

# **A study on Productive Performance of Different Broiler Strains Fed Different Company Feeds under Intensive Management in Mirasarai**



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# **A study on Productive Performance of Different Broiler Strains Fed Different Company Feeds under Intensive Management in Mirasarai**



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## TABLE OF CONTENTS

Contents	Page No
LIST OF TABLES.....	04
LIST OF ABBREVIATION.....	04
ABSTRACT.....	05
Chapter I INTRODUCTION.....	06 - 08
Chapter II MATERIALS AND METHODS.....	09 - 11
Chapter III RESULT .....	12 - 13
Chapter IV DISCUSSION AND CONCLUSION .....	14 - 16
REFERENCES.....	17-18
ACKNOWLEDGEMENTS .....	19
BIOGRAPHY.....	20

### LIST OF TABLE

Table No	Content	Page No
Table 1	Nutrient composition of Provita feed company	
Table 2	Nutrient composition of Nourish feed company	
Table 3	Nutrient composition of CP feed company	
Table 4	Production performance of Cobb-500 strain	
Table 5	Production performance of Ross Broiler strain	
Table 6	Comparison of production of different feed company	

### LIST OF ABBREVIATION

Abbreviation and Symbol	Elaboration
%	Percent.
<i>et al.</i>	And his associate.
CVASU	Chittagong Veterinary and Animal Sciences University.
DM	Dry Matter
ME	Metabolical Energy
CP	Crude Protein
CF	Crude Fiber
EE	Ether Extract

## **Abstract**

Broiler birds of two unique strains (Cobb-500 and Ross Broiler) were explored from Day-Old to 30 days old enough to compare their performance in same management criteria. The strains were provided with three diverse poultry feed planned by various perceived feed organization in Bangladesh. In this investigation it was recorded that the normal feed utilization per feathered creature was higher by Ross Broiler (2439.56 gm) than Cobb-500 (2154.23 gm). In the event of live weight, it was discovered that the normal live weight per bird animal was higher by Cobb-500 (1554.66 gm) than Ross Broiler (1491.67 gm). After conclusive investigation it was discovered that normal better FCR was given by Cobb-500 (1.39) than Ross Broiler (1.64). Mortality (%) was found 4% and 4.7 % in Cobb-500, Ross Broiler strains separately. For Provita feed, Nourish feed and CP feed the mortality was 4.7%, 3.53%, 4.03% ; feed intake was 2268.36gm, 2228.76gm, 2268.38gm; normal body weight was 1518gm, 1529.66gm, 1510.33gm and FCR was 1.49, 1.46, 1.5 separately. There was no huge ( $p>0.05$ ) contrast of execution with the given feed. Yet, the outcome showed that there was a noteworthy relationship of broiler strain with its presentation. Taking everything into account, Cobb-500 oven strain is had all the earmarks of being the most efficient to raise between two broiler strains researched here in light of their exhibition records.

**Key Word:** Broiler, FCR, Feed, Mortality, Strain

# Chapter 1

## Introduction

Agriculture is the backbone of economy of Bangladesh. Share of livestock in Agricultural Gross Domestic Product is 13.5% and livestock contributes 1.5% of GDP in the national economy employing 20-50% people of Bangladesh (BBS, 2018-19). This small share in GDP has greater contribution to meet up the demand of daily protein. The poultry meat alone contributes 35.3% of the total meat production in Bangladesh (Hamid et al., 2016). Poultry farming in Bangladesh are getting momentum during the last two decades. This is highly sensitive and risk oriented venture. Poultry production in Bangladesh is characterized predominantly by the backyard type and small scale farming for a long time. Poultry industry is creating a good number of employment opportunities in Bangladesh and is contributing a large scale in the economy of Bangladesh. Nowadays small and large scale poultry industry is being established which provide meat, eggs as well as job opportunity. Total population of poultry in our country is approximately 347 million (DLS, 2018-19). There are 16 grandparent farms, 206 breeder farms and approximately 70000 commercial poultry farms employing 8 million people annually (OHPH, Prof Md. Ahasanul Hoque, CVASU, Personal Communication). Broiler chickens are broadly reared for meat purpose, whereas layer chickens are reared for egg purpose.

Total production of meat was 61.52 lakh metric ton in numbers in FY 2015-16 (DLS, 2017). Farm produced broilers, spent hens, cockerels constitute about 55% of the total chicken meat (Hossain, 1999). The per capita availability of meat was 106.21 gm/day/head in the year 2015-16. The demand of meat was 120 gm/day/head and egg 104/head/year supply in the year of 2015-16 (DLS, 2017). The demand of meat is higher in our country than the supply. This data clearly indicate that the abundance of poultry meat is still very much lower in Bangladesh in spite of the significant development in the commercial poultry sector during last 10 years.

