**ABSTRACT**

The study was carried out at Rahman poultry farm at Belabo in Narsingdi for a period of 05/02/2018 to 25/03/2018 to observe management of housing, feeding, lighting, production performance, and disease control practices of 5000 layer birds of Lohmann brown under open housing system. During study period, in case of brooding chicks, feed intake was 17gm/day in 2nd week, 19gm/day in 3rd week and 21gm/day in 4th week of age. Body weight was 56gm, 115gm, 187gm, 238gm respectively at 2nd, 3rd, 4th, 5th week of age. The average body weight gained was 60.67 gm/week. The mortality rate was 0.123% per week. In case of layer, the body weight was observed to be 1.87kg, 1.89kg, 1.94kg and mortality was 0.073%, 0.044%and 0.048% respectively at 33rd, 34th, 35th week of age and average feed intake was 115.79gm/day. As for the hens, per day egg production was 87.27% from 33rd to 35th week of age. The peak production was observed to be 88.18% at 33rd week of age. The mortality was 0.055% per week and total mortality was 0.17% over the total experimental period. It may be concluded that, peak production can be achieved during 33rd week of age.

**Key words:** Starter, production performance, management, layer,

CHAPTER- I

# INTRODUCTION

The economy of Bangladesh is agro based. About 52% of the Gross Domestic Product (GDP) comes from agricultural sector of which crops alone shares 38.8%, livestock 65%, fisheries 3.5% and forestry 3.2%, (Sikder,1990). According to Nazir Ahmed (2003), the present poultry population is estimated to about 185.70 million of chicken of which 162.70 million is Deshi Chickens and remaining are hybrid. It is estimated that there are approximately 163.5 million chickens which are contributing partially for the alleviation of poverty and malnutrition of the people. At present situation commercial poultry eggs and meat are accomplishing the greater demand of animal protein as well as the human nutrition in the country .About 0.26 million metric tons of meat and 5210 millions table eggs are produced per year (Rahaman ,2003 ). A total of 5 million people are working presently in this sector and an amount of Tk. 22,000 millions has been invested in this sector.(Rahman,2003 ). The poultry is an important sub-sector of livestock. Chickens are major avian species kept in Bangladesh. Traditionally poultry is reared by almost all the rural families and particularly by landless people in Bangladesh. About 151 million chickens and duck were available in Bangladesh (Saleque, 2001). Thus is contributing a lot to the small farmers in Bangladesh. Mass production of chicken eggs has become a highly efficient, competitive enterprise. In a commercial layer farm pullets will begin to laying eggs at 20-22 weeks of age and once laying will eventually peak at 85-93% production. Each hen can be expected to lay about 270 quality eggs by the age of 75 weeks. About 1.8 kg feed is needed to produce per dozen eggs (Samad. M.A, 2005).The poultry industry play important role on the upliftment of socio-economic conditions and meet the demand of animal protein requirement s in human diet.In Bangladesh commercial poultry farms are few and most of our demand is fulfilled from the rural source where the farmers rear the chicken under the scavenging system.

Now- a-days the growth and automation of the commercial egg manufacturing industries have developed faster and progressed further than any other type of livestock production during a period of only about last two decades on Bangladesh.

Suitable breed and proper knowledge of management results in profitable poultry production (Mahapatra, 1990) which are lacking on traditional poultry rearing system. Poultry industry is just growing and its contribution to total poultry production is not yet satisfactory. Bangladesh thus has an improving management condition under backyard system. The productivity of indigenous chickens are very low having annual laying capacity of about 35-45 small size eggs per bird and the body weight of male and female birds is about 1.82 kg and 1.30 kg respectively (Amin,1990).

Emerging poultry industries are increasing and about 78% egg and 86% meat are produced by rural scavenging chicken (Huque, 1993).

Apart from genetic background, poor management, nutrition and diseases are main limiting factor s in back yard poultry. In case of back yard farming system of poultry, there are also some constraints. Poultry raising in this country hampered by others microbial and parasitic diseases which causes to heavy losses to farmers. Bangladesh is a highly populated country where backyard poultry farming system is unable to meet the demand of egg and meat as a source of animal protein. At present total demand of egg 1482 crores but available only 565 crores throughout the country (DLS 2006). To meet the demand we need mass production of chicken eggs intensive farming system with high yielding poultry breed or strain.

