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Growth Performance and Survivability of Rajasree Birds under Deep Litter and Scavenging Systems

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Abstract: The aim of the experiment was to determine the performance and survivability of Rajasree birds under backyard condition. A total number of 2000 day old chicks of Rajasree were reared in deep litter house up to 9 weeks under controlled conditions to record the body weight, feed consumption and feed conversion ratio. After 9 weeks, 1800 birds were equally distributed to 60 beneficiaries (20 females and 10 males) in four villages of Nalgonda district of Andhra Pradesh to record the body weight, feed consumption and feed conversion ratio under the backyard condition up to 20 weeks. At the age of day old, the average weight of male and female chicks was 33 and 30 g, respectively. The male and female average body weight gains and feed consumption at 9th week were 582 and 491 g and 1868 and 1951 g, respectively. The feed conversion ratio at 9th week was 3.20 and 3.97 respectively. The average mortality was 3.12% up to 9 weeks. The male and female mean body weight at 20th week were 1160.7 and 1006.9 g under backyard farming. The body weights were significantly ($p<0.05$) greater for birds reared in Shaligouraram (1204 g and 1023 g) and Chilkur village (1196 g and 1024 g) compared to other two villages. Therefore, it has been concluded that the 10-15% of supplementary feeding will optimize the performance of the birds under backyard condition, which will surely lead to increase the nutritional security and livelihood of under privilege sections of the society.

Key words: Rajasree, body weight, feed conversion ratio, survivability

INTRODUCTION

Over 65% of India's population lives in rural areas and out of which, 58% depends upon agriculture and allied sectors. Nevertheless, agriculture growth since last two decades barely exceeded 3% compared to about 10% in poultry sector during the same period. The annual per capita consumption of chicken eggs is very low in rural areas (15.1) compared to urban areas (>80). Furthermore, the rural poultry production during 2002-2003 was reduced to 14.3% from to 21.1% (FAO, 2008). In order to improve the socioeconomic and nutritional status of the people inhabiting in the rural areas, there is a need to promote backyard poultry farming with improved chicken varieties that are suitable under village condition. Therefore, the necessity was felt to expedite various research organizations to increase the availability of poultry products (egg and chicken meat) in the remote rural areas. In that process, several chicken crosses were developed to meet the demand of backyard poultry farming depending on the specific need of people of the region. Further, the chicks of improved varieties are being produced through artificial incubation. The chicks thus produced without hen need the initial mother care in terms of warmthness, feeding, health care, etc. Thus the nursery rearing became an integral part of backyard poultry farming with improved chicken varieties. However, the productive/growth performance of many crosses developed by various research organizations have not been evaluated so far in the farmer's field, which is a vital index that determines the subsequent layer performance.

Rajasree, a prolific egg laying chicken variety has been developed by Sri Venkateswara Veterinary University to boost the backyard poultry production. However, it has not been evaluated so far at the framer's field. Therefore, an experiment was conducted to find out the growth potential of Rajasree birds under the free range scavenging system in Nalgonda district of Andhra Pradesh.

MATERIALS AND METHODS

A total of 1890 day old chicks (Rajasree) were reared in deep litter house upto 9 weeks of age by offering balanced diet (Table 1) in the experimental farm and were vaccinated as per recommended protocol. The data on body weights, feed consumption, feed conversion ratio and mortality were collected at weekly intervals.

A total of 60 beneficiaries were identified and selected for this study. Each of the beneficiary was given 30 adult Rajasree birds at 10 week of age in four villages i.e. Shaligouraram, Thatikal, Chilkur and Doodya thanda.