Various strains of broiler have been developed in the past with a view to obtain maximum meat production. The body weight gain of broiler has been markedly increased and feed utilization has been strongly improved with advancement of new technology applied in poultry nutrition as well in genetics. The broiler breeder strains that are most commonly used in Bangladesh are Arbor Acres, Hub chicks, Ross, Hubbard classic, Cobb-500, Lohman (Latif 1999). Feed constitutes the

major cost of poultry meat and eggs production which is between 65 to 75%. So, any improvement in the performance of broilers and layer birds due to diet inevitability can have a profound effect on profitability (McNab, 1999).

Poultry feeds are mostly consist of grains (Pattison, 2008). A portion of commercial feed, typically around a quarter, is known as bulk and is indigestible. The amount of bulk is referred to as bulk density (Fuller, 2004). The quantity of feed and the nutritional requirements of the feed, depend on the weight and the age of the poultry as well as the season (Damerow, 2012). Healthy poultry requires sufficient amount of protein and carbohydrates, along with the essential vitamins, minerals, and adequate amount of water. The feed should be cleaned and dried.

The objective of poultry feeding is to convert the low quality feed like cereal grains, oil cakes into high quality feed like meat and eggs. About 30 to 40% of the total feed consumed is converted into meat and egg. The requirement for a given nutrient is the minimum quantity of that nutrient, when all other nutrients are supplied in adequate quantities that will maintain normal growth and production and prevent the development of symptoms of nutritional deficiency (Verma, 2006).

In industrial agriculture, machinery is used to automate the feeding process, reducing the cost and increasing the scale of farming. For commercial poultry farming, feed serves as the largest cost of operation, (James *et al*, 2010). Good quality feed has a several advantages over lower quality feeds i.e; better feed efficiency, faster growth rate, lower mortality, higher survivability and better meat and egg quality etc (Rosenberry, 2002). Moreover, higher quality feeds also drastically reduce the risk of diseases. A good number of feed mills in Bangladesh are producing compound poultry feeds. These are purchased by farm-owners according to their need in order to nourish the poultry birds. Farmers do not have enough facility to evaluate the quality of the prepared or compound feeds. The level of nutrients in the ration prepared in different feed mill may vary from company standard. Deficiency of a particular nutrient in the ration, generally unnoticed by the farm owners can cause an undesirable effect on production.

The number of feed mills is increasing rapidly throughout the country keeping consistent with poultry industry in order to meet up the existing feed need of the farmers. The exact number of feed mills now in operation is not definitely known, but a report stated that there are 40 feed

mills with 900 dealers at the private sector who are producing and distributing poultry feeds all over the country (Latif, 1999). Most rations in the market are well balanced. Although a good number of feed mills are in operation in the country, only a few of these are serious in maintaining quality of their products (Banerjee, 2005). Therefore the present study was conducted to observe productive performance of broiler strains providing feed from 3 different leading companies in Bangladesh- Provita, CP (Charoen Pokphand), Nourish.

**Specific objectives:**

- 1. Observe productive performance of broiler under intensive farm management**
- 2. Compare production performance of broiler strain fed with different commercial feed.**



## Chapter 2

### Materials and Methods

The study was conducted based on the available layer farms in Mirasarai during my internship placement period. The duration of the study was from 13th October to 12th December in 2019. Based on the availability in the farms Cobb-500 and Ross Broiler were selected for the study. In the study area CP, PROVITA and NOURISH feed were more used in the broiler farms. So based on their availability these commercial feeds were selected for the study. 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. A structured questionnaire was developed containing the basic question with a view to extract information regarding the objective of the study such as strain of the bird, type of rearing, type of feed, name of feed company, amount of feed intake, live weight etc.

