

## **Abstract**

The study was conducted to observe the management and production performance of two different layer strains (Hisex and ISA Brown) available in Cox's Bazar sadar, Cox's Bazar, under cage rearing system. Collected data on the egg production percentage, body weight gain and feed intake of observed layer birds of the farm were compared with the standard level. The production performance was compared of laying period under normal management in cage system. The egg production was found to be highest in Hisex brown (85%) compared to ISA brown (82%). The egg weight of Hisex brown was (54gm) which is higher than ISA brown (53gm). The feed consumption rate was also higher in ISA Brown brown (122gm) per bird during peak production but it was lower in Hisex brown (118gm) per bird during the same stage of production. Average age at peak production was 26 weeks in Hisex brown, where as 28 weeks was in ISA brown. Average length of peak production 9 weeks was in Hisex brown and 8 weeks was in ISA brown. In the present study, it was noted that some production parameter were slightly lower than literature supplied by respective company, but general production performance of Hisex Brown was better than ISA brown under normal management in cage system.

**Key words:** Hisex Brown, ISA Brown Management, Production performance

## 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). In Bangladesh, the poultry sector has turned into a promising and dynamic industry with enormous potential for poverty reduction through income and employment generation (Rahman, 2007). It has been recognized as a profitable enterprise and is the most popular income generating activity for the rural poor, particularly women and unemployment youths. Poultry raising has emerged as an integral part of agribusiness in the farming community in Bangladesh (Latif, 2007). In the recent years, poultry farming has become one of the most popular business in agriculture sector of Bangladesh and more specifically, the layer industry in now a developing enterprise alongside other sectors of poultry production. The total growth rate of poultry in Bangladesh is about 6.25% per year (Saleque, 2007). The magnitude of contribution of poultry sector in agriculture GDP is 7.87% and to the country's GDP is 1.5% (BBS, 2005).

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 151million chickens and duck were available in Bangladesh (Saleque, 2001). Thus is contributing a lot to the small farmers in Bangladesh. A total of 5 millions people are working presently in this sector and an amount of Tk. 22,000 millions has been invested in this sector .(Rahman,2003 ).

The demand of the egg and meat is high in our country but the supply is not enough Indigenous chicken are principal of suppliers of poultry meat ,egg of the country though their predominance are poor .Rural scavenging chickens contribute about 75.06%egg of the country (Haque, 1993). The egg production of Deshi hen is about 30-70 egg per year ,egg size stand about 30-50 gm (All et al 1996) where are the exotic strains turn to 300 eggs per year (Haque 1999). Emerging poultry industry are increasing and high producing commercial exotic strains farmed very intensively by the industrialist.

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 1.8kg feed is needed to productive per dozen eggs(Miah et al., 2002).

The government is showing interest in this sector and is encouraging both urban and rural people to involve there. There were very few numbers of poultry farms present in 10-15 years back, But at present in Bangladesh there are about 100 private poultry farm. Due to fulfill the promising demand of poultry and layer chicks, presently some broiler and layer parent stocks and grandparent stock are reared in Bangladesh. All these efforts were taken by some private companies, such as Kazi farms, Nourish Poultry and Hatchery, Paragon, Paharica, Usha, BRAC, Biman hatchery etc.

Recently the prospects of rearing exotic hens by the poor in Bangladesh have highlighted (Rahman, 2003). The found projects are important tool for poverty alleviation and social empowerment for the poor, especially for the rural women. Seeing the prospects, various government and non- government organization have come forward helping distress women and unemployed youths across the country in establishing farms so as to make them sell reliant. The nutritional and diseases problem are major constraints in Bangladesh for the development and maintenance of poultry, suitable breed and proper management results in profitable production which are lack in traditional poultry rearing system ( Rahman, 2003)

The Hisex brown and ISA brown, brown feathered brown egg layer is a very competitive producer of strong shelled eggs. She has an excellent livability and is ready to stand the challenges of today's egg industry. She produces large quantities of uniform colored brown eggs with a reputation for having an outstanding feed efficiency (Anon, 2013). The favorable genetic characteristics can only achieved when the bird is provided with all its requirements. These include , but are not limited to, good quality feed, good housing and healthcare.

