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Productive performance of different broiler strains under the intensive management in Kishoreganj district of Bangladesh

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Abstract

Nine thousand commercial broiler chicks of three different strains (Cobb-500, Ross Broiler, Hubbard Classic) were investigated from Day-Old to 30 days of age to compare their performance characteristics with similar open housing, feeding and near about same environmental management condition in Kishoreganj district. The strains were assigned to three groups with three different poultry feed formulated by different recognized feed company in Bangladesh. In the present study, the mortality (%) was found 4%, 4.7 % and 3.5% in Cobb-5oo, Ross broiler and Hubbard classic strains respectively. In this study it was recorded that the average feed consumption per bird was higher by Ross Broiler (2439.56 gm) than Hubbard classic (2171.38 gm) and Cobb-500 (2154.23 gm). In case of live weight, it was found that the average live weight per bird was higher by Cobb-500 (1554.66 gm) followed by Hubbard Classic (1511.66gm) and Ross Broiler (1491.67 gm). After final analysis it was found that average better FCR was provided by Cobb-500 (1.39) than Hubbard Classic (1.44) and Ross Broiler (1.64). For Provita feed, Nourish feed and New Hope feed the mortality was 4.7%, 3.53%, 4.03% ; feed intake was 2268.36gm, 2228.76gm, 2268.38gm; average body weight was 1518gm, 1529.66gm, 1510.33gm and FCR was 1.49, 1.46, 1.5 respectively. There was no significant ($p>0.05$) difference of performance with the provided feed. But the result indicated that there was a significant relationship of broiler strain with its performance.
In conclusion, Cobb-500 broiler strain is appeared to be the most economical to rear amongst the three broiler strains investigated here in response to their performance records.

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Introduction

The poultry sector is an important avenue in fostering agricultural growth and reduces malnutrition for the people in Bangladesh. It provides cheapest animal protein (nutritious egg and meat) for human consumption within shortest period of time. Meat is an excellent source of high quality and readily digestible protein and can play a significant rule in alleviating the nutritional status of the

people. They are also good sources of micro nutrients (Bender, 1992). Poultry meat alone contributes 37% of the total meat production in Bangladesh. Poultry contributes about 22-27% of the total animal protein supply in the country. According to the national health strategy, an adult people need 120 gm of meat every day. However, presently the availability is only 67.17gm. The consumption of meat in developing countries grew by 70 MMT from 26 MMT during last 5 years (Financial Express, 2014). This increasing trend will continue due to increase in population, higher income and health consciousness of the people. By the year 2020, world population would be lifted to 8 billion with most of the population growth coming from the developing countries (Singh *et al.,*2001). To reduce the shortage of animal protein in the country, broiler can play an important role. The modern broiler chicken is fast growing, efficient and can rapidly fulfill the shortage of protein requirement since it can be produced at least possible time as compared to other meat producing animals. According to WHO-FAO joint survey, meat consumption per head in Bangladesh is 15.23kg per year while the requirement is 43.8kg per person. So there is a deficit of 65.23% to meet our domestic requirement. It may be noted that poultry contributes 35.25% of total meat supply (Akber *et al.,* 2013). According to poultry Association on an average people consume 3.63 kg of poultry meat per year which is expected to be 5 kg by 2015 and 12kg by 2021. Poultry production has greatly flourished during last three decades in Bangladesh. The expansion of commercial broiler production in Bangladesh has a great potential for the partial fulfillment of huge protein gap of the country. There are 6 Grand Parent farms which supply 80% of the total demand for parent stock and rest 20% are imported. In the country 82% stock farms are operating and of producing 55-70 lakh DOC of broiler and 5 lakh Layer DOC per week estimated by breeder association (Raha *S K,* 2015). Poultry industry contributes 1% to the country's GDP while at least 60 lakh people are involved in the sector, but the industry lacks proper support from the government as claimed by stakeholders. Various strains of broiler have been developed in the past with a view to obtain maximum meat production. The body weight gain of the broiler strains has been markedly increased and feed utilization has been strongly improved with the advancement of new technology applied in poultry nutrition as well as in genetics. The broiler breeder strains commonly used by the broiler industry in Bangladesh are Arbor Acres, Hub chicks, Ross, Starbro, Hubbard classic, Cobb-500, MPK, Lohman, G and Hybro N (Latif 1999).Feed constitutes about 60-70% of the total cost of broiler production (Banerjee, 1998).The major objective of poultry feeding is the conversion of feedstuff into human food. Nowadays, various commercial feed mills are producing different forms of broiler feed for different age group of bird. The physical form of feed (mash, pellet and crumble) is a crucial factor in meat yield of broiler but their nutritional status varies to a great extent. The actual level of nutritional status of feed can be directly supervised by direct laboratory analysis of ready feed. Therefore, the present study was conducted to observe productive performance and economic suitability of three broiler strains in Kishoreganj district.