The growth and automation of the commercial egg manufacturing industry have developed faster and progressed further than any other type of livestock production during a period of only about last two decades in Bangladesh. There are two types of egg produced, which includes parent stock and commercial stock

1. Parent stock: When the male and female are of two different grandparent stock are crossed to produce hybrid male and female line called parent stock.
2. Commercial stock: When the male and female of different parent stocks are crossed to produce commercial stock.

The loss is attributed to the death by 15-30% as well as morbid effect like reduce weight gain, fall in egg production and unthriftness. In spite of these limitations, some highly modern commercial poultry farms were established as poultry industry in Bangladesh in recent years.

Some companies are involved to import layer parent stock and some layer strains which give high production under intensive farming system and with strict Bio-security. Some available layer strains in Bangladesh are; ISA brown, ISA White, Hisex White, Shaver 579 Brown, and Shaver White etc.

The White laying commercial leghorn strains available to industry has a high rate of lay and a smaller body, since that allowed leghorn type stock to produce dozen of eggs on less feed.

**The specific objectives of the study:**

* To observe the management and production performance of layer in litter system under normal management condition.
* To know the feed consumption of layer in litter system.
* To know the mortality of layer in litter system under normal management condition.
* To know egg production in different weeks of age.

**CHAPTER-** **II**

**MATERIALS AND METHODS**

**Study area:**

The study was conducted on layer farm at Rahman poultry farm at Belabo in Narsingdi district. They reared about 5000 layers of Lohmann brown in litter system. They have only one shed. They provided feed adlibidum which contains 20% cp and 2950kcal ME/kg up to 8 weeks and 16% cp and 2650kcal ME/kg up to 18 weeks and in layer 17%cp and 2750kcal ME/kg up to 72 weeks. The birds were vaccinated against Marek’s disease, Newcastle disease, Fowl cholera, chicken pox and Gumboro diseases.

 

Fig: Location of Rahman poultry farm

**The following standards were maintained at Rahman poultry farm during experimental period:**

**Birds:**

The total numbers of layer birds were 5000.

**Housing:** The housing system was open sided house for layer.





Fig: Housing of floor rearing system in the farm. Fig: Inner view of Poultry farm shed

**In case of brooding**: Each chick guard contains 600 chicks where space was 360 square feet, contains electric brooder. It will be increased according to age and up to 16 weeks of age.

**In case of layer**: It was situated on high land and 5 sheds. And open places as well as well ventilated. The house made as east west length wise and maintains on dry litter. The layers were kept in cage after 18 weeks of age@ 18”x14” x 17” for 3 birds.

**Brooder house management**:

The brooder house was located separated from other house because it reduces the chance of diseases transmission. The brooder home should keep clear at time. All in and all out system is the best method for this reason. The brooder house was prepared by using 3” litter on floor of brooder home. The brooder house was fumigated and disinfected before 24 hours of arrival of chicks. In this farm the brooder house was closed house.

For brooding one electric brooder used for 500 birds and floor space at first week was .4 sq ft which gradually increases day by day.

The temperature was 340c and then decreased @ 3 to 40c in every week which was standard as per as direction of the manual. Chick guard was made of plain metal sheet because it conserves more heat than partex board. The height of the chick guard was 18 inch and the distance between the brooder and litter was 69 inch.

**Watering**:

For the prevention of diseases clean water and germ free water were supplied to bird and each 100 birds need one round drinker.

**Feeding and feeder**:

The experimental farm supplied feed to day old chick on papers or tissue (2 inch rich polish) for 1 week. Then provide the starter ration starter 24 hours 2-3 hours brought after arrival and contained CP 19 to 20%, ME 2950/kg, lysine 1.07, methionine 0.43 to 0.54% adlibidum feeding was allowed for 3 weeks. Then weighing which compared with guide line.

**Ventilation**:

In favor of proper ventilation the experimental farm used timer fan. Exhaust fan and also used for preventing extreme hot.

**Bio security:**

Bio means life and security denotes safeguard. Its a set of manage mental practices which reduce the incidences of diseases outbreak or inhibit to entrance of diseases curing in an organism into the farm. It’s the hard fact of poultry livestock industry accounts for at least 10% of total production cost and overall costs of specific diseases in poultry. The firm disposed the dead birds with a pit and separates the diseases bird accurately.

