

A STUDY ON THE PERFORMANCE OF RHODE ISLAND RED, WHITE LEGHORN AND THEIR CROSS WITH NAKED NECK CHICKEN

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Summary

160 day-old chicks of Rhode Island Red, White Leghorn and their crossbred with Naked neck chicken were reared upto 23 weeks of age at Bangladesh Agricultural University Poultry Farm in order to study the economic traits of birds. RIR had highest body weight gain (1494.39 g), followed by White Leghorn (1392.57 g), RIR × NN (1268.9 g) and White Leghorn × NN (1266.73 g). RIR showed significant difference ($p < 0.05$) to other groups of birds in body weight gain but difference were insignificant in between other birds. RIR showed better feed conversion ratio (4.72:1) but difference were insignificant ($p > 0.05$), however, RIR × NN exceeded White Leghorn × NN in feed efficiency. RIR × NN had highest livability (90%) while White Leghorn had lowest (85%). Earlier sexual maturity was observed in White Leghorn (163 days) than RIR (168 days) but cross breeds were similar in age at sexual maturity RIR were heaviest (1538.89 g) at age at sexual maturity, on the other hand RIR × NN were heavier (1315.39 g) than WL × NN (1306.77 g) at sexual maturity. (Key Words: Economic Traits, RIR × NN, WL × NN)

Introduction

In a tropical country like Bangladesh where environmental temperatures ranges from 24-25°C on an average, the exotic pure breeds of chickens suffer most from heat stress. So proper considerations for a suitable stock of poultry should be given in order to increase both egg and meat production of chicken to the existing indigenous germplasm and their upgradation. From this viewpoint Naked neck birds found else where in rural areas of Bangladesh places in top as indigenous stock. Merat (1982) reported better performance of Naked neck birds at a temperature ranges from 25°C to 30°C and above Zein-El-Dein et al. (1984a) suggested that Naked neck birds showed a slightly stronger advantage in presence of a ration with suboptimal protein level. Balancing the protein level is great problem in formulating rations for chicken in Bangladesh. Present study thus envisages the comparative performance on economic traits of crossbreds out of Naked neck, Rhode Island and White Leghorn under Bangladesh condition.

Materials and Methods

The study was conducted with 160 day old chicks of Rhode Island Red (RIR), White Leghorn (WL), Rhode Island Red × Naked neck (RIR × NN) and White Leghorn × naked neck (WL × NN), 40 from each group with 2 replications of 20 each at Bangladesh Agricultural University Poultry Farm upto 23 weeks of age. The birds were properly vaccinated and wing-banded and reared on floor for all groups of birds. The data obtained were analysed by Randomized Block Design. Analysis of variance was done for body weight gain and feed consumption. The Duncan's New Multiple Range Test were performed to test the significant differences among the treatment means.

Results

Growth rate:

The average body weight of day-old chicks was highest in RIR (28.08 g), followed by those of RIR × NN (25.7 g), WL (25.48 g) and WL × NN (24.53 g) and their corresponding average weights at 23 weeks of age were 1522.47 g, 1294.46 g, 1348.05 g and 1291.28 g respectively. The average final body weight gain at 23 weeks of age was highest in RIR (1494.39 g), followed

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Received August 12, 1991

Accepted November 19, 1991

by those of White Leghorn (13222.57 g) RIR × NN (1268.9 g) and WL × NN (1266.73 g) shown table 1.

Feed consumption and Feed conversion :

The average feed consumption per bird at 1st week was highest in WL × NN (49.53 g)

birds followed by those of RIR × NN (42.27 g), WL (41.8 g) and RIR (37.82 g) and their corresponding average feed consumption upto 25 weeks of age were 8041.95 g, 7864.71 g, 7530.52 g and 7054.93 g respectively, shown in table 1.