Materials and method

The report was based on survey work and there was no laboratory analysis in this study. The study was conducted at the different upazila namely Kotiadi, Karimganj, Hossainpur and also from sadar in Kishoreganj district. These upazila were selected on the basis of number of poultry farm observed frequently. Before site selection, a good relationship was built up with different relevant offices and other related people in the target areas.

Data collection

After site selection a survey was made by going poultry feed and chick agent's office of selected feed company who have broiler farms. Nine farms (1000 DOC/farm) were selected from each of the agent/farmer from my selected area in December 2018. The data were collected from nine rural poultry farm namely Mizan poultry farm, Harun poultry farm, Maa moni poultry farm located at Kotiadi upazila; Shima poultry, Imran poultry farm, Surma poultry farm located at Karimganj upazila; Norosunda poultry farm, Masum poultry farm and brothers poultry farm located at Hossainpur to determine the production performance and economic suitability of three broiler strains in Kishorgonj district. The broiler strains which were selected for this study were Cobb-500, Hubbard Classic, Ross Broiler collected from Provita Hatcheries Ltd., Aftab Bohumukhi farm Ltd. and CP Bangladesh Ltd. respectively. Each of the strain was supplied their feed from 3 well known feed companies. The name of the feed companies was Provita feeds Ltd., Nourish feeds Ltd. and New Hope Agrotech Bd. Ltd. The birds were reared in open sided farm house and from day old to 30 days providing identical care and management. Before interviewing the farmers were given a brief description about the purpose of study. Collections of accurate and reliable data were done cautiously since the reliability of survey depends on the authenticity of data to be obtained.
Live weight gain, FCR and Mortality % were calculated by the following ways:
LWG= Achieved body weight of the birds (g) - Initial body weight (g) of the birds
FCR= Feed intake (gm) / Body weight gain (gm)
Mortality % = (No. of birds died / No. of birds starting) ×100

1. Management procedure

During the rearing periods the broiler were exposed to continuous light and provided 1350 cm^2 floor space per bird. Average temperature and humidity recorded for each batch with the help of thermometer and hygrometer. Each farm contained adequate amount of feeder and drinker for proper feeding and drinking. Litter of wood shaving materials to a depth of 2 cm was spread on the floor of each farm to maintain a comfortable environment for the birds. Feeders were cleaned daily before supplying diets and drinkers were washed weekly to maintain hygienic condition for the birds. Day old chicks were brooded up to 12 days providing adequate light and temperature. Continuous lighting was provided throughout the trial period. Feeds were provided in a pellet form. Birds had free access to water and feed which were provided adlibitum throughout the trial period. All the birds received the necessary vaccines against Newcastle disease, Infectious Bursal disease and Infectious Bronchitis disease and medicines for disease protection. Cost of production was determined by considering expense on feed, chicks, labour, vaccine, litter and miscellaneous cost. The nutrient compositions of the experimental feeds are shown in table 1 and 2.

