IBD) disease vaccine, and additional vaccination and deworming schedules were administered to all the chicks by the time they were 72 weeks old (Chauhan and Roy, 2003). The chicks' mortality trend and weekly body weight growth were noted. The weekly body weights of the chicks were used to determine their relative growth rate. The pullet's initial egg weight, pullet egg weight, egg weight at 40 weeks of age, and rise in egg weight were all noted. The number of eggs laid at 40 and 72 weeks, as well as the age at which the first egg was laid, were noted. Standard statistical techniques outlined by Snedecor and Cochran (1994) were used to evaluate the data. The impact of genetic group on several development and production traits was investigated.

RESULTS AND DISCUSSION

Table 1 shows the average body weight of Grampriya and Vanaraja at various week intervals. After the fourth week of life, crosses' body weight differs considerably ($p < 0.05$) from that of their parents. At various ages, the body weights of crosses were almost identical to those of Vanaraja birds and substantially ($p < 0.05$) greater than those of Desi birds (table 1). Birds' development, productivity, and reproductive characteristics are directly reflected in their body weight. The sexual maturity of the several groups of poultry birds was found to vary most considerably in this research. Grampriya matures at 158.32 days, Vanaraja at 141.62 days, and Desi bird at 186.47 days. The genetic heritage of Vanaraja birds predominating in crosses may be the reason for the greater body weight increase and earlier age of sexual maturity in crosses compared to native birds. The success of a poultry business is determined by egg output and egg weights. Vanaraja, Desi, and Grampriya's pullet egg weights were 38.75 g, 30.82 g, and 34.94 g, respectively. At 40 weeks of age, their egg weights were 55.87 g, 42.89 g, and 51.26 g, and their weight increases were 17.12 g, 12.07 g, and 15.42 g. Table 1 illustrates the considerable ($p < 0.05$) variation in egg weight between crosses and their parents at first lay and 40 weeks of age. Egg production at 40 and 72 weeks of age changed substantially ($p < 0.05$), according to the current research. The paternal heritage from Grampriya birds used to generate the crosses may be the reason for their superior performance. In all stages of starter, grower, and layer poultry, mortality percentages were found to be higher than those of their parents, although they were still within allowable bounds (table 1). Winter had a greater death rate, wet seasons had a lower death rate, and summer had the lowest. During the farm's trial phase, no particular illness breakout was noted. As a dual-purpose bird appropriate for home and rural farming in India, the cross has significant output potential. Consequently, it is determined that cross-bred chickens are superior to rural poultry kinds in terms of suitability as an alternative dual-purpose variety for backyard chicken farming. Vanaraja, Grampriya, and local birds had hatchability percentages of 87.56%, 89.36%, and 85.72% on viable egg sets and 68.23%, 68.92%, and 64.74% on total egg set basis, respectively. In comparison to the values reported by Pandian et al. (2011) in bantam chicken (85.99% and 64.48%), the mean percent hatchability recorded in this research on fertile egg set and total egg set basis was greater. Over the course of a week, the F1 cross's body weight was more than that of native chicken. The paternal heritage from Vanaraja that was used to generate the crosses may be the reason for their exceptional performance. Birds' development, productivity, and reproductive characteristics are directly reflected in their body weight (Nirajan et al., 2008). Similar to the current study, other researchers have documented the substantial impacts of genetic group on chicken body weight (Mohammed et al., 2005, Chatterjee et al., 2007). Similar estimations were reported in Gramapriya birds by Haunshi et al. (2009) and Nirajan et al. (2008). The results of the current research were consistent with a previous publication by Jha et al. (2012), which described a similar development pattern performance of Desi birds. Since native chickens are known to have lighter, more compact bodies in order to avoid being raised in a free-range environment, the lower body weight of the local Desi birds was predicted (Haunshi et al., 2009). According to our research, the average age at sexual

maturity (ASM) for Vanaraja, Grampriya, and Desi birds was 141.62, 186.47, and 158.32 days, respectively. It is preferable for the layer to reach sexual maturity at a younger age, which might extend the laying period and enhance egg output. Haunshi et al. (2009) previously observed that improved types of birds bred for backyard farming, such as Gramapriya (179.50 days) and Vanaraja (197.70 days), have relatively greater ages of sexual maturation. Gramapriya and Vanaraja birds in backyard farming reached sexual maturity at 160.89 and 164.79 days, respectively, according to Niranjana et al. (2008). Giri and Sahoo (2012) found that Gramapriya birds in intensive (138 days) and extensive (142 days) systems of management had a relatively lower age of first lay