The Hisex brown and ISA brown are breed to tolerate the challenges of various housing conditions. In general there is a “happy medium” in regards to how much space a bird needs.

The initial investment in housing and equipment is reduced when less space is allocated for each bird. Too little space will reduce performance. Too much space, on the other hand, may result in higher energy costs for warming the building and over consumption of feed may occur, etc. (Anon 2013)

Hence my study was conducted into a commercial farm at Cox's Bazar sadar, Cox's Bazar . In a village side area to observe the comparative production performance of two different layer strain- Hisex Brown and ISA Brown in cage system at normal management.

Therefore my study was undertaken with the following objectives:

- To observe the management practices of Hisex brown layer and ISA brown layer.
- To observe production performance of two different layer strains in cage under normal management condition.
- To know the feed consumption of two strains in cage system.
- To determine the severity of problems faced by the farmers involved in layer production.

## REVIEW OF LITERATURE

According to FAO (1997), appropriate size of the operation, maintaining highly productive stock, efficient utilization of resources, better housing, adoption of standard hygienic practices, reducing cost of production and adequate planning for marketing of the products play a major role in making commercial egg production more profitable.

Samad (2005) reported that a good commercial layer management is required for the optimum growth and subsequently high egg production. Kumar and Mahalati (1998) reported lower costs of production and higher returns for larger than smaller flocks. Oluyemi and Robert (1979) reported that egg production is the major index of performance of commercial layer business, because of its accounts for 90% of the income from the enterprise. Egg production is one of the most important economic traits in chicken. As feed cost accounts for about one half or two thirds of the total cost of producing egg, increased efficiency of the laying stock in terms of higher food conversion for egg production should be the principle breeding objective (Jull,1970).

Elwardany et al. (1998) stated that efficient utilization of feed and avoiding unnecessary feed wastage would minimize total cost of production. Thus, management of egg laying birds in an appropriate rearing environment would ensure better profitability. Har Pal Singh *et al.* (1977). Proper lighting management is important in the layer farm. Light strike the optic nerves which activate the pituitary gland so that there is increased FSH for the egg production. A proper lighting program will lead to the higher egg production and also to higher egg profits.

Farooq et al. (2002) stated the disease in any stage of production affect the productivity of the farm. He suggest to avoid overcrowding, effective use of brood-grow house under better hygiene, appropriate light schedule and use of cages instead of floor houses for egg type layers will reduce mortality. Alam et al. (1998) reported the intensive farm rearing system has got more production and high profit by rearing the hybrid and exotic breed. Talukdar et al. (2010) also cited the environmental effect of production performance due to managerial effect. FAO (2008) country report stated that disease outbreak and low bio-security and managerial practice decrease the average production performance in both commercial and smallholding poultry farm in Bangladesh

## MATERIALS AND METHODS

**Selection of study area:** The area was selected on the basis of availability of layer farms and my intern spot, to observe the productive performance of layer and management procedures. The data were collected through a survey that was conducted over the areas of Cox's Bazar Sadar, Cox's Bazar.

### **Selection of strain:**

There were two strains in the selected farm Such as **Hisex brown & ISA Brown Strain**. The strains were selected on the basis of availability in the farm.

### **Methods of data collection:**

A structured questionnaire was developed containing the basic question with a view to extract information regarding management and preventive measures undertaken in relation to the objective set. Emphasis was given to the key consideration of managerial different sector like housing, feeding and watering, procurement, disease control measure, bio-security and marketing of the produced egg. The entry system, drainage system, garbage disposal, hand bath, foot bath, showering system, personal hygiene management etc also considered under the point of biosecurity. With the objective of collecting above mentioned information the author own self selected and visited the farm

### **Housing system**

- \* Tin shed house was constructed with 1 feet high side wall.
- \* Wire mesh were used from the side wall of the shed.
- \* Curtain was used to protect the birds from cold.