Table 1: Nutrient composition of Provita feed

Nutrient	Starter (1-12 days)	Grower (13-23days)	Finisher (24 up to sell)
ME(kcal/kg)	3050	3100	3150
Cp%	23	22	21
Ca%	1.1	1.2	1.2
P%	.45	.50	.50
Fat%	5	5.5	5.5
CF%	3.5	4	4
Lysine%	1.25	1.20	1.15
Methionine%	.55	.50	.50
Vita and mineral%	*Adlibitum*	*Adlibitum*	*Adlibitum*
Humidity%			

Source: www.provitagroupinfo.com

Table 2: Nutrient composition of Nourish feed

Nutrient	Pre Starter (1-6 days)	Starter (18-28days)	Finisher (29-up to sell)
ME(kcal/kg)	2950	3000	3050
CP%	21	20	19
Ca%	1	.95	.9
P%	.45	.45	.42
CF%	5	5	4
Lysine%	1.15	1.05	1
Methionine%	.4	.45	.42
Vitamin and mineral%	*Adlibitum*	*Adlibitum*	*Adlibitum*
Humidity%	12	12	12

Source: www.nourish-poultry.com

Table 3: Nutrient composition of New Hope feed

Nutrient	Starter (1-12days)	Grower (13-23days)	Finisher (24 up to sell)
ME(kcal/kg)	3000	3100	3150
CP%	22	21	20
Ca%	1.1	1.2	1.2
P%	.45	.5	.5
CF%	3.5	4	4
Lysine%	1.25	1.20	1.15
Mithionine%	.55	.5	.5
Vita and mineral%	*Adlibitum*	*Adlibitum*	*Adlibitum*
Humidity%			

Source: www.newhopeagri.com

2. Statistical analysis

Statistical analyses were performed by using Minitab software [Minitab version 15]. Data were analyzed using two-way ANOVA where two factors were strain and feed .The confidence level was 95%.

Results

Comparative performance of Cobb-500, Ross Broiler and Hubbard Classic strain were analyzed with providing different formulated feed by three well recognized feed companies in Bangladesh namely Provita feeds Ltd, Nourish feeds Ltd and New Hope Agrotech Bd. Ltd. The rearing period were 30 days for each farm. For the determination of comparative performance and economic suitable broiler strain in Kishoreganj district, data were collected from nine different poultry farms located in Kishoreganj district. Summarized data are shown in the table 4, 5, 6, 7 and 8 respectively.

Table 4: Production performance of Cobb-500 strain

Variable	Farm 1 (Provita feed)	Farm 2 (Nourish feed)	Farm 3 (New Hope Feed)
Mortality%	3.5	4.2	4.3
Rearing period(day)	30	30	30

Total feed intake bird^{-1} gm	2140	2149.9	2172.81
Daily feed intake bird^{-1} gm	71.2	71.797	72.427
Feed conversion ratio	1.38	1.37	1.41
Live weight gain bird^{-1} gm	1551	1571	1542

Table 5: Production performance of Ross broiler strain

Variable	Farm 1 (Provita feed)	Farm 2 (Nourish feed)	Farm 3 (New Hope Feed
Mortality%	6.8	3.5	3.8
Rearing period(day)	30	30	30
Total feed intake bird^{-1} gm	2535	2382.23	2402.46
Daily feed intake bird^{-1} gm	84.45	79.35	80.082
Feed conversion ratio	1.7	1.59	1.62
Live weight gain bird^{-1}	1492	1500	1483

Table 6: Production performance of Hubbard Classic strain

Variable	Farm 1 (Provita feed)	Farm 2 (Nourish feed)	Farm 3 (New Hope Feed)
Mortality%	3.8	2.9	4
Rearing period (day)	30	30	30
Total feed intake bird^{-1} gm	2130.1	2154.15	2229.88
Daily feed intake bird^{-1} gm	71	72.02	74.296
Feed conversion ratio	1.41	1.42	1.48
Live weight gain bird^{-1} gm	1511	1518	1506

Table 7: Average feed conversion ratio of different strain

Strain	Mortality%	Average feed consumption (gm bird^{-1})	Average body weight (gm bird^{-1})	Feed conversion ratio (FCR)
Cobb-500	4	2154.23	1554.66	1.39
Ross Broiler	4.7	2439.89	1491.67	1.64
ubbard Classic	3.5	2171.38	1511.66	1.44