**Table-1: fumigation of farm:**

|  |  |  |
| --- | --- | --- |
| Fumigation place | PPM + Formalin  (gm + ml) | Fumigation time |
| Layer house | (20+40).2 | 20 minutes |

.

**TABLE: 2, Management of Brooding at** **Rahman poultry farm:**

|  |  |
| --- | --- |
| **Age** | **Temperature** |
| 1st 5 hours | 350c |
| 5 hours to 3 days | 340c |
| 4 to 7 days | 34 to 310c |
| 2 weeks | 31to 280c |
| 3 weeks | 28 to 260c |
| 4 weeks | 28 to 230c |
| After 4 weeks | 200c |

**Lighting:**

Lighting schedule followed in this farm is given below in table:

**Table:3, lighting schedule were @ watt/ sq.ft**

|  |  |  |
| --- | --- | --- |
| **Age/day/week** | **Light/day(in hour)** | **Watt/sq.ft** |
| 1-3day | 24hours | .56 watt |
| 4-6day | 23 hours | .50 watt |
| 7-8day | 23 hours | .37 watt |
| 1-2weeks | 23 hours | .25 watt |
| 2-3weekas | 22 hours | .19 watt |
| 3-4weeks | 18 hours | .19 watt |
| 4-5 | 16 hours | .19 watt |
| 5-6 | 14 hours | .19 watt |
| 6-10 | 13 hours | .19 watt |
| 11-18 | 12 hours | .095 watt |
| 18-20 | 11.30 hours | .019 watt |
| 20-21 | 12 hours | .25 watt |
| 21-22 | 12.30 hours | .25 watt |
| 22-23 | 13 hours | .25 watt |
| 23-24 | 13.30 hours | .25 watt |
| 24-25 | 14 hours | .25 watt |
| 25-26 | 14.30 hours | .25 watt |

**Debeaking:** They debeaked 9th week of age but it should be done 10th weeks of age.

**Use of Anthelmintics**: First time, at the age of 45 days, then they used to every 45 days alternatively.

Note: when we use Anthelmentics, we did not use vitamin that day, but we had to use vitamin for following 3 days.

**TABLE: 4, Chart of lighting program of Lohmann brown what we provided**

|  |  |  |
| --- | --- | --- |
| **Age** | **Temperature** | **Day light + Artificial light** |
| 0 to 3 days | 340c | 24 hours |
| 4 to 7 days | 31-340c | 23 hours |
| 2nd weeks | 27-310c | 22 hours |
| 3rd weeks | 23-270c | 21 hours |
| 4th weeks | 20-230c | 20 hours |
| 5th weeks | 200c | 18 hours |
| 6th weeks | 200c | 16 hours |
| 7th weeks | 200c | 14 hours |
| 8th to 18th weeks | 200c | 13 hours (include maximum day light) |
| 19th weeks | 200c | 13.5 hours |
| 20th weeks | 200c | 14 hours |
| 21st | 200c | 14.5 hours |
| 22nd weeks | 200c | 15 hours |
| 23rd weeks | 200c | 15.5 hours |
| 24th weeks | 200c | 16 hours |
| 25th to 78th weeks | 200c | 16 hours |

**Table: 5- Definite ration (nutrient, vitamin and minerals) which supplied with some deviation of standard level:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age in week | 0-4 | 4-7 | 8-14 | 15-17 | 17-40 | 40-60 | + 60 |
| CP% | 21-22% | 19.5% | 17.5 | 15.0 | 17-18 | 16-17 | 15-16 |
| ME/K CAL/KG | 2900 | 2900 | 2825 | 2775 | 2800 | 2775 | 2750 |
| Crude Fiber% | | 3-5 | 3-6 | 4-7 | 3-6 | 3-6 | 3-7 |
| Crude fat % | | 2.5-6 | 2.5-7.0 | 2.5-7.0 | 3-7 | 3-7 | 3-7 |
| Linoleic acid | | 1.2 | 1.0 | 1.0 | 1.2 | 1.2 | 1.2 |

**Minerals (minimum- maximum)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Calcium % | 1-1.1 | .9-1.1 | .9-1.1 | 3.3-3.5 | 3.6-3.8 | 3.8-4.0 |
| Available phosphorus % | .45 | .40 | .36 | .40 | .38 | .34 |
| Chloride % | .15-.25 | .15-.25 | .15-.25 | .15-.25 | .15-.25 | .15-.25 |
| Sodium % | .16 | .15 | .15 | .15-.2 | .15-.25 | .15-.20 |