Table 1: Growth and performance of Vanaraja, Grampriya and Hazra (Desi) of different ages

Age of chicks		Vanaraja (g)	Grampriya (g)	Hazra (Desi)(g)
0 Day		34.28±0.32 ^b	33.61±0.26 ^{ab}	30.57±0.23 ^a
4 Weeks		146.72±2.14 ^b	139.34±2.23 ^{ab}	124.85±1.27 ^a
6 Weeks		371.46±1.38 ^b	348.38±1.58 ^b	196.81±2.51 ^a
8 Weeks		498.56±1.82 ^b	478.93±2.42 ^b	276.78±3.24 ^a
12 Weeks		815.76±3.34 ^b	794.36±4.25 ^b	523.25±4.73 ^a
16 Weeks		1236.41±2.95 ^b	1156.24±3.92 ^b	651.36±5.12 ^a
20 Weeks		1572.31±1.87 ^b	1464.52±2.75 ^b	986.74±5.85 ^a
40 Weeks		1835.52±4.65 ^b	1682.28±4.73 ^b	1259.84±6.23 ^a
Age at Sexual maturity (Days)		143.65±1.76 ^c	171.38±1.42 ^b	212.43±1.65 ^a
Egg weight at 40 weeks of age		55.87±2.24 ^b	51.26±2.35 ^{ab}	42.89±2.37 ^a
Increase in egg weight (g)		17.12	16.32	12.05
No. of eggs laid in 40 weeks period		72.57 ± 3.46 ^c	58.26 ± 3.58 ^b	11.83 ± 3.72 ^a
No. of eggs laid in 72 weeks period		214.52 ± 3.95 ^c	167.48 ± 4.71 ^b	61.83 ± 4.83 ^a
Egg shell color		Dark brown	Brown to light brown	Creamy
Mortality (%)	Starter (0-8 week)	7.54	8.63	6.85
	Grower (9-20 week)	2.61	3.57	2.78
	Layer (21-72 week)	0.95	1.27	0.46
Means bearing same superscript within rows (small letters) did not differ significantly (P < 0.05)				

n comparison to Niranjana et al. (2008), who reported 56.15 and 149.47 eggs, respectively, in Vanaraja birds, the total eggs produced for crosses birds at 40 and 72 weeks was greater in the current research. Giri and Sahoo (2012) observed that Gramapriya birds produced 93.25 eggs and 78.0 eggs in an intense system. These studies' egg quality values were compared to those of Arya et al. (2012) in desi and exotic crosses during backyard farming and in colorful broiler sire lines in Tripura's agroclimatic conditions, as reported by Malik and Singh (2011). Table 1 displays the total mortality for each of the three bird groups. The primary causes of death were bacterial infections of the yolk sac (coryza and colibacillosis) and protozoal infections (coccidiosis). Throughout the investigation, no epidemic or deaths from particular illnesses were noted. These results were superior to the previous research by Jha et al. (2012), which stated that 23.12% of Desi birds under intensive control systems died. Giri and Sahoo (2012) found that Gramapriya birds under intensive and comprehensive systems of management had death rates of 9.65% and 24.66%, respectively, up to 8 weeks of age. Five forward-thinking farmers from the villages of Deora, Nonhi, Kako, Jehanabad, and Rukunpura—Mr. Manoj Kumar, Mr. Kundan Kumar, Minazul Haq, Nakul Kumar, and Arbind Kumar, respectively—started this business on a commercial scale before more than fifty farmers joined it. They could produce 96,500 boiler birds, which they would then divide among these 9345 farmers. In the district, fifty farmers are less engaged in livelihood-oriented, capital-intensive businesses. About 60,000 boiler birds have been created by prosperous farmers, who also began raising native birds, such as Vanaraja and Grampriya chicks, for egg production because to the eggs' easy accessibility at home. For young people living in remote villages, backyard chicken raising offers excellent job and commercial agricultural options. Due to the improvement of the desi non-descript bird by crossbreeding with a better breed, the enterprise has effectively produced average revenue from eggs and meat. The findings showed that, in comparison to Desi birds, Vanaraja and Grampriya birds grow more quickly, lay more large eggs, thrive in low-input systems, are resistant to most diseases, require less space, require less labor and investment, and support self-employment and income generation.

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