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## **A Study on the Comparative Performance of Different Breeds of Broiler Ducks Under Farmer's Condition at Farming System Research and Development (FSRD) Site, Sylhet, Bangladesh**

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**Abstract:** The experiment was conducted with 40 Pekin, 40 Muscovy and 40 Deshi White day-old as hatched broiler ducklings under farmers condition to investigate the comparative performance of three breeds of ducks under farmer's management up to the 09 weeks of age. The final live weight in Pekin, Muscovy and Deshi White were 1763.0, 1225.0 and 1208.0 g/ducks respectively ( $P < 0.05$ ). The total feed consumption up to the brooding period in three breeds were 2047.00, 1652.06 and 1430.05 g/ducklings respectively ( $P < 0.05$ ) and the respective feed conversion ratios were 2.40, 2.91 and 3.05. Mortality was non-significant ( $P > 0.05$ ) among the breeds of ducks. The highest (70%) dressing yield was found from Pekin and the lowest (65%) from Deshi White. The highest production cost was found in Pekin and the lowest in Deshi White. The highest gross margin and BCR (Tk.34.93/duck and 1.66 respectively) were obtained from Pekin and the lowest (Tk. 11.45/duck and 1.23 respectively) from Deshi White. From the results it may be concluded that exotic breeds /improved breeds of broiler ducks rearing is possible at FSRD site, Sylhet and farmers can be benefited within short time. The breed of Pekin ducks is superior over Muscovy and Deshi White.

**Key words:** Broiler duck, comparative performance, feed intake, growth rate, FCR, farmer's condition

### **Introduction**

Bangladesh is an over populated country. Agriculture is the main source of income for the people. Majority of the people of this country is suffering from malnutrition, particularly for the shortage of animal protein. According to a report of BBS (1998) average per capita availability of meat is 12.51 g/day. Whereas per capita requirement of meat is 120 g/day. Poultry production is an effective way to bridge this nutritional gap as a faster rate than other sources. The supply and demand gap of the animal protein can be met by increasing the production of poultry meat and eggs. Among poultry, ducks can be more easily brooded, need less care and are less subjected to diseases than the chicken (Modak, 1996). As such, the people of some areas are more interested in raising ducks than chicken.

There are about 85 million chickens and 33 million ducks in Bangladesh and about 95% of these birds are raised in the backyards (FAO, 1989). It is evident that about 78% of the poultry eggs and 86% of poultry meat is produced by small holding farmers (Alam, 1995). On the other hand, Poultry provide about 25% of the total animal protein sources in Bangladesh (Huque, 1991). Duck rearing would increase the employment opportunity as well as subsidiary income of the rural women, land less and marginal farmers. Increased duck rearing would not interfere with chicken rearing due to different rearing and scavenging venue, that is why duck rearing would be a great supplement to total poultry production (Ferdus, 1999).

Exotic ducks like Pekin, Muscovy and Deshi White are

very much popular for commercial meat production under ideal farm condition. But their production performances are not known to us when they are kept in conventional system (farmer's condition). This study was designed to compare the performances of the Pekin, Muscovy and Deshi White ducks under the farmers condition and to suggest a breed which is suitable for backyard duck farming with following specific objectives. To find out the suitable breed of ducks for broiler production under farmers condition.

To determine the cost of broiler duck production under farmer's condition.

### **Materials and Methods**

The experiment was conducted with 40 Pekin, 40 Muscovy and 40 Deshi White day-old as hatched broiler ducklings under farmers condition to investigate the comparative performance of three different broiler ducklings up to the 9 weeks of age. The initial live weight of individual ducklings ranged from 42 to 46g. The ducklings were equally divided and randomly assigned to 03 treatment groups; B<sub>1</sub>-Pekin: B<sub>2</sub>-Muscovy and B<sub>3</sub>-Deshi White having four replications (farmers) in each treatment. A total of four farm families (farmers) were selected randomly on the basis of their own interest. Every farmer was supplied 10 ducklings in each breed. During the brooding period ducklings were reared on earth floors. When required the ducklings of all treatments were given additional heat with electric bulb for the 1<sup>st</sup> fourth week of age. After 4<sup>th</sup> week of age ducklings were reared in scavenging system with

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Table 1: Composition of the ration used in duck rearing under farmer's condition

Ingredient	Composition (g/kg)	Component	Calculated composition
Rice crush	12.00	ME (Kcal/kg)	2900
Wheat bran	26.50	Crude protein (%)	17.56
Rice Polish	31.50	Crude Fiber (%)	04.01
Kheshari	01.00	Calcium(%)	1.75
Till oil cake	16.00	Total Phosphorus(%)	0.89
Pulse bran	10.00	Lysine(%)	01.00
Fish meal	02.00	Methionine(%)	00.89
Di-calcium Phosphate	0.50		
Salt	0.50		
Embavit	+		
Total	100.00		

Table 2: Body weights (g/ducklings/wk.) of different breeds of ducklings at different ages