1. Mortality (%)

In the present study, the mortality of our broiler strains during the study period (30days) were 4%, 4.7% and 3.5% in Cobb-500, Ross Broiler, and Hubbard Classic broiler strains ,respectively [Table 7]. Mortality of the three strains throughout the entire rearing period did not show any significant ($P>0.05$) difference between the target groups. It was also found that average mortality % were 4.7, 3.53 and 4.03 for Provita feed, Nourish feed and New Hope feed by selected strains and it also did not show any significant ($P>0.05$) difference between the target groups throughout the entire rearing period [Table 8].

Table 8: Average feed conversion ratio of different feed company

Feed company	Mortality%	Average feed consumption (gm bird^{-1})	Average body weight (gm bird^{-1})	eed conversion ratio (FCR)
Provita	4.7	2268.36	1518	1.49
Nourish	3.53	2228.76	1529.66	1.46
New Hope	4.03	2268.38	1510.33	1.5

2. Feed Intake

Total feed intake of Cobb-500 strain per bird was 2140 gm, and 2149.9 gm for Provita feed, Nourish feed and New Hope feed respectively. It was found that feed consumption per bird was slightly higher at New hope feed and lowest at Provita feed [Table4]. Ross Broiler strain consumed 2535 gm, 2382.23 gm, 2402.46 gm feed per bird for Provita feed, Nourish feed and New Hope feed respectively. It was found that feed consumption per bird was higher at Provita feed and lowest at Nourish feed than New Hope feed [Table5]. Hubbard Classic strain consumed 2130.1gm, 2154.15gm and 2229.88 gm feed per bird for Provita feed, Nourish feed and New Hope feed respectively. It was found that feed consumption by Hubbard Classic strain was higher for New Hope feed and it was lower for Provita feed and Nourish feed respectively [Table 6]. After final analysis it was found that average feed consumption per bird was higher by Ross broiler (2439.89) than Hubbard classic (2171.38 gm), Cobb-500 (2154.23gm) [Table7]. It was also found that average feed consumption per bird by selected strains was slightly higher for New Hope feed (2268.38 gm) than Nourish feed (2228.76 gm) and Provita feed (2268.36 gm) [Table 8]. This result indicates that there was no significant ($P>0.05$) difference of total feed intake with the provided feed. But final result indicated the significant ($P>0.05$) difference of total feed intake with broiler strain.

3. Live weight

Result of average live weight gain of Cobb-500, Ross Broiler and Hubbard Classic strain providing feed from three different feed company (Provita, Nourish and New Hope) are also shown in the table 4,5 and 6 respectively. At 30 days of age, body weight differ significantly ($P<0.05$) between the strains. It has been showed that at 30 days average live weight gain of Cobb-500 strain were 1551gm, 1571 gm and 1542 gm per bird for Provita feed, Nourish feed and New Hope feed respectively [Table 4]. It was found that Cobb-500 was providing better body weight for Nourish feed. Live weight gain of Ross Broiler strain were 1492 gm, 1500gm and 1483 gm per bird for Provita feed, Nourish feed and New Hope feed respectively [Table 5]. Live weight gain of Hubbard Classic strain were 1511 gm, 1518 gm, and 1506 gm per bird Provita feed, Nourish feed and New Hope feed respectively [Table 6]. It was found that Nourish feed providing better body weight for all three strains than Provita feed and New Hope feed.
After final analysis it was found that average live weight per bird was higher by Cobb-500 (1554.66 gm) than Hubbard Classic (1511.66 gm), Ross Broiler (1491.67 gm) [Table 7]. It was also found that average live weight per bird by selected strains was slightly higher for Nourish feed (1529.66 gm) than Provita feed (1518 gm) and New Hope feed (1510.33gm) [Table 8].This result indicates that there was no significant ($P>0.05$) difference of live weight gain with broiler strains and the provided feed.