### **Brooder House**

Rice husk was used as litter.

- \*Floor space 0.5 square per chick initially then increased gradually.
- \*Chick are used 3feet by 2 inches for 50 chicks
- \*Round waterer of size 5L for 50 chicks.
- \*Brooder with 3-4 bulbs of 100W for 500 birds.
- \*Chick guard of 15 inches height and 7feet diameter for chicks

### **Layer House**

- \*Cage system
- \*Cage system 75square inches per bird.
- \*The height was 40cm.



### **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. The chicks were debeaked or beak trimmed at 8-10 of age or whenever necessary, as a preventive measures or to prevent feather pecking and cannibalism, which affects egg production seriously. The farm used electric debeaker for this purpose.

**Drinkers:**

For the prevention of disease clean and germ free water should be supplied to bird and each 75 birds need one round drinker and 3 days later used nipple drinker (one nipple drinker for 8-10 birds)with round drinker.

**Feeds and feeder:**

The experimental farm supplied feed to day old chick on special flat feeder for 2 days. Then provide linear feeder @ 2.5cm/bird. The starter ration started 24 hrs. after arrival and contained CP-19-20%, ME-2900Kcal/kg, lysine-1.05, Methionine-0.40-0.54%. Ad libitum feeding was allowed for 3 weeks. Then weighing which compared with the guide line.

**Litter management:** Rice husk was used as litter in that farm The thickness/depth of litter was about 3.5-4.5 inches in grower shed and 5-6 inches in production shed the amount of litter required for a shed was supplied at the beginning of brooding within the brooder guard and during brooding for the first few days it was covered with paper. They also used lime over the build up litter at the rate of 1kg/50sq ft and sometime disinfectant spray was also done As regular practice the litter was scratched once a day The litter was replaced by new litter  $\frac{1}{2}$ (half) or  $\frac{2}{3}$ (two third) if they become too damp.

**Ventilation:**

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

**Feeding:**

Feeding is another most important component of modern poultry farming. The profitability or loss of poultry farming mostly depends upon the feeding management. About 50% cost of the total farming is involved for feeding.. Feed is given to the shed two times daily-at the early morning and at noon. Restricted feeding is also maintained in the farm. It starts from 4 weeks of age and goes up to 20 weeks.

**Feed allowance in production period:**

Feed supply depends on the age of the bird and production rate. Peak feed allowance is 125gm at 26 weeks of age when the layer hen are in peak production. At 20<sup>th</sup> week the production rate is 65% and 118 gm feed is supplied at this time.



**Table-1: Feed allowance in production period:**

<b>Production rate (%)</b>	<b>Feed consumption (gm/day)</b>
65	106
70	111
75	115
80	119
85	121
90	125
94	125
98*	125

**Lighting:** For proper growth and production lighting management system is necessary for poultry. The selected farm kept birds in 15 hrs lighting. But when body weight decrease then the birds were kept in extra one hour lighting. In the selected farm lighting started 4.30 am and it was continue for 16.30 hours that means at 8 am.

Intensity of light: There are two factors influencing the intensity of light falling on birds:

- Power of light source the amount of light given out by the bulb is directly proportional to its wattage.
- Distance of surface from the light source the light intensity decreases, as the source of light is placed further away from the surface.