Treatment (Breeds)	Age (weeks)									
	Ini	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
B1	46	152 <sup>a</sup>	330.0 <sup>a</sup>	526.5 <sup>a</sup>	835.0 <sup>a</sup>	1056.0 <sup>a</sup>	1316.0 <sup>a</sup>	1489.0 <sup>a</sup>	1664.0 <sup>a</sup>	1763.0 <sup>a</sup>
B2	44	106 <sup>c</sup>	221.0 <sup>c</sup>	391.4 <sup>c</sup>	491.4 <sup>c</sup>	570.0 <sup>c</sup>	655.50 <sup>c</sup>	853.0 <sup>c</sup>	971.8 <sup>c</sup>	1225.0 <sup>c</sup>
B3	42	113 <sup>b</sup>	291.4 <sup>b</sup>	425.1 <sup>b</sup>	551.8 <sup>b</sup>	652.0 <sup>b</sup>	786.8	924.3 <sup>b</sup>	1142.6 <sup>b</sup>	1208.0 <sup>b</sup>
LSD	--	12.6	11.17	66.72	22.08	19.39	50.81	21.80	46.97	42.34
CV %	--	5.35	2.47	9.81	2.13	1.48	3.19	1.16	2.16	1.72

\* Figures in the row with dissimilar superscripts differ significantly at P< 0.05, all LSD's are against 06 df. B1= Pekin, B2= Muscovy & B3= Deshi White

Table 3: Feed consumption (g/ducklings/wk.) of different breeds of ducklings at different ages

Treatments Breeds	Age (weeks)									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	
B1	313.12 <sup>a</sup>	734.71 <sup>a</sup>	1307.0 <sup>a</sup>	2047.0 <sup>a</sup>	2534 <sup>a</sup>	3128 <sup>a</sup>	3625 <sup>a</sup>	3998 <sup>a</sup>	4409 <sup>a</sup>	
B2	244.80 <sup>b</sup>	605.30 <sup>b</sup>	1117.0 <sup>b</sup>	1652.06 <sup>b</sup>	2106 <sup>b</sup>	2481 <sup>b</sup>	2798 <sup>b</sup>	3214 <sup>b</sup>	3608 <sup>b</sup>	
B3	228.00 <sup>c</sup>	569.10 <sup>c</sup>	953.0 <sup>c</sup>	1430.05 <sup>c</sup>	1871 <sup>c</sup>	2216 <sup>c</sup>	2574 <sup>c</sup>	2915 <sup>c</sup>	3217 <sup>c</sup>	
LSD value	14.33	12.07	13.02	23.37	32.03	35.14	39.10	42.01	46.07	
CV %	3.39	1.10	0.65	0.76	0.81	0.86	0.93	0.98	1.15	

Figures in the row with dissimilar superscripts differ significantly at P< 0.05, all LSD's are against 06 df. B1= Pekin, B2= Muscovy & B3= Deshi White

recommended ration (Table 1), where 50% feed was supplied in morning and rest of the feed was supplied in the evening on the basis of their total daily requirement. The ration was fed as wet mash. The ration were formulated satisfying the nutrient requirement of the ducklings as outlined by NRC (1997) using rice crush, wheat bran, rice polish, keshari, til oil cake, pulse bran, fish meal etc. (locally available) feed ingredients where, CP= 17.56% and ME= 2900 Kcal/Kg. Diets for three different broiler ducklings were same. Detail composition of ration was shown in Table 1. All ducklings were immunized against Duck Plague and Duck Cholera diseases according to the procedures recommended by vaccine manufactures. Data were recorded on initial weight (g/ducklings), weekly growth (g/ducklings), survivability (%), feed consumption (g/ducklings), feed efficiency and cost of meat production (Tk./kg.). Gross return, gross margin, and benefit-cost ratio were calculated considering the present market

values of different commodities.

The experiment was conducted by following the principles of Randomized Complete Block Design (RCBD).

$$\text{Model: } Y_{ij} = \mu + t_i + b_j + e_{ij}$$

Where:

$Y_{ij}$  = Effect of the  $i$ th duck breeds in the  $j$ th replicate (farmers)

$\mu$  = General mean effect

$t_i$  = Effect of the  $i$ th treatment (duck breeds)

$b_j$  = Effect of the  $j$ th block (farmers)

$e_{ij}$  = Independent random error distributed as  $N(0, \sigma^2)$ .

Data were subjected to statistical analysis following RCBD (Steel and Torrie, 1980) using a computer package, MSTAT-C. Least Significant Differences (LSD) were calculated to compare variations between treatments where ANOVA showed significant differences.