**Amino acid (% minimum)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Lysine % | 1.05 | .95 | .72 | .80 | .77 | .72 |
| Methionine % | .45 | .40 | .34 | .40 | .38 | .35 |
| Met +cystein% | .80 | .75 | .56 | .71 | .68 | .65 |
| Tryptophan % | .20 | .17 | .15 | .18 | .17 | .16 |

**Table: 6, Amino acid and ME/KG according to feed intake in various period of Lohmann brown (standard level)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hen day  production | Feed  Gm/hen/day | ME/KG | Methione % | Met+ cys % | Tryptophan % | Lysine % |
| 90%  production | 105 | 3020 | .40 | .76 | .18 | .87 |
| 110 | 2880 | .38 | .72 | .17 | .83 |
| 115 | 2760 | .36 | .68 | .17 | .79 |
| 120 | 2650 | .35 | .65 | .16 | .76 |
| 85-90%  Production | 100 | 3080 | .4 | .73 | .18 | .84 |
| 105 | 2930 | .38 | .70 | .17 | .80 |
| 110 | 2800 | .36 | .66 | .16 | .76 |
| 115 | 2680 | .35 | .63 | .16 | .73 |
| 120 | 2570 | .33 | .61 | .15 | .70 |
| 80-85% production | 100 | 2970 | .38 | .69 | .17 | .82 |
| 105 | 2830 | .36 | .66 | .16 | .78 |
| 110 | 2700 | .35 | .63 | .15 | .74 |
| 115 | 2580 | .33 | .60 | .15 | .71 |
| Below 80%  production | 100 | 2900 | .36 | .66 | .16 | .79 |
| 105 | 2760 | .34 | .63 | .15 | .75 |
| 110 | 2640 | .33 | .60 | .15 | .72 |
| 115 | 2570 | .31 | .57 | .14 | .69 |
|  |  |  |  |  |  |  |

**Table: 7, Temperature in various production level with body weight of Lohmann Brown.**

|  |  |  |
| --- | --- | --- |
| Temperature | Production | Body weight |
| 180c | Above 90% production | 1430-1390 |
| 220c | 85-90%production | 1360-1320 |
| 260c | Below 85% production | 1320-1280 |
| 300c | Below 80% production | 1280-1220 |

**Table: 8, % of calcium during laying period with feed intake**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feed intake/  Day | % of calcium in feed | | | | |
| 3.2% | 3.4% | 3.6% | 3.8% | 4.0% |
| 90 | 2.88 | 3.06 | 3.24 | 3.42 | 3.60 |
| 95 | 3.04 | 3.23 | 3.42 | 3.61 | 3.80 |
| 100 | 3.20 | 3.40 | 3.6 | 3.80 | 4.00 |
| 105 | 3.36 | 3.57 | 3.78 | 3.99 | 4.20 |
| 110 | 3.52 | 3.74 | 3.96 | 4.18 | 4.40 |
| 115 | 3.68 | 3.91 | 4.14 | 4.37 | 4.60 |
| 120 | 3.84 | 4.08 | 4.32 | 4.56 | 4.80 |

**TABLE: 9 Vaccination schedule at Rahman poultry Farm:**

|  |  |  |
| --- | --- | --- |
| Age (day/week) | Name of the VACCINE | Route of administration |
| 1st day | Mareks | S/C in neck |
| 5th day | BCRDB+IB | Eye drop or drinking water |
| 8thday | Gumboro | Eye drop or drinking water |
| 9thday | GUMBORO+RANIKHET | S/C in neck |
| 14-18thweeks | Mareks | S/C In neck |
| 21st weeks | Ranikhet (live) | Eye drop or drinking water |
| 28th day | Gumboro (live) | Eye drop or drinking water |
| 35th day | IB | Eye drop or in drinking water |
| 6th weeks | Fowl pox | Wing web |
| 8th weeks | Ranikhet+Coryza | Drinking water |
| 10th week | Fowl Pox + Cholera | Wing web or S/C |
| 14th week | Cholera | BREAST muscle |
| 16th week | Coryza | Breast muscle |
| 18th week | IB+Ranikhet+EDS | Breast muscle or S/C |





Fig: Disease diagnosis by postmortem in the farm

**Egg collection:** Eggs were collected manually from each shed once daily from 9 am to 1 pm. After collection, eggs were clean with soft towel soaked with Savlon ® antiseptic solution. Dirt was removed by knife through slight rubbing. Then grading was done in grading room. During grading of eggs, de-shaped eggs, jumbo eggs, small sized, broken eggs, excessively dirty eggs, abnormal color eggs were discarded. Eggs of uniform size were selected for marketing. No eggs are being stored as the marketing system is local and instant selling.



