A Production report of Feed Conversion Ratio (FCR) on commercial broiler farm

By

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Report Presented in Partial Fulfillment for the Degree of
Doctor of veterinary Medicine
Faculty of Veterinary Medicine
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ABSTRACT

The study makes an attempt to know the actual feed conversion ratio (FCR) of poultry farms at Shibganj upazila, Bogura. There are about 60-70% are the production costs is feed cost. Mainly the feed utilization by broilers determines the farming profitability. In broiler feed conversion ratio (FCR), feed conversion rate (FCR) or feed conversion efficiency (FCE) is a measure of bird efficiency in converting feed mass increased body mass. The data was collected from record book of Sarkar poultry farm, Hasan poultry farm and Tithi poultry farm. These three farms used CP, Nourish and Euro feed respectively. The following of the study is going to portray a picture on overall FCR of these farms and help understanding the importance of FCR.
Introduction

Poultry sector is one of the fastest growing agricultural sub-sectors for global meat production and consumption. Bangladesh possesses a large and rapidly expanding poultry sector. There are about 320.6 million chickens are available in Bangladesh (BBS, 2016) on which Shibganj Upazila, Bogura district has total 1 million chickens (Personal communication, DLS, 2018). The normal requirement of animal protein as meat for a human is about 62.5 gm per day (BER, 2013). Poultry rearing plays an important role for improving the nutritional status of the Bangladeshi people through reducing the gap of protein supply within a short period of time. Therefore, to meet up the protein scarcity within shortest possible time, emphasis should be given on intensive poultry farming. Before 3 decades poultry was reared as a backyard farming system and a few numbers of poultry was reared by the rural people for their own consumption of meat and eggs. Nowadays the commercial poultry become popular for income generation, employment opportunity. Poultry plays an important role in the economic development of the country.

The feed conversion efficiency is the ratio of amount of feed intake and the total live weight of birds. In Bangladesh on the basis of management and weather condition, the feed conversion efficiency (FCR) of broiler bird is usually 2.00-2.75:1 that is average feed conversion efficiency is 2.38:1.
Feed intake and feed conversion efficiency (FCR) are affected by rate of growth of birds; contents of ration, nutrient adequacy of the ration, environmental temperature, health condition of the birds. The meat production depends on mainly FCR. There are about 4500 commercial broiler farms, more than 700 layer farms and 20 breeder farms present in Bogura district (Personal communication, DLS, 2018). Most of the farmers have small to medium size broiler farm with 1000 to 2500 birds. All farmers rear their bird under intensive farming system. They use the vaccination schedule of that hatchery from where the chicks are brought. Farmer use different company feeds such as Advance feed, ACI feed, Nourish feed, Euro feed, Kazi feed, CP feed, Aftab feed etc. in this upazila. In Bangladesh, there were abundant study was available on broiler parent stocks and the effects on different feed and nutrients for growth of broiler farm. However, very little number of studies is about the FCR on commercial broiler farms. Therefore, the present study was undertaken with the following objectives.

Objectives

1. To evaluate the feed intake of broilers under different commercial feeds (CP feed, Nourish feed and Euro feed)

2. To examine the live weight and live weight gain of broilers.

3. To estimate the Feed Conversion Ratio (FCR) of broilers.
MATERIALS AND METHODS

Study area:
The necessary data were collected from the different unions of Shibganj upazila, Bogura district.

Figure: Shibganj Upazila, Bogura district

Time of study:
The study period was November, 2019 during internship placement.
2.3 Data collection
The data were collected from record book of Sarkar poultry farm, Hasan poultry farm and Tithi poultry farm. These three farms used CP, Nourish and Euro feed respectively. They procured the day old chicks from hatchery. After purchasing the chicks they were reared this broiler under intensive management system up to market. The live weight of chicks was recorded at day old and every week up to 4 weeks of age. Feed intake and live weight gain of each flock were recorded weekly to know the average feed intake and weight gain of the broilers.

2.4 Data analysis:
The feed conversion ratio was calculated from average feed intake and the total live weight gain in the poultry farm (Mwale et al., 2008). The formula is:

\[
\text{Feed conversion ratio (FCR)} = \frac{\text{Total feed intake}}{\text{Total body weight gain}}
\]

The mean, standard deviation was calculated by using Microsoft Excel-2007. The line graph was prepared by using Microsoft Excel-2007.
Results and Discussion

3.1 Live weight and live weight gain

The live weight and live weight gain of broilers under 3 intensive farms who used CP, Nourish and Euro feed respectively are presented in (Table 1) and the rate of weight gains (time vs. live weight) are shown in Graph 1, Graph 2 and Graph 3 respectively. All 3 graphs show that live weight of broilers were gradually incline with the increase of age in all farms. The $R^2$ values were very high (Graph 1, 2 and 3), which indicated the weight gain of broilers were steady and good fitted with the liner regression. From this (Table 1), it was seen that the broilers of all 3 farms were increased live weight with the increases of age.

