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## Feeding Systems Followed in Broiler Farms Adjacent To Dhaka City and its Impact on Productivity

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**Abstract:** A field survey investigated the feeding systems of broiler farms and its impact on productivity. A total of 100 farmers were selected randomly from four villages taking 25 from each village under Savar Upazila of Dhaka. In the study area average population of broilers was 1945 with a standard deviation of 627.28. The highest proportion (38%) of the farmers were medium producer (1000-2500 broilers) while 35% of them were small producers (up to 1000 broilers) and 27% were large producers (above 2500 broilers). Majority of the farmers (29%) used broiler chicks of BRAC farm, but early marketing age and over all economic production was found with broilers of Kazi Poultry Farm (27%). The highest FCR was also found in birds of Kazi Farm (2.03:1), whereas the birds from Aftab Poultry Farm achieved 2.09:1. In the investigation area most of the farms used Kazi Poultry Feed (22%), Aftab Poultry Feed (19%) and Usha Poultry Feed (13%). The mostly used Kazi Poultry Feed contained 90.30, 89.43 and 89.90% DM and 20.66, 21.62 and 20.71% CP, respectively for the starter, grower and finisher diets. Only one farmer of this survey area used homemade feed. The farmers stored broiler feeds in normal rooms. Most of the farmers (61%) stored their feed only for 3-4 days. The highest proportion (79%) of the farmers used crumble or pellet diet, whereas only 21% farmers used mash diet. Better FCR (20.3:1) was found when farmers used crumble or pellet diet but poor result (2.21:1) was found with mash diet. It was also found that *ad libitum* feeding was not economic, but most profitable system was to provide feed twice a day.

**Key words:** Feeding systems, broiler, productivity

### INTRODUCTION

In the recent years poultry farming has become one of the most profitable business in agriculture sector of Bangladesh and more specifically the broiler industry is now a rapidly developing enterprise among other sectors of poultry production. A large number of broiler farms are being established in different parts of the country. At present about 15 million broilers per month are produced in Bangladesh, particularly all of this production comes from small back-yard type farms (Hassan and Hassan, 2003). About 1, 06134 chicken farms and 60,401 duck farms have already been setup in the country in private sector (DLS, 2001-02). Successful broiler rearing depends on many factors-such as availability of quality chicks, supply of quality feed, cost-effective management system and stable marketing system.

Bangladesh is a densely populated country and her per capita land is 0.089 ha (BBS, 1998). Due to the lack of grazing land, the scope for development of livestock industries of large animals is limited here. The broiler farming has become the most popular one as it requires less housing space, short rearing period and consequently quick return and less risk. Therefore, the

present trend of development of broiler industry will continue in the future if the conditions remain favorable. Successful broiler rearing depends on many factors such as availability of quality chicks, supply of quality feed, cost-effective management system and stable marketing system. Each of these factors are vital for profitable broiler farming. It is fact that feed cost constitutes the major part (70% or more) of the cost of broiler farming. There are many poultry feed industries have been developed in the country. Many compound feeds are also being exported from abroad. None of these sources are passing through quality control. As a result, time to time the poultry industry suffers seriously due to imbalance feeds and fungal infested feed. Not only quality of feed, but also feeding system affects broiler production which varies from farm to farm. Effective feeding system is always necessary to improve the broiler production (Konashi *et al.*, 2000). That needs to be evaluated and standardized.

### MATERIALS AND METHODS

A survey was conducted on the feeding systems of broiler farms and its impact on productivity. In this study,

a total of 100 farmers were selected randomly from four villages: 25 from Asulia Bazar, 25 from Nabinagar, 25 from SavarBazar and 25 from Hamaetpur under Savar Upazila of Dhaka district in Bangladesh for a period of January to April 2003. The questionnaire was designed and pre-tested in the field and necessary changes were made before the final survey was undertaken. Direct and simple questions were included in the questionnaire and collected data on broiler population, sources of broiler chicks and its impact on productivity, sources of broiler feeds, use of feed ingredients, duration of feed storage, nutrient composition of feeds, feed intake, body weight, FCR, use of mash-crumble-pellets and its impact on productivity, frequency of feeding and its impacts. Before interviewing on the questionnaire each farmer was briefed on the purpose of the visit and convinced to cooperate to collect as much as accurate information. After collection of data and information from the field, it was transferred to tabulation sheets. Various statistical measures such as number, percentage, mean and standard deviation were used in analysis of data.

## RESULTS AND DISCUSSION

**Broiler population:** The broiler farm size ranged from 500-4000, the mean and standard deviation being 1945 and 627.28, respectively. The data in the Table 1 shows that in the study area, mostly the farmers were of medium and small categories. However, the percentages of large farms were also reasonably high (27%). But Hassan and Hassan (2003) reported that the average farm has a capacity of only about 500 broilers.