4. Feed conversion ratio (FCR)

Feed conversion ratio was influenced ($P<0.05$) by strains. FCR of Cobb-500 strain was 1.38, 1.37 and 1.41 for Provita feed, Nourish feed and New Hope feed respectively. It was found that Nourish feed provided better FCR than Provita feed and New Hope feed [Table 4]. FCR of Ross Broiler strain was 1.7, 1.59 and 1.62 for Provita feed, Nourish feed and New Hope feed respectively. It was found that Nourish feed provide better FCR than Provita feed and New Hope feed [Table 5]. FCR of Hubbard Classis strains were 1.41, 1.42 and 1.48 for Provita feed. Nourish feed and new hope feed respectively .It was found that Provita feed provide better FCR

than Nourish feed and New Hope feed [Table 6]. The lowest figure of FCR indicates that birds of this strain (Cobb-500) are supposed to be more efficient in converting feed to meat than others. After final analysis it was found that average better FCR was provided by Cobb-500 (1.39) than Hubbard Classic (1.44) and Ross Broiler (1.640) [Table7]. It was also found that the average FCR by selected strains was slightly better for Nourish feed (1.48) than Provita feed (1.49) and New Hope feed (1.50) [Table8]. This result indicates that there was no significant ($P<0.05$) difference of FCR with the provided feed. But final result indicated that the significant ($P<0.05$) difference with broiler strain and FCR.

Discussion

1. Mortality%

The mortality of the broiler strains were unaffected by all the groups throughout the study period (dl-30). Birds of Hubbard Classic showed less mortality compared to others. In this study it was found that mortality percentage was minimum for Hubbard Classic (3.5%) followed by Cobb -500 (4%) and Ross Broiler (4.7%) It may therefore, be deduced that strains did not adversely affect the bird livability. So to say the effect of strain on the livability percentage of broiler chickens is exiguous or nominal. The current findings are in agreement with that of Sarker *et al*., (2001-2002) and Rokonuzzaman *et al.,* (2015) who demonstrated that strains had no adverse effect on livability of the birds. In another report Hossain *et al.,* (2011) stated that there were no significant differences ($P>0.05$) of mortality in different strains. Mortality in a broiler flock is very important consideration for successful and profitable broiler production and it should minimize within 5%.Islam *et al*., (1998) found average mortality of 2.33% in a broiler flock providing different types of ration. Sarker (1998) observed the effect of feeding vitamin mineral premix on the mortality of broiler and found the mortality of 3.33% and 1.66% for traditional feed and vitamin mineral supplemented feed, and lowest in CLP trained farmers (85.0 Taka) among respectively. However, Rahman *et al*., (1996) observed higher mortality of broiler in different season. They found the broiler mortality of 24, 24 and 25% in summer winter and rainy season respectively.

2. Feed intake

The ingestion of the optimal level of dietary nutrients, whether for birds involved in egg or meat production, is very much dependent on the level of feed intake. The complexities of the factors which determine nutrient intakes and causative reasons and hypothesis for under or over consumption, have been reviewed extensively by many former researchers (Forbes, 1995; van der Heide *et al*., 1999; Forbes 2006). Birds have precise requirements for nutrients, both macro and micro and energy-yielding components. Therefore, knowledge of their feed intake capacity is essential if dietary concentrations are to be appropriate. A bird's daily consumption of feed ultimately governs its health, development and potential for reproduction.However, in this study the average feed consumption per bird was higher of Ross Broiler strain (2439.89gm) corresponding Hubbard Classic (2171.38gm), Cobb-500 (2154.23gm). Ross broiler was found to be higher than other strain in this study.The higher feed consumption of the strains may be resulted from the heavier body weight and individual body requirements of the birds. In addition, the reason for higher feed intake may be explained by several other factors including breed or strain, feed quality, palatability of feed, age, sex, individual body temperature, stage of production, climatic effect and other environmental conditions. Smith *et al*., (1998) reported