Live weight gain (LWG), Feed Conversion Ratio (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 as start)\* 100

Nutrient composition of broiler feed 3 feed companies:

Table 1: Nutrient composition of Provita feed

<b>Nutrient</b>	<b>Starter (1-12 days)</b>	<b>Grower (13-23 days)</b>	<b>Finisher (24 day- up to sell)</b>
ME (kcal/kg)	3050	3100	3150
CP%	23	22	21
Ca%	1.1	1.2	1.2
P%	0.45	0.50	0.50
Fat%	5	5.5	5.5

CF%	3.5	4	4
Lysine%	1.25	1.20	1.15
Methionine%	0.55	0.50	0.50
Vita and mineral %	Adlibitum	Adlibitum	Adlibitum

Source: [www.provitagroup.com](http://www.provitagroup.com)

Table 2: Nutrient composition of Nourish feed

<b>Nutrient</b>	<b>Pre Starter (1-6 days)</b>	<b>Starter (18-28 days)</b>	<b>Finisher (29 day- up to sell)</b>
ME (kcal/kg)	2950	3000	3050
CP%	21	20	19
Ca%	1	.95	0.9
P%	0.45	0.45	0.42
CF%	5	5	4
Lysine%	1.15	1.05	1
Methionine%	0.40	0.45	0.42
Vita and mineral %	Adlibitum	Adlibitum	Adlibitum
Humidity%	12	12	12

Source: [www.nourish-poultry.com](http://www.nourish-poultry.com)

Table 3: Nutrient composition of CP feed

<b>Nutrient</b>	<b>Starter (1-6 days)</b>	<b>Grower (18-28 days)</b>	<b>Finisher (29 day- up to sell)</b>
ME (kcal/kg)	2850	2350	3050
CP%	21	20	19
Ca%	1	.95	0.9
P%	0.45	0.45	0.42
Fat	5.5	6	5
CF%	5	6	4
Lysine%	1.15	1.05	1
Methionine%	0.40	0.45	0.42
Vita and mineral %	Adlibitum	Adlibitum	Adlibitum
Humidity%	12	12	12

Source: [www.cpfeed.com](http://www.cpfeed.com)

## Results

Data were collected from 10 different broiler farms located in Mirasarai. Summarized data are presented in following tables.

In case of Cobb-500 strain, total feed intake in 30 days of rearing was nearly same in 3 different feed companies; though slightly high feed intake was found in case of CP (2172.8 gram). Daily feed intake was also almost same. Feed conversion ratio was slightly high in farms fed CP feed (1.41). Live weight gain was found highest in case of Nourish feed company (1571gram), whereas CP has the lowest live weight gain. Lowest mortality was seen in farms feeding Provita feed. (Table 4)

Table 4: Production performance of Cobb-500 strain

<b>Factors</b>	<b>Fed Provita feed</b>	<b>Fed Nourish feed</b>	<b>Fed CP feed</b>
Rearing period (day)	30	30	30
Total feed intake (gram per bird)	2140	2149.9	2172.8
Daily feed intake (gram per bird)	71.2	71.8	72.43
Feed conversion ratio	1.38	1.37	1.41
Live weight gain (gram per bird)	1551	1571	1542
Mortality %	3.5	4.2	4.3

In Ross Broiler strain, total feed intake in 30 days of rearing slightly varied in 3 different feed companies; higher feed intake was found in case of Provita feed (2535 gram). Daily feed intake was also almost same. Feed conversion ratio was slightly high in farms fed Provita feed (1.41). Live weight gain was found highest in case of Nourish feed company (1500 gram), whereas CP has the lowest live weight gain. Lowest mortality was seen in farms feeding Provita feed. (Table 5)

Table 5: Production performance of Ross Broiler strain

<b>Factors</b>	<b>Fed Provita feed</b>	<b>Fed Nourish feed</b>	<b>Fed CP feed</b>
Rearing period (day)	30	30	30
Total feed intake (gram per bird)	2535	2382.23	2402.46
Daily feed intake (gram per bird)	84.45	85.13	84.79
Feed conversion ratio	1.7	1.59	1.62
Live weight gain (gram per bird)	1492	1500	1483
Mortality %	3.5	4.2	4.3

All the variables (Average feed consumption, average body weight gain, feed conversion ratio, mortality percentage) varied slightly in farms fed different company feed.

Table 6: Comparison of production of different feed company

<b>Feed company</b>	<b>Average feed consumption (gram per bird)</b>	<b>Average body weight gain (gram per bird)</b>	<b>Feed conversion ratio (FCR)</b>	<b>Mortality%</b>
Provita	2268.36	1518	1.49	4.7
Nourish	2228.76	1529.66	1.46	3.53
CP	2268.38	1510.33	1.5	4.03

## Discussion and Conclusion

From the perceptions of the examination it can clearly be said that, creation exhibitions of Cobb-500 and Ross Broiler has seemed, by all accounts, to be acceptable under business cultivating framework. The feed admission, live weight increase and FCR indicated that business oven cultivating is gainful.