Table 1: Effect of live weight and weight gain of broilers in different farms

<table>
<thead>
<tr>
<th>Age (wk)</th>
<th>Mean Live Weight of birds/wk (gm)</th>
<th>Mean live weight gain of birds/wk (gm)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Farm 1 (CP Feed)</td>
<td>Farm 2 (Nourish feed)</td>
</tr>
<tr>
<td>Dayold</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day old</td>
<td>39.9±0.96</td>
<td>39.87±1.44</td>
</tr>
<tr>
<td>1st</td>
<td>220.12±2.5 6</td>
<td>240.43±3.0 6</td>
</tr>
<tr>
<td></td>
<td>180.22±2.36 6</td>
<td>200.56±2.62 6</td>
</tr>
<tr>
<td>2nd</td>
<td>450.53±2.9 8</td>
<td>500.02±3.1 5</td>
</tr>
<tr>
<td></td>
<td>270.31±4.80 8</td>
<td>299.46±4.10 8</td>
</tr>
<tr>
<td>3rd</td>
<td>800.03±3.7 0</td>
<td>950.14±3.3 5</td>
</tr>
<tr>
<td></td>
<td>349.5±3.4 9</td>
<td>450.12±6.04 9</td>
</tr>
<tr>
<td>4th</td>
<td>1249.58±5.48</td>
<td>1500.42±4.14</td>
</tr>
<tr>
<td></td>
<td>449.55±7.39</td>
<td>550.27±6.57</td>
</tr>
</tbody>
</table>
The differences of live weight among three farms may cause the differences for nutrition, management, breeds and age effects of the broilers. Similar factors were reported by other researchers (Saleque, 2007). From the table it was shown that highest body weight was recorded from Vai vai poultry farm (1650.81 gm/bird) who used Euro feed and lowest body weight in the Sadeque poultry farm (1249.58 gm/bird) who used CP feed after 4 weeks of age. From the (Table 1), it could be seen that weight gain of broilers in each farms were gradually increase with increase of age. The result was supported by (Hossain et al., 2006) but somewhat varies from (Roy et al., 2006). The overall body weight gain of the Farm-1, Farm-2 and Farm-3 were 312.39 gm/bird, 375.11 gm/bird and 412.75 gm/bird respectively. This study conducted that the live weight of commercial broiler at 4th weeks of age in Farm-1, Farm-2 and Farm-3 are 1249.58 gm/bird, 1500.42 gm/bird and 1650.81 gm/bird which are varies from the research of (Shahidullah et al., 2008) who found that the live weight of commercial broiler at 4th weeks age is 1450 gm/bird but the study found higher body weight than the report of (Sarkar et al., 2008) who reported 1200 gm/bird at 4th weeks of age.
Graph-1: Relationship between time with live weight (gm) in Farm 1 (CP Feed)

\[ y = 343.79x - 179.41 \]

\[ R^2 = 0.9801 \]

Graph-2: Relationship between time with live weight (gm) in Farm 2 (Nourish Feed)

\[ y = 423.01x - 259.77 \]

\[ R^2 = 0.9765 \]
3.2 Feed intake and feed conversion ratio

The average weekly feed intake and feed conversion efficiency (FCR) of broilers under 3 intensive farms who used CP, Nourish and Euro feed respectively are presented in (Table 2) and the rate of feed intake (time vs. feed intake) are shown in graph-4, graph-5 and graph-6. The graphs show that feed intake of broilers was gradually incline with the increase of age in both farms. The higher $R^2$ values indicated that the feed intake of broilers was good fitted with the linear regression. From this Table 2, it was seen that the broilers of Farm-1, Farm-2 and Farm-3 were increased feed intake with the increases of age. However, the broilers of Farm-3 showed higher feed intake than other 2 farms but at 4th weeks of age Farm-2 showed
more feed intake (914.1 gm/bird) than Farm-1 (763.53 gm/bird) and Farm-3 (874.92 gm/bird). These differences may cause the differences for nutrition, management, breeds and age effect. Similar factors were reported by (Saleque, 2007).

