**Chapter-I**

**INTRODUCTION**

Bangladesh is an agro-based developing country in the Southeast Asian region. Livestock specially poultry is a promising sector for employment generation and poverty reduction in this country (GOB, 1999). The contribution of poultry to the total animal protein was about 22 to 27 percent in the country (Ahmed and Haque, 1990). About 89% of the rural households that rear livestock were also found to rear poultry (BBS, 1996). Poultry meat and eggs are used chiefly as human food and poultry meat alone contributed 29% of the total meat production in Bangladesh (BBS, 2001). FAO (2003) estimated the status of poultry production in the country to be 140 million chickens and 13 million ducks.

The Livestock Production Index shows that Bangladesh has been able to register growth in livestock seen 1990. The importance of livestock can be understood by observing its contribution to Gross Domestic Product (GDP). Livestock sectors contribution to GDP was 2.80% in 1990-91, which increased to 2.92% in 2005-06. However, the livestock sub-sector grew at a rate higher than the annual growth rate of the overall agricultural sector.

The production and reproductive performance of chickens under intensive management provide important guidelines for the poultry enterprise in the country (Islam *et al*., 2003). Fayoumi, a chicken breed originated in Egypt and has been present in the West since 1940, is a light-weight fowl which has upright tail and forward breast and neck. Fayoumi cock is around 2 kg whereas a hen is 1.6 kg, which produces about 200 eggs per year. The hybrid “Sonali”is derived from the cross between RIR cock and Fayoumi hen. The average body weight of the cock is 2.5 kg and a hen is around 2 kg. This cross is popular for its light weight, body colour and taste resembling that of indigenous chicken. Currently, Sonali chickens are widely using as an alternative of indigenous/deshi chicken in the country. These two breeds had considerable customer demand either for meat or egg characteristics. Research reports on the production performance of Fayoumi (Khan *et al*., 2006) and Sonali(Sarkar, 2007) reported that these breeds are suitable for the environment of Bangladesh.

From the current situation of small-scale production units, it has become essential to get some precise idea on financial statement of poultry production scenario in the country. These findings would be valuable to the policy makers and extension workers in order to guide policies towards increasing efficiency of the poultry enterprise in Bangladesh. Considering these perspectives, this study was carried with the following objectives.

**The objectives were as follows:**

* To evaluate the body weight in Fayoumi and Sonali chickens under intensive farming condition.
* To compare the trend of body weight gain between Fayoumi and Sonali.

**Chapter-II**

**MATERIALS AND METHODS**

***2.1 Description of the study area***

The present study was conducted at Government Poultry Farm in Comilla. It is one of the renowned farms for Fayoumi and Sonali chickens in Comilla district which was established in 1976. The mean maximum and minimum temperature of the study period were 35°C and 18°C, respectively and its average relative humidity was 60%.

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**Figure 1: Map showing Comilla Adarsha Sadar Upazilla.**

***2.2 Study population***

A total of 3000 Sonali and 2500 Fayoumi chickens were used in the study.

***2.3 Sample population***

A total of four flocks (two for Fayoumi and two for Sonali) were selected randomly from eleven and five birds from each selected flocks were measured to get body weight weekly. The average flock size of each breed was 500 chickens.

***2.4 Data collection***

Data were collected during the period of February 2016 to June 2016. A predefined questionnaire was used to collect the information regarding general management, ration, feed intake and body weight gain. Feed offered to the chicken were measured every morning and refusal were recorded next day morning and the differences between offered and refusal were calculated as intake. Body weight of chickens was taken from 1st week to 17th week at 7 days interval using suspended spring balance.

***2.5 Statistical analysis***

Collected data were entered into Microsoft office 2007 Excel worksheet. Descriptive statistics for different variables were analysed using GraphPad Prism version 7.00 for Windows, GraphPad Software, La Jolla California USA, [www.graphpad.com](http://www.graphpad.com)”. The differences in the means of variables were analysed by using paired t-test from the Prism 7.00. P values of 0.05, 0.001 and 0.001 were considered for the significance at 5%, 1% and 0.1% level of significance.

**Chapter-III**

**RESULTS AND DISCUSSION**

***3.1 General management***

Before placing the experimental birds into shads, the whole unit was cleaned and disinfected. Chicken were vaccinated against the most common chicken diseases of the area namely Newcastle and Bursa (Gumboro), and fowl pox. In a poultry starter house five brooding boxes were placed for rearing of chickens until four weeks. One hundred chickens were reared in each box until four weeks and heated with 250 watt bulbs in brooding hay boxes. After four weeks it transferred in to the grower house.

***3.2 Ration***

The handmade diet composed of maize, wheat, soybean toasted, Rice polish, Protein concentrate, salt, limestone and premix used during the study (Table 1). During the starter period, starter ration containing 20% CP and 2800 kcal ME/kg, was provided each chicken each day. Three plastic tube feeders and three bell shaped (round) plastic waters were used to provide feed and water ever day in brooding hay boxes. During growing period growing ration containing 16% CP, 2700 kcal ME/kg was supplied to each chicken per day.