**Sources of broiler chicks and its impact on productivity:** A stock of quality chicks is one of the most important factors for poultry production. Gueyr (1998) reported that quality chicks are essential for higher and rapid production. It can be seen from the Table 2 that the farmers used different private sources for the broiler chicks.

Table 2 also shows the marketing age as well as the live weight at marketing age of the broilers in the study area. The average marketing age of broilers from different sources varied from 37-42 days. It is fact that the chicks that grows and reaches the marketing age faster, would be the best for profitable farming as more they will stay in the farm, will eat more feed which will be costly. However, not only the marketing age should be the criteria, but also the live weight at marketing age should also be considered and the data on those parameters have been presented also in Table 2. If the marketing age of broilers and the live weight at marketing are compared, it

Table 1: Broiler population

Farm categories	No. of farmers	Mean	SD
Small producer (up to 1000)	35(35)		
Medium producer (1000-2500)	38(38)	1945	627.28
Large producer (2500 and above)	27(27)		

Figure in parenthesis indicates percentage

can be seen from the data that Kazi Farm is the best supplier of the quality chicks followed by Biman Farm. This result may be varied due to parent stock management and bio-security control of the farm to produce quality chick. In this regard, it needs further investigation.

**Sources of broiler feeds:** Feed cost is one of the most important factors for broiler production. This feed cost occupies about 70% of the total cost of production. A recent report stated that the commercial broiler population is about 61 million and their feed requirement is about 1,83,000 tones per year (Tareque, 2001). It can be seen from the Table 3 that the farmers under study used nine sources for their broiler feed. Among the studied farmers the highest number of farmers used Kazi feed (22%) followed by its nearest source Aftab feed (19%). Usha feed occupied the 3rd position. According to the opinion of farmers that the Kazi and Aftab feed were superior in comparison with other sources. Farmers also reported that the price of Kazi feed was also lower (Tk.13.50) than the other sources (Tk.14 and more) of feed.

The Table 3 also shows the current production (ton per h) and total annual production (tons) in the year 2000-2001 of the experiment related feed farms.

**Duration of feed storage:** Farmers stored their broiler feeds for the duration from 1 to 9 days. They used mash, crumble and pellets for feeding broilers. Three types of broiler feeds (starter, grower and finisher) were used. Farmers stored the broiler feeds in a room, which was mainly made by bamboo wood and tin. The Table 4 revealed that the duration of feed storage differed from farm to farm. In the study area most of the small producers usually stored feeds for 1-2 days due to lack of their storage facilities. Mainly large producers stored their feeds for 5-7 days or more. They had some facilities also to store feed for longer days. Number of the farmers and the duration of preservation are given in a Table 4. Due to lack of hygienic processing and proper storage of livestock feeds are contaminated with mould and fungi. According to WHO approximately 25% of all food commodities produced on the earth are contaminated with mycotoxin. Moulds utilize nutrients present in the feedstuff for their metabolism and propagation reducing the nutritional quality as well as palatability of grain (Sapcota and Islam, 2003). As a result lowering body

Table 2: Sources of broiler chicks and its impact on productivity

Name of sources	No. of farmers used the sources	Average marketing age (days)	Mean (day)		Average body weight/broiler at marketing age (g)	Mean (g)	
			Mean (day)	SD		Mean (g)	SD
Kazi	27 (27)	37			1500-1600		
Biman	17(17)	40			1600-1700		
Proshika	16(16)	42	39.73	1.85	1600-1700	1598	53.52
BRAC	29(29)	40			1500-1600		
Aftab	11(11)	42			1600-1700		
Total	100						

# Figure in parenthesis indicates percentage

Table 3: Sources of poultry feeds for the farmers and their production capacity

Sources	No. of farmer used the sources	Current production (ton per h)			Total annual production (tons) in year 2000-2001
		Mash	Pellet	Total	
Kazi Farms Ltd	22 (22)	2.00	0.00	2.00	7,200
Aftab Farms Ltd	19 (19)	1.50	8.50	10.00	45,000
Paragon Poultry	11 (11)	1.00	7.00	8.00	28,000
Quality Feeds	11 (11)	2.00	8.00	10.00	30,000
Usha Feed	13 (13)	3.00	6.00	9.00	30,000
Nourish Poultry	10 (10)	2.00	4.00	6.00	20,000
BRAC Feed	03 (03)	2.50	6.00	8.50	24,000
Proshika Feed	02 (02)	1.50	0.00	1.50	1,080
United Feed	09 (09)	1.00	0.00	1.00	1,800