Table 4: Feed Conversion Ratio of different breeds of ducklings at different ages

Treatments Breeds	Age(weeks)								
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th
B1	2.95 <sup>a</sup>	2.36 <sup>a</sup>	2.91 <sup>b</sup>	2.41 <sup>a</sup>	2.53 <sup>a</sup>	2.46 <sup>a</sup>	2.33 <sup>a</sup>	2.48 <sup>a</sup>	2.36 <sup>a</sup>
B2	3.98 <sup>b</sup>	3.11 <sup>c</sup>	3.01 <sup>c</sup>	2.91 <sup>b</sup>	2.66 <sup>b</sup>	2.61 <sup>b</sup>	2.80 <sup>b</sup>	2.64 <sup>b</sup>	2.58 <sup>b</sup>
B3	3.23 <sup>c</sup>	2.93 <sup>b</sup>	2.87 <sup>a</sup>	3.05 <sup>c</sup>	2.91 <sup>c</sup>	2.95 <sup>c</sup>	2.57 <sup>c</sup>	2.95 <sup>c</sup>	2.87 <sup>c</sup>
LSD value	6.33	6.73	6.02	6.37	6.03	5.14	6.10	6.17	6.07
CV %	0.39	0.21	0.15	0.26	0.19	0.36	0.23	0.38	0.25

Figures in the row with dissimilar superscripts differ significantly at P<0.05, all LSD's are against 06 df.  
B1= Pekin, B2= Muscovy & B3= Deshi White

Table 5: Gross Margin Analysis of Broiler duck production at FSRD site

Treatments	TVC (Tk./Ducklings)				Gross return (Tk./Ducklings)	BCR
	Duckling	Feed	Med.	Lab.		
B1	12	37.07	04	00	88.00	1.66
B2	12	35.78	04	00	67.38	1.30
B3	12	32.95	04	00	60.40	1.23

B1= Pekin, B2= Muscovy & B3= Deshi White, (1US\$ = Tk.57.50), Price: Duckling cost = Tk.12/ducklings, Feed cost = Tk.11.30/Kg, Medicine & Vacc. cost = Tk. 4/ducklings, Live broiler ducklings = Tk. 50/Kg.

## Results and Discussion

Performance of broiler duck rearing under farmer's management condition at FSRD site, Sylhet were presented in the following sub-headings.

**Live weight:** The result (Table 2) showed that there was a difference in body weight gained among the breeds at different ages significantly (P>0.05). The highest body weight was produced by Pekin breeds of duck (1763g) and the lowest (1208.00g) in Deshi White. It might be due to the reason that, while they were grazing, ate different amounts of fallen grains in the paddy fields, earthworms and small insects (Poultry Planner, 2000). Similar results were reported by Bachno *et al.* (1994). They recorded higher growth rate of Pekin over Muscovy ducks during the first eight weeks of life. Meat of Muscovy was more tasty than other breeds of ducks. But the highest amount of meat was found from Pekin.

**Feed consumption:** The tested breeds of broiler ducks were significantly different (P < 0.05) among themselves for feed consumption at various ages. The highest feed intake was observed in Pekin and the lowest in Deshi White (Table 3). This findings was supported by Cavalchini *et al.* (1982). But this results were dissimilar with the findings of Bogrene and Mihaly (1994). They reported that Feed conversion efficiency of Muscovy was better than Pekin. This variation may be due to the environmental & managerial variation.

**Feed conversion ratio:** Feed conversion ratio (FCR) were significantly differed (P< 0.05) among breeds at all ages (Table 4). It is indicated that over all feed

conversion efficiency of Pekin was better than those of other two breeds of ducks. The results are in agreement with the findings of Bogrene *et al.* (1994). But are dissimilar with the findings of Bachno *et al.* (1994).

**Mortality ( %):** The results showed that the mortalities of Pekin, Muscovy and Deshi White were 4, 4 and 2% respectively which were statistically non-significant. Deshi White is more resistant to diseases than other two breeds, which coincide with the results of Hamid and Chwodhury (1988).

**Dressing Yield ( %):** No significant difference was found in meat yield characteristics of broiler ducklings. The highest dressing yield was found (70%) from Pekin and the lowest (65%) from Deshi White. This results were partially coincide from the findings of Sogomonov and Rakhmanov (1988). They reported that dressing % of Pekin, Muscovy and Deshi White ducklings at 09<sup>th</sup> weeks of age were 71.6, 68.10 and 70.0% respectively.

**Gross Margin Analysis:** The ducklings showed differences among them from 1<sup>st</sup> week to 9<sup>th</sup> weeks of age (Table 5). The highest production cost was found from Pekin and lowest from Deshi White. The highest gross margin and Benefit Cost Ratio (BCR) (Tk.34.93/duck and 1.66 respectively) were obtained from Pekin and the lowest (Tk. 11.45/duck and 1.23 respectively) from Deshi White. This was due to variations in body weight gained which is probably a genetic character. Because, breeds of ducks is one of the most important factors affecting profitable production (Ali and Islam, 1995).

From the results it may be concluded that exotic breeds

/improved breeds of broiler ducks rearing is possible at FSRD site and farmers can be benefited within short time. The breeds of Pekin ducks is superior over Muscovy and Deshi White.

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