TABLE 1. ECONOMIC PARAMETERS OF RIR, RIR × NN, WL AND WL × NN

Parameters	RIR	RIR × NN	WL	WL × NN
1. Average initial body weight (g)	28.08	25.70	25.48	25.55
2. Average final body weight (g)	1522.47	1294.46	1348.05	1291.28
3. Average final body weight gain (g)	1268.90	1268.90	1322.57	1266.73
4. Average feed consumption (g)	7054.93	7864.71	7530.52	8041.95
5. Feed conversion ratio	4.72 : 1	6.19 : 1	5.69 : 1	6.35 : 1
6. Livability (%)	87.5	90	85	87.5
7. Weight at sexual maturity (g)	1538.89	1315.39	1352.67	1306.77
8. Age at sexual maturity (d)	168	174	163	173

Livability :

Livability percentage of RIR × NN birds were better (90%) comparing with those of RIR (87.5%), WL × NN (87.5%) and WL (85%).

Age and weight at sexual maturity :

The average age and weight at sexual maturity of different types of birds were presented in table 1. WL reached sexual maturity at 163 days, RIR at 168 days, RIR × NN at 174 days and WL × NN at 173 days. The highest average weight at sexual maturity was recorded in RIR (1538.89 g), followed by White Leghorn (1352.67 g), RIR × NN (1315.39 g) and WL × NN (1306.77 g).

Discussion

RIR × NN birds showed higher rate of gain at 8 weeks of age, which corresponds to the

result of Jull (1948). The significant variability ($p < 0.05$) was observed in final body weight gain among the different types of birds (table 2). The effect of type of birds on body weight gain was tested by Duncan's New Multiple Range Test (table 3). The average body weight gain of RIR differed significantly ($p < 0.05$) with those of WL, RIR × NN and WL × NN birds respectively. But no significant difference was observed in body weight gain among WL, RIR × NN and WL × NN birds. However, RIR × NN showed better in body weight gain than WL × NN. The above findings correspond with the results of Monnet et al. (1979), Hamid and Nashirul (1980) and Hanzl and Somes (1983).

Insignificant variability was observed in respect of feed consumption among the different types of birds (table 4). The average feed conversion ratio of RIR, RIR × NN, WL and WL × NN birds were 4.72 : 1, 6.19 : 1, 5.69 : 1 and 6.35 : 1

TABLE 2. ANALYSIS OF VARIANCE FOR FINAL BODY WEIGHT GAIN

Source of variance	Degree of freedom	Sum of square	Mean of square	F
Replication	1	19925.09	19925.09	8.34
Type of birds	3	69099.79	23033.26	9.66*
Error	3	7167.79	2389.26	

* Significant at 5% level of probability.

RIR, WHITE LEGHORN AND CROSSBRED NAKED NECK

TABLE 3. DUNCAN'S NEW MULTIPLE RANGE TEST FOR AVERAGE FINAL BODY WEIGHT GAIN

Value of P	2	3	4
SSR	4.50	4.50	4.50
LSR	151.16	151.16	151.16

(Type of birds)

Average gain in weights are arranged in order of magnitude.

Effect of birds on average final body weight gain.

Type of birds	Mean weights (g)
Rhode Island Red	1494.39 ^a
White Leghorn	1322.58 ^b
RIR × NN	1268.90 ^b
WL × NN	1266.73 ^b

Mears within a column hearing dissimilar letters differ significantly at 5% level of significance as adjusted by the Duncan's New Multiple Range Test.

respectively. The better feed conversion in RIR found in this study was in agreement with that of O'Neil (1959). However, RIR × NN was better in feed conversion than those of WL × NN.

Livability of RIR × NN birds was better and WL was less viable. Crossbred produced from WL with Naked neck had better livability than that of WL. It indicates that the crossbreds are more resistant to diseases than the pure breeds. This result agrees with the findings of Hutt (1938).

WL reached sexual maturity earlier than those of other birds which in agreement with the findings of Hamid and Nashirul (1980). The crossbred birds were late at sexual maturity was supported by Marais (1965). However, there was no such difference in age at sexual maturity between birds of WL × NN and RIR × NN groups. Heavier body weight of RIR followed

TABLE 4. ANALYSIS OF VARIANCE FOR FEED CONSUMPTION

Source of variance	Degree of freedom	Sum of square	Mean of square	F
Replication	1	213096.35	213096.35	0.76
Type of birds	3	1130394.81	376798.24	1.34
Error	3	870142.51	280047.50	

Insignificant.

by WL, RIR × NN and WL × NN was also supported by Hamid and Nashirul (1980). However, crossbreds out of RIR × NN were heavier than those of WL × NN.

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