# Figure in parenthesis indicates percentage. Source: Tareque (2001)

Table 4: Duration of storage of mash, crumble and pellet feeds for broilers

No. of farmers	Duration of feed storage (days)	Mean	
		Mean	SD
15 (15)	1-2		
61 (61)	3-4		
17 (17)	5-6	4.11	1.62
07 (07)	7 and above		

# Figure in parenthesis indicates percentage

Table 5: Nutrient composition of broiler feeds

Sources of feed	Category	DM (%)	CP (%)	CF (%)	Ash (%)
Aftab Feed	Starter	88.96	18.52	8.11	10.25
	Grower	89.32	21.19	7.00	7.34
	Finisher	89.55	19.99	5.33	7.55
Kazi feed	Starter	90.33	20.66	5.62	7.64
	Grower	89.43	21.63	4.19	5.56
	Finisher	89.99	20.71	4.11	5.46
Paragon feed	Starter	90.40	19.12	6.21	6.33
	Grower	89.74	20.87	5.93	5.92
	Finisher	89.53	19.95	5.77	5.98
Quality feed	Starter	88.52	18.59	8.24	9.29
	Grower	89.73	21.07	7.25	7.71
	Finisher	89.58	19.79	6.77	7.11
Usha feed	Starter	90.21	20.59	5.67	7.59
	Grower	89.96	21.62	4.92	5.67
	Finisher	89.72	20.73	4.17	5.51
BARC feed	Starter	85.21	18.01	9.31	10.39
	Grower	86.17	19.43	7.11	8.54
	Finisher	85.11	18.87	7.07	8.21
Homemade feed	Starter	84.21	17.49	8.21	9.26
	Grower	85.92	18.99	7.32	8.53
	Finisher	84.01	18.20	6.11	7.19

weight gain, feed consumption and reduction in nutrient retention. So, in Bangladesh condition we need more research activities regarding feed processing and its storage.

**Nutrient composition of broiler feeds after storage:**

From Table 5 it is observed that CP% varies from 1-2% in the farm of the study area. The CP level of the starter diets of different sources supplied to the sample farmers seems to the lower than the recommended (22%). However, the levels for growers and finishers diets seem to the similar to the recommended one. It is interesting to note that the CP level of all the three diets of homemade diets were lower than those of the feed mill sources. Even then, the broilers fed on homemade diets the similar production status as those they were fed on mill sources. Crude fiber content of all the diets irrespective of the sources ranged from 4-9%.

**Feed intake and FCR of broilers up to marketing age:**

FCR is always related to feed intake of broiler chicks. Average feed intake, body weight and FCR of broilers at marketing age of the sample farms in the study area are presented in Table 6. Better FCR was found in Kazi (2.03:1) and Aftab's (2.09:1) birds (Table 6). Kazi birds showed the highest value for FCR which indicated that taking lower feed intake and their body weight gain was higher. To gain market weight (1550 g) Kazi birds' feed intake was 3150 g at marketing age. Body weight and feed consumption at marketing age is shown in Fig. 1. The highest body weight gain at marketing age was observed in Biman, Proshika and Aftab birds where there total feed intake were also higher then Kazi and BRAC. Birds FCR was higher when feeding and management system was properly maintained (Kim and Chung, 1993).

Table 6: Average feed intake, weight and FCR of broilers up to marketing age

Name of the Sources of Broiler chicks	Average feed intake (g) up to marketing age	Mean	SD	Average body weight (g) broiler up to marketing age	Average FCR at marketing age
Kazi	3100-3200			1500-1600 (37 days)	2.03:1
Biman	3500-3600			1600-1700 (40 days)	2.15:1
Proshika	3500-3600	3355.44	165.54	1600-1700 (42 days)	2.17:1
BRAC	3300-3400			1500-1600 (40 days)	2.26:1
Afteb	3400-3500			1600-1700 (42 days)	2.09:1

# Figure in parenthesis indicates marketing age

Table 7: Effect of feed on feed intake, body weight gain and FCR of broilers up to marketing age

Category	No. of farmers		Average feed intake (g) broiler	Average body weight (g)	Average FCR
	No.	percent			
Use mash diet	21	21	3378	1526	2.21:1
Use crumble or pellet diet	79	79	3251	1602	2.03:1

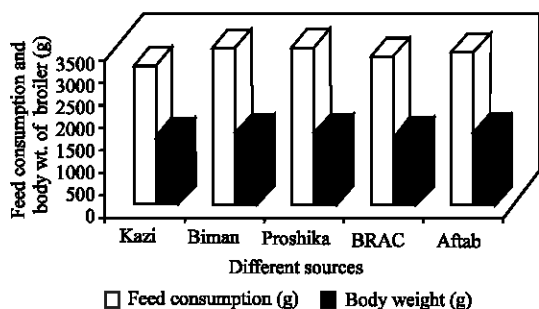


Fig. 1: Body weight gain and feed consumption of broilers procured from different sources

