



Original Research

Growth Performance of Vanaraja Birds Fed Fresh Azolla Incorporated Diets under Intensive Productive System

N. Bharathy^{1*}, P. Vasanthakumar¹ and N. Akila²

¹Veterinary University Training and Research Centre (TANUVAS), 4/221, Panduthakaran Pudur, Manmangalam Post, Karur – 639 006, Tamil Nadu, INDIA

²KVK, Namakkal, Tamil Nadu, INDIA

*Corresponding author: lpmbharathi@gmail.com

Rec. Date:	Sep 06, 2017 10:24
Accept Date:	Mar 16, 2018 17:23
DOI	10.5455/ijlr.20170906102448

Abstract

The growth performance of vanaraja birds fed with fresh azolla supplemented diets was assessed at farmer's field reared under deep litter system. A total of 200 numbers of one month old vanaraja birds was randomly divided into four groups. Group 1 (G1) was fed with wet azolla @ 5 % of the ration (grains), Group 2 (G2) was fed with wet azolla @ 10%, Group 3 (G3) was fed with wet azolla @ 15% and the Group 4 (G4) served as control and fed only locally available low cost feed materials such as sorghum grains, rice bran, ground nut oil cake and broken rice. The weight gain of birds was recorded at fortnightly intervals up to 14 weeks of age. The body weight of birds (1112.6 g) fed azolla @ 15 % of ration was more ($P \leq 0.05$) compared to all other groups. The study suggests that supplementation of azolla @ 15 % along with locally available feed ingredients improved the growth performance of vanaraja birds reared under intensive system.

Key words: Fresh Azolla, Growth, Vanaraja Birds

How to cite: Nallathambi, B., Perianna, V., & Natrajan, A. (2019). Growth Performance of Vanaraja Birds Fed Fresh Azolla Incorporated Diets under Intensive Productive System. International Journal of Livestock Research, 9(1), 202-205. doi: 10.5455/ijlr.20170906102448

Introduction

Backyard poultry rearing is still popular in some states of India for production of birds with multi-coloured feathers similar to that of desi chicken which lays brown coloured shell eggs. So far the native chicken specific to their localities are selected by the poultry farmers for backyard poultry rearing. This results in minimum egg production (60 to 80 eggs / year / hen) with more feed consumption leading to less profit. Now, the crossbred chicken have been introduced in backyard poultry rearing which results in more egg production (150-180 eggs / hen / year) with less feed consumption. The crossbred chicken and their eggs are marketed for same price as that of desi chicken because of the similarity in physical appearance. A



crossbred chicken for backyard poultry rearing was widely followed. Among the crossbred chicken the Vanaraja is a multi-coloured dual-purpose chicken variety developed at Project Directorate on Poultry, Hyderabad, for free range and rural backyard rearing. The plumage colour and disease resistance of Vanaraja is similar to native chicken. Vanaraja grows fast and produces more eggs than native chicken. So the vanaraja birds were chosen for the study. Azolla contains (on dry weight basis) 25-35% protein, 10-15% minerals whereas carbohydrate and oil contents are low. Nutritive and feeding value of azolla has been assessed in commercial broiler chicken, desi birds and ducks (Acharya *et al.*, 2015). Both dietary fresh /wet as well as dried azolla meal can be safely included in the broiler diet at the rate of 10 per cent have been used by the earlier workers, without affecting production performance. Shoukat *et al.* (2015) observed that 5.0% azolla may be incorporated in the diets of broiler chicken to make the broiler production more profitable. However, studies on performance of dual purpose breeds such as Vanaraja fed fresh azolla under farmers field conditions are scanty. Therefore this study was carried out.

Chemical Composition of Azolla (% on DM basis)

Crude protein - 23.96

Crude fiber - 6.05

Ether extract - 3.63

Total ash - 14.77

Sand and silica - 0.5

Calcium - 1.2

Phosphorus - 1.0

Materials and Methods

A total of 200 numbers of one month old Vanaraja birds were randomly divided into four groups. Group1 (G1) was fed with fresh azolla @ 5% of the ration (grains), Group 2 (G2) was fed with fresh wet azolla @ 10%, Group 3 (G3) was fed with wet azolla @ 15% and the Group 4 (G4) served as control and fed only with locally available low cost feed such as sorghum – 20%, bran – 35%, oil cake – 25% and broken rice- 20%.