that strain and sex can affect feed intake and feed conversion ratio. Goliomytis *et al*., (2003) reported that feed intake was comparable between Cobb-500 and shaver Starbro strains through 154 days of age .They reported that feed intake of broilers increased until 84 days of age and then declined until 112 days of age. These findings are in agreement with their results, as this experiment was ended at 30 days and there was also a continuous increase in feed intake. However, in contrast, the poor performance and reduced feed intake of the broiler strains may be affected by the adverse environmental impact. This strain is supposed to be less heat- tolerant than others, which might affect their feed consumption capacity and other performance as well. Baghel and Pradhan (1989) and Islam (2000) reported that broiler performance is reduced significantly when they are raised under hot humid and dry seasons than the cold-climatic condition.

3. Live weight

Traditionally, the salient criteria for appraising the performance of the broiler strains have been growth rate and feed conversion efficiency and less frequently, carcass composition (Cahaner *et al*., 1987; Cabel and waldroup, 1991; smith and pesti, 1998; Rezaei *et al*., 2004) but some strains may show higher mortalities and a great variation in final body weight than others due to several factors (strains, sex, feed, disease incidence, environmental condition and so on). Chicken growth is well described as a sigmoid curve with an initial exponential development phase and a final phase of inhibited growth that consists of gradual reduction in growth rate following a asymptotic increase in the body weight (Aguilar *et al.,* 1983).However, in this present study significant differences were observed in the live weight and average body weight gain among the three broiler strains rearing under the farming conditions of Bangladesh. In this study it was found that, average live weight per bird was Cobb-500 (1554.66 gm) followed by Hubbard Classic (1511.66 gm) and Ross Broiler (1491.67 gm). It was found that Cobb-500 broiler strain achieved heavier body weight and higher weight gain than the other strains. The improved body weight gain of this strain, possibly due to higher feed intake and several other factors might be involved herewith. My study results are in agreement with the reports of several others previous researchers (Gonzales *et al*., 1998; Sarker *et al*., 2001 and 2002; Abdullah *et al*., 2010; Hossain *et al*., 2011) who found similar variations in rearing different strains under experimental conditions. Some study reported that there were no significant differences (P>0.05) among the three strains Cobb-500, Hubbard Classic and Arbor Acres in first, second and third and fourth weeks of age (Azad, 1996, Hossain *et al*., 2011; Zullitch *et al* 1989 and Makram *et al*., 2010).The differences of the live weight and weight gain of the broiler strains may be explained by different factors, for example, genotype ,feed, sex, strains, environmental conditions, climatic effects and so on. Gonzales *et al*., 1998; found strain effects among several strains of birds in live weight. Korver *et al*., 2004; reported that genotype may affect the body weight of different broiler strains. Genetic variation of the strains amongst other factors might give rise to body weight variation between two individual birds. So it is assumed that more weight gain of Cobb-500 broiler strain might arise from the genetic make-up during the embryonic stage, which can lead to having different growth potential, and it may be possible owing to the strain effect and some other factors might be involved herewith. Broiler reached to each target weight of broiler (Cobb-500) was more or less closed to the standard weights as indicated by Cobb Breeding Company Limited (Cobb-500, Commercial Broiler Management Guide, 2004).According to data published by the Breeding Company, the Cobb-500 achieves 765 gm weight at 21 days and 1259gm at 28 days where as the broiler birds in this study achieved 1554.66gm at 30 days.