**Table 1.** Ration used for different age of Fayoumi and Sonali under intensive farming system

|  |  |  |
| --- | --- | --- |
| Ingredients | From 0-8 weeks | From 9-18 weeks |
| Maize | 60% | 58% |
| Rice polish | 14% | 17% |
| Soybean | 18% | 14% |
| Protein conct. | 7% | 4% |
| Common salt | 0.5% | 0.75% |
| Limestone | 0.25% | 6% |
| Vit. Mineral pre. | 0.25% | 0.25% |

**3.3 *Feed consumption***

The average daily feed intake in 1st week was 16 gm/bird, while a bird at 10 weeks of age consumed 60gm feed and on 17 weeks daily feed intake per bird was found to be 85gm (table 2). During the starter period (up to 9th week) the average 36 gram starter ration containing 20% CP and 2800 kcal ME/kg, was provided each chicken each day. During growing period (up to 17th) the average 64 gram of feed was provided per head per day and growing ration contained 16% CP, 2700 kcal ME/kg. Average daily feed intake of Fayoumi chicken was similar with report of Khan *et al.* (2006), Akhtar *et al.* (2007) and Rizwanual *et al.* (2011).Theses similarity might be due to similar management (intensive management) system.

**Table 2.** Amount of feed consumed by per bird per day

|  |  |
| --- | --- |
| Age of birds in week | Amount of feed consumed by per birds (gram) |
| 1st | 16 |
| 2nd | 21 |
| 3rd | 26 |
| 4th | 31 |
| 5th | 36 |
| 6th | 41 |
| 7th | 45 |
| 8th | 51 |
| 9th | 57 |

|  |  |
| --- | --- |
| Age of birds in week | Amount of feed consumed by per birds (gram) |
| 10th | 60 |
| 11th | 64 |
| 12th | 67 |
| 13th | 70 |
| 14th | 73 |
| 15th | 77 |
| 16th | 81 |
| 17th | 85 |

***3.4 Body weight for Sonali and Fayoumi***

The mean body weight gain in Sonali after 1st week was 28.20±1.39 gm which was more than Fayoumi (27.8±1.36 gm) but in 2nd week, the difference of mean weight did not vary significantly (p > 0.05) (Table 3). Although, the mean body weight gains in 3rd and 4th weeks were higher in Fayoumi, these were gradually decreased in 5th and 6th weeks than Sonali, which was in line with the finding of Ripon *et al.* (2012). After 6th weeks, the mean weight gain again increased in Fayoumi up to 15th weeks and again decreased from 16th week. Variation in phenotypic values of traits may be varied due to variation in quantitative traits (Faruque *et al*., 2010), however, in the present variations in body weight gain likely due to the differences in genetic make-up of the chicken breeds.

**Table 3**. Weekly mean body weight for Fayoumi and Sonali chicken under intensive farming

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Fayoumi | | Sonali | |  |  |
| Week | Mean | SE | Mean | SE | p value | Level of significance |
| 1 | 27.80 | 1.36 | 28.20 | 1.39 | 0.8421 | NS |
| 2 | 44.40 | 2.32 | 44.00 | 1.64 | 0.8914 | NS |
| 3 | 78.00 | 3.99 | 75.80 | 2.58 | 0.6554 | NS |
| 4 | 115.80 | 7.48 | 107.60 | 6.14 | 0.4215 | NS |
| 5 | 144.40 | 13.65 | 156.60 | 14.30 | 0.5543 | NS |
| 6 | 188.20 | 26.37 | 224.40 | 15.29 | 0.2690 | NS |
| 7 | 341.20 | 7.55 | 300.20 | 26.88 | 0.1802 | NS |
| 8 | 422.40 | 20.29 | 385.00 | 38.71 | 0.4170 | NS |
| 9 | 523.80 | 7.76 | 466.20 | 21.98 | 0.0387 | \* |
| 10 | 611.00 | 4.60 | 586.00 | 16.03 | 0.1724 | NS |
| 11 | 727.00 | 2.30 | 700.00 | 3.22 | 0.0001 | \*\*\* |
| 12 | 840.40 | 3.63 | 794.80 | 4.47 | 0.0166 | \* |
| 13 | 928.00 | 6.33 | 875.40 | 11.01 | 0.0032 | \*\* |
| 14 | 999.80 | 3.38 | 952.80 | 11.20 | 0.0038 | \*\* |
| 15 | 1052.00 | 4.06 | 1006.00 | 5.34 | 0.0001 | \*\*\* |
| 16 | 1145.00 | 4.18 | 1089.60 | 5.07 | 0.0001 | \*\*\* |
| 17 | 1211.00 | 4.00 | 1191.40 | 39.92 | 0.6383 | NS |

# body weight was weighed in gram; SE, Standard error of mean; NS, Not-significance;

\*, \*\* and \*\*\* means significance at 5%, 1% and 0.1% level of significance

***3.5 Average weekly body-weight gain in Sonali and Fayoumi***

The difference in body weight gain from 1st to 2nd week in Fayoumi and Sonali were 16.6 gm and 15.8gm respectively, but in 8th to 9th week the difference was too higher in Fayoumi (101.4gm) than Sonali (81.2gm) which may be due to difference in genetic make-up, feeding and management practices. Again in 16th to 17th week, the average difference was higher in Sonali (101.8gm) than Fayoumi (66gm).

Figure 2**: The average weekly body weight gain in Sonali and Fayoumi under intensive**

**farming.** Average body weight was weighed in gram; X axis, period from week to week; Y axis, Weekly average live-weight gain in gram

**Chapter-V**

**CONCLUSION**

Fayoumi and Sonali chickens are adapted and perform well under intensive management condition for meat production in Comilla. This study revealed that the body weight gain of Fayoumi was better than Sonali after 6 weeks of age. This is because of the better and longer adaptation of Fayoumi breed than that of Sonali in the Bangladesh. In contrast, the mean body weight gain in Sonali was better than that of Fayoumi after 16 weeks which may be due difference in genetic make-up as both chicken breeds were reared under same feeding and management system. Fayoumi and Sonali chickens are very adaptable in intensive farming system of Bangladesh and could be a good choice for meat and egg producer who can regularly supply supplementary feed.

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**BIOGRAPHY**

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