Table 1: Body weight of Vanaraja birds fed fresh azolla

Age (in weeks)	Dietary treatment groups			
	G1 (Azolla supplementation @ 5 %)	G2 (Azolla supplementation @ 10 %)	G3 (Azolla supplementation @ 15 %)	C - Control (without azolla)
Hatch weight	36.6 ± 0.28	36.7 ± 0.41	36.1 ± 0.34	36.1 ± 0.43
4	203.4 ± 3.46	207.4 ± 3.14	210.1 ± 3.21	211.8 ± 4.16
6	302.0 ± 5.32	315.4 ± 5.33	321.9 ± 5.42	335.7 ± 5.58
8	342.4 ± 6.68	352.6 ± 5.29	378.6 ± 5.02	385.6 ± 8.67
10	665.2 ± 7.16	675.1 ± 5.43	699.6 ± 9.24	535.2 ± 5.88
12	762.5 ^b ± 4.73	792.2 ^b ± 4.16	814.3 ^a ± 6.23	710.2 ^b ± 4.16
14	1000 ^b ± 8.23	1011.0 ^b ± 8.52	1112.00 ^a ± 9.10	956.00 ^b ± 6.93

Means with at least one common superscript in a row do not differ significantly ($P > 0.05$)

Pa

The birds were vaccinated against Ranikhet diseases (RDVKF1, Lasota and R2B) up to 3 months period. Clean drinking water was provided ad lib to all the birds at all times.

Table 2: Economics of azolla based diets – feeding cost per kg live weight

Treatment Group	Level of Azolla Inclusion 10 (%)	Cost of Feed per kg (INR)	Total Feed Cost (INR)	Feed Cost per kg Live Weight (INR)
G1	5	22.7	2720	54.4
G2	10	22.3	2676	52.93
G3	15	22	2640	49.48
G4	0	23	2760	57.74

Table 3: Ingredients included in the ration

Treatment Groups	Level (%) of Azolla (Fresh)	Number of Birds	Remarks
G1	5	50	Sorghum grain - 20 %
G2	10	50	Broken rice - 20 %
G3	15	50	Groundnut oil cake – 25 %
G4 (Control)	0	50	Rice bran – 35 %

Results and Discussion

The chemical analysis of azolla used in the experiment contained (% on DM basis) 23.96 crude proteins, 6.05 crude fibres, 3.63 ether extract, 14.77 total ash, 0.5 sand and silica, 1.2 calcium, 1.0 phosphorus (Alalade and Iyayi 2006; Raseena, 2006). Further, Basak *et al.* (2002) reported that ether extract content of azolla varied between 3.0 -3.5 % in present study more less similar value (3.63) was obtained. The crude fibre content of 6.05 % less was compared to the findings of Querubin *et al.* (1986). Azolla contains a calcium content of 1.11% (Parthasarathy *et al.*, 2001) which is in close conformity with the value recorded in present study. The variations in the nutrient composition of azolla as reported by researchers could be due to species difference and habitat variation of the taxon.

No bird died in any treatment group during the experimental period, indicating that inclusion of azolla in feed had no deleterious effect on improved varieties. The body weight of birds fed different levels of fresh azolla along with grains did not differ significantly from 4th week to 10th week of their age. However, the body weight of birds (1112 ± 9.1 g) fed fresh azolla @15% was higher ($P \leq 0.05$) at 12th and 14th weeks of age when compared to all other groups. These findings are not agreement with the results of Dhumal *et al.* (2009) who observed higher returns in chicken fed ration wherein 5% protein source was replaced by azolla, in contrary to the present study. The body weight was relatively lower in Group 4 (G4). The livability of birds also did not vary amongst the experimental groups.

Conclusion

This study suggested that supplementation of azolla @15% along with locally available feed ingredients improved the growth performance of vanaraja birds reared under intensive system.



Acknowledgements

The authors are grateful to Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu for providing necessary facilities for conducting the study.

References

1. Acharya, P., Mohanty, G. P., Pradhan, C. R., Mishra, S. K. Beura, N. C. and Moharana, B. 2015 *Veterinary World*, 8 (11): 1293 – 1299.
2. Alalade OA and Iyayi EA (2006). Chemical composition and feeding value of Azolla (*Azolla pinnata*) meal for egg type chicks. *International Journal of Poultry Science*, 5: 137-141.
3. Basak B, Pramanik AH, Rahmnan MS, Taradar SU and Roy BC (2002). Azolla (*Azolla pinnata*) as a feed ingredient in broiler ration. *International Journal of Poultry Science*, 1: 29-24.
4. Dhumal MV, Siddiqui MF, Siddiqui MBA and Avari PE (2009). Performance of broilers fed on different levels of Azolla meal. *International Journal of Poultry Science*, 44: 65-68.
5. Parthasarathy R, Kadirvel R and Kathaperumal V (2001b). Chemical evaluation of azolla as poultry feed ingredient. *Cheiron*, 30: 35-37.
6. Raseena (2006). Effect of dietary supplementation of Azolla (*A. pinnata*) on production performance in Japanese quail (*Coturnix japonica*).M.V.Sc. thesis submitted to Kerala Agricultural University, Thrissur, India.
7. Saikia, N.,Sapkota, D.and Hazarika, R. 2014. *Indian Journal of Poultry Science*, 49(1): 113-111.
8. Shoukat, A., Adli, S., Bandy, M.T. and Khan, M. A. 2015. *Journal of Poultry Science and Technology*, 3(1): 15-16.
9. Querubin L. J., Alcantara PF and Luis ES (1986). Chemical composition and feeding value of Azolla in broiler ration. *Philippines Journal of Veterinary and Animal Science*, 13: 46.