4. Feed Conversion Ratio (FCR)

Feed conversion ratio (FCR) is a measure of how well a flock converts feed intake into live weight and provides an indicator of management performance, and also profit at any given feed cost. As feed cost represents 60-70% of the total cost of broiler production, the efficient conversion of feed into live weight is essential for profitability, and small changes in FCR at any given feed price can have a substantial impact on financial margins. Solving or preventing FCR problems in a flock requires both good planning and good management. Anything that effects live weight, feed intake or feed wastage will influence FCR. The key to preventing FCR problems is ensuring that throughout the brooding and grow-out period, good management practices are in place. Management practices should always ensure that feed intake is optimized and feed wastage minimized, as a reduction in feed intake per se (as opposed to feed usage; feed intake plus feed wastage) will not be beneficial to FCR. Quite the opposite, because live weight gain is positively correlated with feed intake, high feed intakes will usually improve FCR. This is because birds growing faster reach slaughter weight in fewer days. The conversion of feed to live weight is a complex process and the cause of a poor or high FCR is usually multi-factorial. Correcting an FCR problem requires a multi-disciplinary approach, with input and coordination across all areas of management, health and nutrition.FCR values of this study indicated that improved feed efficiency showed by Cobb-500 (1.39) then inferior trend of FCR values was followed by Hubbard Classic (1.44) and Ross Broiler (1.64) subsequently at 30^{th} days of age. FCR of the Cobb-500 broiler strain was found to be superior to other strains in this study. Feed consumption and FCR of broiler (Cobb-500) were slightly lower than the data indicated by the Cobb Breeding Company Limited. According to the breeding Company, birds consume 1003 and 1836 gm feed respectively up to 21 and 28 days with corresponding FCR value of 1.31 and 1.46 respectively (Cobb-500, commercial broiler management guide, 2004). In this study, broiler consumed 2154.23 gm feed with FCR 1.39 at 30 days. This performance might be partly due to the capacity of this strain (Cobb-500) to convert greater quantities of feed and hence greater live weight than in other broiler strains. The improved FCR of Cobb-500 birds indicates that this strain is more efficient in converting feed to meat more rapidly than in other strains. This findings are in agreement with the report of Hossain *et al*., (2011) who also reported that Cobb-500 strain provide better FCR than other strain in Bangladesh. In another report by Abdullah *et al*.,(2010) who also found similar FCR value in Hubbard Classic strain of broilers. Feed conversion is a complex, highly aggregate trait that is the net result of the interaction of many different component traits. There are also some factors present that affect the FCR of a flock such as mortality and disease. High mortality, especially late mortality, will result in a significant increase in FCR. The dead birds will have consumed a significant amount of feed but will not contribute to final flock live weight. Causes of mortality need to be addressed urgently. According to Arbor Acres service bulletin (2011), if environmental temperature falls below the birds' zone of comfort (i.e. birds become cold), feed intake will be increased. The extra energy provided by this increase in intake will be used to maintain body temperature and not for growth, and in increase in FCR will occur. If environmental temperature increases above the birds' zone of comfort (i.e. birds become hot), feed intake will be reduced, growth will slow and flock FCR will again be increased. There is now plenty of evidence to show that conditions during the hatching process have an effect on gut development and sub sequent nutrient digestion and absorption (Arbor Acres service bulletin, 2011). Furthermore, if temperature and ventilation conditions during chick transportation are not optimized, early chick development can be impaired and final flock FCR will be negatively affected.Depressed

growth rate and decreased feed consumption of birds grown in higher temperature environments have been reported in many studies over a number of years using many genetic groups (Wilson 1948; Suk and Washburn, 1995). Reports on the effect of environmental temperature on efficiency of feed utilization are not as definitive. Several studies (such as Suk and Washburn, 1995) have shown decreased efficiency of feed utilization with increased environmental temperatures; some studies, such as that of stillborn et al., 1998), reported no significant effects of heat stress on efficiency of feed utilization, whereas other studies, such as that of Deaton *et al*., (1968).reported that feed utilization was improved under hot environmental temperatures. Deaton *et al*., (1972) reported that the effect of heat stress on efficiency of feed utilization varied with age.

Conclusion

In this study it is stated that production performance of broilers are slightly affecting by feed. The livability percentage is also lower in our local farm level might be due to the lack of proper management practices and bio-security measures in farm level .The knowledge derived from this study will also increase our understanding about the relationship of broiler strain, commercial feed with production performance of our available commercial broiler strain in Kishoerganj area and taking necessary step at national policy level Finally, it can be concluded that Cobb-500 broiler strain may be recommended as economic and more suitable for rearing under the farming management in Kishoreganj district of Bangladesh.

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