**Fig: Egg collection from laying box**

**Figure: Collection of egg**

**Marketing of Egg:**

The eggs are collected from the shed in the morning. The collected and graded eggs are transported to local market for selling by the won transport system. The bepary buy these eggs at whole sale rate and distributed to the consumer.

****

**Fig: marketing of egg**

**CHAPTER- III**

**RESULTS AND DISCUSSION**

In my experimental period I worked on management side, which has given me a result of experiment that has given below through:

**Table-: 10, during brooding of chicks.**

**Obtained result on body Weight, mortality, feed intake of Lohmann brown what I have got during my study time with standard level**

Total number of bird were 5000

Experimental period was 21 days (2nd to 4th week of age)

Total death of birds were 10

Average mortality per week was 0.07%

Average Body weight gained / week was 60.67 gm

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | **Standard report** | | | | | **Observation** | | | |  |
| Age in  Week | Birds | No. of dead  In week | Age  (days) | Types  Of  feed | Bwt  (end of weeks)gm | Feed  Intake  (day/gm) | Rate  **Of**  mortality | Total feed  Kg/day | Feed  intake  Gm/day/bird | Bwt  Gm/week | %Mortality/  week | | |
| 01 | 5000 | --- | 0-7 | Starter | 60 | -- | -- | --- | --- | 56 | --- | | |
| 02 | 4993 | 7 | 8-14 | Starter | 120 | 21 | 1.2 | 106 | 14.17 | 115 | 0.14% | | |
| 03 | 4989 | 05 | 15-21 | Starter | 200 | 26 | 1.6 | 121 | 16.21 | 187 | 0.10% | | |
| 04 | 4983 | 6 | 22-28 | Starter | 280 | 31 | 1.7 | 134 | 18 | 238 | 0.12% | | |

So, feed intake determined 14.17 gm, 16.21 gm, and 18 gm of per bird of per day at 2nd, 3rd and 4th week of age. Mortality rate was 0.14% at 2nd, 0.10 at 3rd and 0.13% at 4th week of age and average mortality 0.123%/week.

**CHAPTER- IV**

**LIMITATIONS**

**The following limitations were faced during the experimental period:**

1. The duration of this experiment was short.
2. Feed formulation of that farm is not fully followed by standard level of Lohmann brown.
3. Bio security was not fully maintained.
4. Electricity supply was not regular.
5. Crisis of man power.
6. The farm was not away from locality.

7. Uniformity of flock were 70% in 33rd weeks of age and 75% in 35th weeks

**CHAPTER-V**

**CONCLUSION**

Although the studied farm follows the rules of layer farming method, the egg production did not reach to the peak compared to standard level but mortality was lowest during rearing of chicks and laying period. During the placement, feeding, housing, collection of egg, cleaning and disinfection of the farm and disposal of shed waste were directly observed.

It can be noted that the overall condition of this farm is good. Its location, structure, hygiene, shed management, flock management, litter management, disease management, vaccination, egg collection and their marketing all are acceptable level. This layer farm may provide a nice economic opportunity to the farm owner.

It may be concluded that, with better management including bio security program of the farm, proper ration formulation, and disease prevention by vaccination, the egg production can be increased up to the standard level which will definitely make the farm more profitable.

**CHAPTER- VI**

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**Biography**

|  |  |
| --- | --- |
| Name | Apu Raihan |
| Present position and affiliation | Intern student, 18th Batch, FVM, Chittagong |
|  | Veterinary and Animal Science University. |
| Educational background and year | Doctor of Veterinary Medicine in 2017 |
|  | (appeared), Chittagong Veterinary and Animal |
|  | Science University. |
| Research interest | Poultry and Large Animal Sector |
|  |  |
| Aim | Establish a veterinary health complex in field level |
|  |  |