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Table 1: Ingredient and nutrient composition of diet fed during the nursery period from (up to 9 weeks)

Ingredient	Part
Maize	44.00
Deoiled rice bran	16.00
Sun flower cake	8.00
Soya bean meal	28.00
Shell grit	2.00
Salt	0.40
Di-Calcium Phosphate	1.20
Vitamin and mineral premix	0.16
Nutrient composition	
Metabolizable energy (kcal/kg)	2750.00
Crude protein (%)	21.00
Calcium (%)	1.20
Non Phytin phosphate (%)	0.35
Lysine (%)	1.00
Methionine (%)	0.36

Data on body weight and livability were recorded at once in two weeks. The beneficiaries were also supplied with night shelters made of wood for protection from predators during night time. The growers were on the natural predominately food base (fallen grains, kitchen waste, greens, insects etc). Based on the need the growers were given supplementary grain like sorghum, rice broken etc.

The statistical analyses were performed using SPSS software package, version 10.0.1 (SPSS Inc., Chicago, USA). The variations in different recorded parameters were analyzed using the one way analysis of variance. The model included the different villages as the source of variation. The means of different treatments were separated using Tukey's test.

RESULTS AND DISCUSSION

Rajasree chicks performance: At the day one, the average weight of male and female chick was 33.0 and 30.0 g, respectively (Table 2). Similarly, male and female average cumulative body weight gains at 3, 6 and 9 weeks were 115, 334 and 582 and 75, 258 and 491 g, respectively. The average cumulative feed consumption during the same period for male and female chicks were 205, 878 and 1868 g and 218, 921 and 1951 g respectively. The cumulative feed conversion ratio at 3, 6 and 9 weeks was 1.78, 2.62 and 3.209 and 2.90, 3.56 and 3.97 respectively for male and female chicks. It has been observed that the higher body weight and better feed conversion ratio was recorded in male than female chicks. The percentage of mortality in the chicks was 3.12% during the first nine weeks, which might be due to the Coccidiosis, weakling and enteritis.

Rajasree grower birds performance: Bodyweight gain of Rajasree male birds varied significantly ($p<0.05$) among different villages (Table 3). During the initial two periods (13 and 14 weeks), the body weight gain in Shaligouraram was significantly ($p<0.05$) higher compared to other 3 villages. However, during 16 and 18 week of age, the body weight gain in chicken was higher than the birds grown in other three villages. At the end of experimental period (20th weeks of age), the weight gain in Shaligouraram and Chilkur was similar and significantly higher than Thatikal and Doodyathanda. The weight gain of Rajasree birds in the latter two villages was similar.

Similarly, the livability of birds was not influenced ($p>0.05$) by the location of rearing which ranged between 93.66 to 96.22 during 10 to 20 weeks of age.

The growth trend of female Rajasree birds are followed the male growth pattern among different villages. The female birds weighed significantly higher in Shaligouraram village compared to other villages at 12 and 14 week of ages. During 16, 18 to 20 weeks of age birds reared in Chilkur village weighed significantly heavier compared to other villages except at 20 weeks. The body weight of birds at 20 weeks of age in Chilkur was similar to those grown in Shaligouraram. The greater body weight in these villages was attributed to the supplementary feeding (10-15%) and availability of scratching grains from paddy fields.

The average mortality of birds was 5.10%. The major (2.69%) cause of mortality was due to predators (dogs, cats, crows and eagle) followed by 1.34% due to pesticide toxicity, 0.74% was due to accidents and

Table 2: Performance of Rajasree chicks during nursery phase (1-9 weeks)

	Male				Female			
Age in weeks	Body weight (g)	Weight gain (g)	Feed intake (g/bird)	Feed/weight gain	Body weight (g)	Weight gain (g)	Feed intake (g/bird)	Feed/ Wt gain
DOC*	33	-	-	-	30	-	-	-
1	50	17	23	1.35	47	17	26	1.52
2	89	56	96	1.71	79	49	106	2.16
3	148	115	205	1.78	105	75	218	2.90
4	216	183	370	2.02	157	127	390	3.07
5	289	256	613	2.39	227	197	645	3.27
6	367	334	878	2.62	288	258	921	3.56
7	449	416	1169	2.81	361	331	1222	3.69
8	519	486	1471	3.02	434	404	1553	3.84
9	615	582	1868	3.20	521	491	1951	3.97