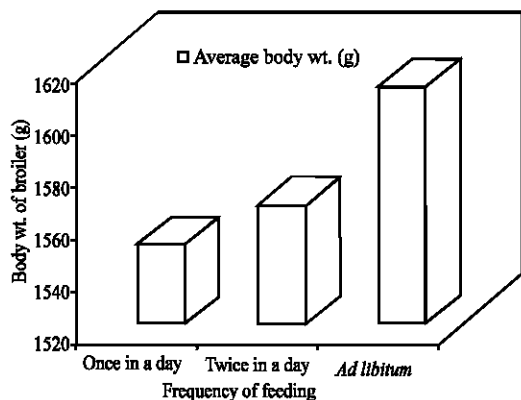


Fig. 2: Feed supplied and body weight (g) of broileras affected by frequency of feeding

**Use of mash, pellets and its impact on productivity:** Mash, crumble and pellet form of feed influence the growth of broiler and also its total production. Only Aftab Bahumukhi farms Ltd produces crumble for broiler starter diet in our country. So very few farmers use crumble diet for their broiler starter ration. Maximum farmers used pellet for their broiler starter, grower and finisher ration. Table 7 shows that 21% farmer used mash diet and the average

feed intake (g) per broiler was 3378 g with average FCR 2.21:1. On the other hand, 79% farmers used crumble or pellet diet, the average feed intake (g) per broiler was 3251 g and the average FCR was 2.03:1. The relatively higher performance of broiler was obtained when the farmers fed crumble or pellet rather than mash. The present results are also in well agreement with the findings Reddy and Narahaari (1993) who obtained that the broilers fed on crumble-pellet diet gained higher bodyweight than those on mash diet.

**Frequency of feeding and its impact on productivity of broilers:**

In the study area 11% farmers provided feed to their broilers once in a day. Sixty two percent farmers provided feed twice a day and 27% farmers provided feed *ad libitum* to there broiler and average body weight (g) per broiler up to marketing age was about 1550, 1565 and 1610 g, respectively (Fig. 2). None of the farmers reported to provide feed restriction. Feed restriction did not always give good results. However a mild restriction may offer some economic advantages over an *ad libitum* feeding regimen, mainly to reduce mortality (Lippens *et al.*, 2000). The values of the study presented in Fig. 2 shows that body weight of broilers was high when intake was *ad libitum*, but it was not economic. In the investigated area most economic system was to provide feed twice a day.

**REFERENCES**

BBS., 1998. Statistical Pocket Book of Bangladesh Bureau of Statistics, Ministry of Planning, Government of the Peoples of Bangladesh, Dhaka.  
 DLS (Department Of Livestock Services), 2001-2002. Genera Information Related to Livestock. Ministry of and Livestock Bulletin. Published by Fisheries and Livestock Information Office Khamarbari, Fmgate, Dhaka, Bangladesh.  
 Gueye, E.L.H.F., 1998. Village egg and fowl meat production in Africa. J. Word Poul. Sci., 54: 73-86.  
 Hassan, K.Z. and K.Z. Hassan, 2003. Broiler- Domestic Market, WTO and Export. Paper Presented in 3 International Poultry Show and Seminar. Bangladesh, pp: 244-250.

- Kim, H.H. and Y.H. Chung, 1993. Effect of dietary feed from regimen on broiler chicken performace. RAD J. Agric. Sci., 35: 554-558.
- Konashi, S., K. Takahashi and Y. Akiba, 2000. Effect of dietary essential amino acid dedficiencies on immunological variables in broiler chickens. Br. J. Nutr., 83: 449-456.
- Lippens, M., G. Roon, G.D. Groote, E. Decaypere and G. Groote, 2000. Early and temporary quant itative food restriction of broiler chicken. Br. Poult. Sci., 41: 343-354.
- Reddy, P.S. and D. Narahari, 1993. Effect of dietary energy levels and pellinging of feed on the performance of broilers in tropecs. Indian J. Anim. Sci., 63: 478-480.
- Sapcota, D. and R. Islam, 2003. Aflatoxicosis: An insidious problem in poultry in poultry production: How to contain It? Paper Presented at 3rd International Poultry Show and Seminar. Held on February 28 to March 2, 2003, Dhaka, Bangladesh.
- Tareque, A.M.M., 2001. An overview of feed industry in Bangladesh. Paper presented in the Feed Milling Seminar organized by Poultry Sector Development Project, Held in August, 20-23.