The ingestion of the ideal degree of dietary supplements, regardless of whether for birds associated with egg or meat creation, is a lot of subject to the degree of feed admission. The complexities of the components which decide supplement admissions and causative reasons and theory for under or over utilization, have been surveyed widely by numerous previous analysts (Forbes, 1995; van der Heide et al., 1999; Forbes 2006). Poultry have exact prerequisites for supplements, both full scale and small scale and vitality yielding parts. However, in this examination the normal feed utilization per bird was higher of Ross Broiler strain (2439.89gm) comparing Cobb-500 (2154.23gm). Ross Broiler was discovered to be higher than other strain in this study. The higher feed utilization of the strains might be come about because of the heavier body weight and individual body necessities of the birds. Smith et al., (1998) revealed that strain and sex can influence feed intake and feed conversion ratio. Goliomytis et al., (2003) found that feed intake was similar between Cobb-500 and Starbro strains through 154 days old enough .They revealed that feed intake increased until 84 days old enough and afterward declined until 112 days old enough. The present study is in concurrence with their outcomes, as this test was finished at 30 days and there was likewise a continuous increment in feed intake.

Notable rules for assessing the presentation of broiler strains have been growth rate and feed conversion ratio and less often, remains structure (Cahaner et al., 1987; Cabel and Waldroup, 1991; Smith and Pesti, 1998; Rezaei et al., 2004) however a few strains may show higher mortalities and an incredible variety in conclusive body weight than others because of a few elements (strains, sex, feed, malady occurrence, environmental condition, etc). In the present study critical contrasts were seen in the live weight and normal body weight gain among the broiler strains rising under the cultivating states of Bangladesh. In this examination it was discovered that, normal live weight per bird was 1554.66 gm in Cobb-500 and 1491.67 gm for Ross Broiler. It was discovered that Cobb-500 accomplished heavier body weight and higher

weight gain than Ross Broiler. The improved body weight addition of this strain, potentially because of higher feed consumption and a few different variables may be included herewith. The present study results are in concurrence with the reports of a few others past analysts (Gonzales et al., 1998; Sarker et al., 2001 and 2002; Abdullah et al., 2010; Hossain et al., 2011) who discovered comparable varieties in raising various strains under trial conditions. Gonzales et al., 1998; and Korver et al., 2004; discovered that genotype may influence the body weight of various broiler strains. So more weight addition of Cobb-500 broiler strain may emerge from the hereditary make-up during the undeveloped stage.

Feed conversion ratio (FCR) is a proportion of how well a herd changes over feed consumption into live weight and gives a pointer of the management, and furthermore benefit at some random feed cost. As feed cost speaks to 60-70% of the whole expense of broiler production, the proficient transformation of feed into live weight is fundamental for productivity, and little changes in FCR at some random feed cost can substantially affect financial margin. FCR estimations of this study demonstrated that improved feed effectiveness appeared by Cobb-500 (1.39) compared to Ross Broiler (1.64). The improved FCR of Cobb-500 demonstrates that this strain is more productive in changing over feed to meat more quickly than Ross Broiler. This study is in concurrence with the report of Hossain et al., (2011) who additionally revealed that Cobb-500 strain give preferred FCR over other strain in Bangladesh.

The mortality of the broiler strains were unaffected by all the groups all through the examination time frame (day-30). In this study it was discovered that mortality rate was lesser for Cobb - 500 (4%) than Ross Broiler (4.7%) It might accordingly, be concluded that strains didn't antagonistically influence the bird livability. The current discovery are in concurrence with that of Sarker et al., (2001-2002) and Rokonuzzaman et al., (2015) who showed that strains had no unfriendly impact on livability of birds.

Poultry requires more logical proportion than some other animals. The current data about the structure and nutritive estimation of the Broiler feed and strains allows the Broiler farmers to choose the best one for the better development and soundness of the poultry based on cost and gainfulness. All the organizations and Broiler farmers ought to be worried during proportion detailing of Broiler Grower birds to satisfy supplement necessity of them and subsequently to build profitability of meat and to fulfill more benefit to make a, neediness free Bangladesh.

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**Author.**

## **Biography**

I am Tahia Ahmed Logno, daughter of Md. Shamsul Alam and Gulshan Ara Parveen . I passed my Secondary School Certificate (SSC) examination from Ispahani Public School and College, Chittagong in 2012 and Higher Secondary Certificate (HSC) examination from Chittagong College, Chittagong in 2014. At present I am an intern veterinarian under the Faculty of Veterinary Medicine in Chittagong Veterinary and Animal Sciences University. I have immense desire to work as good veterinary practitioner and to involve myself in public health related research work.