**Table 2: Effect of feed intake and FCR on different farms**

<table>
<thead>
<tr>
<th>Age (wks)</th>
<th>Mean Feed intake of birds/week</th>
<th>FCR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Farm 1 (CP Feed)</td>
<td>Farm 2 (Nourish feed)</td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>202.55±1.03</td>
<td>252.14±1.35</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>303.2±2.14</td>
<td>455.15±1.11</td>
</tr>
<tr>
<td>3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>503.49±1.10</td>
<td>710.31±1.19</td>
</tr>
<tr>
<td>4&lt;sup&gt;th&lt;/sup&gt;</td>
<td>763.53±0.89</td>
<td>914.1±0.64</td>
</tr>
</tbody>
</table>

The **Table 2** shows the feed intake of broiler at 4<sup>th</sup> of age, among the three farms where highest feed intake was recorded at Nasir poultry farm (Nourish feed, 914.1 gm/bird) and the lowest at Sadeque poultry farm (CP feed, 763.53 gm/bird). From the **Table 2**, it could be seen that FCR of broilers in each farms were gradually incline with increase of age. That indicates that with the increase of age the broiler consumes higher amount of feed that conversion into meat. The overall feed conversion efficiency of the Farm-1, Farm-2 and Farm-3 were 1.69:1, 1.66:1 and
1.60:1 respectively. Among them highest FCR was found in Sadeque poultry farm and lowest in Vai vai poultry farm.

This study found that the FCR of broilers in Farm-1, Farm-2 and Farm-3 are 1.69:1, 1.66:1 and 1.60:1 respectively at 4th weeks age which are less than the research of (Goliomytis et al., 2003) who found the FCR 1.78:1. (Sarkar et al., 2008) reported that the FCR of commercial broiler is 1.62:1 at 28 days but this study found that the FCR of commercial broilers are 1.69:1, 1.66:1 and 1.60:1 at 28 days whereas Farm-1 and Farm-2 shows higher and Farm-3 presents lower FCR than (Sarkar et al., 2008).
Graph-5: Relationship between time with feed intake (gm) of Farm-2 (Nourish Feed)

$y = 224.1x + 22.665$

$R^2 = 0.9979$

Feed intake (gm) vs. Time (Weeks)

Graph-6: Relationship between time with feed intake (gm) of Farm-3 (Euro Feed)

$y = 212.73x + 65.39$

$R^2 = 0.9626$

Feed intake (gm) vs. Time (Weeks)
Feed conversion ratio (FCR) is associated with the intake of feed, rate of growth of birds, contents of ration, efficiency of feed, nutrient adequacy of the ration, management of poultry, environmental temperature, health condition of the birds.

The meat production depends on mainly FCR. FCR increased with the age. Problems related to FCR creates an economic loss for broiler farmers. Any factor which reduces the feed intake, growth or health of the broiler will worsen flock FCR.

Addressing to the issues relating FCR requires communication and coordination across the whole production unit, from manufacture to farmer and processor. Euro feed provides good result in compare to other two feeds as found in our study. It has lower FCR (1.60:1) and higher weight gain (1650.81 gm/bird) than remaining two feeds.
References


Acknowledgement

I Would like to express the deepest sense of gratitude and sorts of praises to the God, the creator and supreme ruler of the Universe who had bestowed upon me to do this work successfully.

The author is also grateful to honorable professor Dr. Abdul Ahad, Dean, Faculty of Veterinary Medicine of Chattogram Veterinary and Animal Sciences University and professor Dr. A.K.M. Saifuddin, Director of External Affairs, Chattogram Veterinary and Animal Sciences University for arranging this type of research work as a compulsory part of this internship programme.

The author expresses her sincere gratitude, humble respect heartfelt thanks to my internship supervisor, Dr. Sonnet podder, lecturer, Department of Anatomy and Histology, Chattogram veterinary and animal sciences university for his scholastic guidance, kind cooperation, sincere help, valuable suggestions, inspiration, who was involved with this study from its inception and his great support. I ever remain greatful to him.

The final acknowledgments and gratitude is for my supporting family that supported me and helped to be in the course and managed to live without me, always encouraged me and without their kind assistance it was very difficult to stay long days far from the home.

finally I would like to thank everybody who contributed to the course and expressing my apology that I couldn’t mention personally each one by one.

The Author
Biography

I am Suvrodeb Barman, Son of Subal Chandra Barman and Suvra Shaha. I am from Bogura district, Rajshahi division, Bangladesh. I have completed my Secondary School Certificate (SSC) and Higher Secondary Certificate (HSC) from Biam Model school and college, Bogura. My SSC passing year was 2012 and HSC passing year was 2014. I enrolled for Doctor of Veterinary Medicine (DVM) degree in Chattogram Veterinary and Animal Sciences University (CVASU), Chattogram, Bangladesh in 2014-2015 session. At present I am doing my internship program which is compulsory for awarding my degree of Doctor of Veterinary Medicine (DVM) from CVASU. In the near future, I would like to work in livestock extension in whole Bangladesh.