*Day old chick

Table 3: Bi-weekly data on mean body weights and livability of Rajasree male and female birds from 10-20 week of four different villages

Age		Shaligouraram	Thatikal	Doodya thanda	Chilkur	SEM	P
12th	M	802.30^{a}	755.20^{b}	744.50^{b}	760.80^{b}	5.63	0.002
	F	728.00^{a}	683.50^{b}	683.20^{b}	696.80^{b}	4.86	0.023
14th	M	889.80^{a}	845.30^{b}	844.60^{b}	889.70^{a}	4.17	0.001
	F	806.00^{a}	781.20^{b}	781.50^{b}	778.60^{b}	3.73	0.010
16th	M	944.30^{b}	834.80^{c}	926.90^{b}	977.90^{a}	8.04	0.001
	F	852.80^{a}	825.60^{c}	840.10^{bc}	885.50^{a}	4.19	0.001
18th	M	1063.10^{a}	1068.00^{a}	1002.00^{b}	1070.00^{a}	5.14	0.001
	F	938.93^{b}	897.00^{c}	901.00^{c}	963.30^{a}	4.60	0.001
20th	M	1204.00^{a}	1165.00^{b}	1078.00^{c}	1196.00^{a}	7.38	0.001
	F	1023.33^{a}	993.80^{b}	986.50^{b}	1024.00^{a}	3.79	0.001
Livability		94.21	96.21	93.66	95.49	0.551	0.406

M - Male, F - Female, Means bearing at least one common superscript in a column do not differ significantly (p>0.05)

0.33% due to diseases. Nevertheless, disease was of minor importance during growing stage. The aerial predators had less effect than terrestrial predators like cats and dogs. No significant differences were observed between villages in mortality.

The results of the present study are in agreement with Chatterjee *et al.* (2002) who reported the growth performance of Nicobar fowl under deep litter systems and backyard farming. Similarly, Padhi *et al.* (1999) conducted an experiment to study the production performance of Nicobari, Naked neck and Frizzle fowl at 12 and 20 weeks of age in humid climate of Andaman and Nicobar Islands. They indicated that up to 12 weeks of age, Frizzle fowl recorded higher body weight in both the sexes (605 g in male and 548 g in female) than Naked neck (580 g in male and 471 g in female). Likewise, a study was also conducted to evaluate the performance of Vanaraja birds under temperate agro climatic conditions of Kashmir valley (Bhatt *et al.*, 2007) and reported that the body weight at 8 weeks of age was 896.9 g (859.46 g body weight gain) with an average feed consumption per bird from 0-8 weeks was 2503 g. A study on the growth performance of Gramapriya under intensive conditions of Tripura was conducted by Niranjan and Singh (2005). They observed that the body weights under farm condition were 299.2, 432.6 and 688 g at 4, 6 and 8 weeks of age irrespectively and cumulative feed consumption was 1165 g up to 6 weeks of age.

The mortality percent due to disease from 0 to 8 weeks and 8 to 20 weeks in three cross breeds (CSML x RIR, CSML x B 77 and B77 x CSML) chicken were 17.06, 9.96, 12.80 and 2, 0, 6, 48%, respectively. Consistently, Padhi *et al.* (2003) reported that the mortality due to predators during 0 to 8 and 8 to 20 weeks were 13.92, 9.73, 50.57% and 7.87, 0.22 and 1.36%, respectively. Similarly, Niranjan and Singh (2005), while studying the production performance of Gramapriya, they have observed 2.53, 0.76 and 2.17% mortality respectively during brooding growing and laying phase respectively. Mortality pattern of Vanaraja birds under field and farm conditions in Kashmir village was 2% under intensive system and 3-5% under field conditions (Bhatt *et al.*, 2007). Therefore, the result of the present study is in well accordance with the previous workers.

Conclusion: Therefore, it has been concluded that the 10-15% of supplementary feeding under backyard condition will optimize the performance of the birds, which will surely lead to increase the nutritional security and livelihood of under privilege sections of the society.

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