**Table-2: Lighting schedule is given below**

<b>Day/week</b>	<b>Duration of light (hour)</b>
1 <sup>st</sup> Day	24
2 <sup>nd</sup> Day	22
3 <sup>rd</sup> Day	20
4 <sup>th</sup> Day	18
5 <sup>th</sup> Day	17
6 <sup>th</sup> Day	16
7 <sup>th</sup> Day	15
8 <sup>th</sup> Day	14
9 <sup>th</sup> Day	13
10 <sup>th</sup> Day	12
11 <sup>th</sup> Day	12
12 <sup>th</sup> Day	12
13-140 <sup>th</sup> Day	12
141-147 <sup>th</sup> Day	14
148-154 <sup>th</sup> Day	14
23 <sup>rd</sup> week	15
24 <sup>th</sup> week	16
25 <sup>th</sup> week to end	16

**Egg collection:**

Eggs were collected manually from each shed twice daily from 7am to 11am and 2pm to 5pm.

After collection, eggs were cleaned 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, abnormal 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.



**Vaccination and Medication:** Vaccination was done against Gumboro disease, Ranekhet disease, Fowl Cholera, Infectious coryza, coccidiosis (Table 3). Deworming agents were used at first time, at the age of 45 days, then they used to every 45 days alternatively.

**Table3: The medication and vaccination scheduled of poultry farm are as follows-**

Age(Days)	Name of the vaccine & drugs	Route	Dose
1-4	Antibiotic + vitamin	Drinking water	
5	IB + ND (Live)	Eye drop	1 drop/bird
7	IBD (Live)	Eye drop	1 drop/bird
9-11	Tylosine	Drinking water	
9-11	Debeaking		
12-14	Anti Cocci	Drinking water	
15	IBD+ (Live)	Eye drop	1 drop/bird
17	Marek's	S/C (Neck)	
18	IB + ND (Live)	Eye drop	1 drop/bird
22-23	Tylosine	Drinking water	25gm/1000birds for 2 days
26-28	Anti Cocci	Drinking water	
35	Fowl pox		
40-42	Anti Cocci	Drinking water	
47	Coryza	I/M (Breast muscle)	0.5 ml/bird
48	Anthelmentic	Drinking water	
53-54	Tylosine	Drinking water	
57	ND (Live)	Drinking water	
72	Cholera vaccine	S/C (Neck)	1 ml/bird
85	Coryza	I/M (Breast muscle)	0.5 ml/bird
90	Tylosine	Drinking water	
92	Anthelmentic	Drinking water	
100	IB + ND (Live)	Drinking water	
105	IB + ND + EDS	S/C (Neck)	0.5 ml/bird
112	Cholera vaccine	S/C (Neck)	1 ml/bird
125	Tylosine	Drinking water	

**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. The sanitation or biosecurity program of the layer farm is as follows:

- ❖ Chicks were vaccinated as per schedule .
- ❖ Entrance of personnel was restricted, prohibited and before entrance everybody were fixed dress for shed after bathing.
- ❖ Area adjacent to the farm was frequently cleaned and disinfectant morning and evening two times.
- ❖ Disinfectants are used alternatively in the footbath.
- ❖ Allow fresh feed were supplied to the birds before supplied the feed were checked for its quality.
- ❖ For water disinfestations three were used and disinfectant spray in house every 15 days interval.
- ❖ The shed were kept free of rodent.
- ❖ Dead chickens were disposed immediately from the farm and incinerated in incineration pit.
- ❖ Water tank clean everyday and nest ,drinker and feeding equipment are washed regularly.
- ❖ Protection was also taken to prevent wilds into the shed.

**Disinfectants:**

Different types of disinfectant used in this farm such as

1. Malathion =25ml/10L water
2. Povisep =10ml/L water 3) Phenol (carbolic acid)

## RESULT & DISCUSSION

**Productive performances of two layer strains:** The data of body weight at maturity, body weight at peak production, age at 50 % production, age at peak production, persistency of egg production, feed intake, egg weight, total egg production capacity, number of egg per years of Hisex and ISA Browns are shown in Table 4. From the data, it is obvious that age of sexual maturity, egg production capacity, persistency of egg production, egg weight, feed consumption of Hisex brown layer appeared to be better than that of ISA brown. The comparative improved performance of Hisex brown layer might be due to the multiple factors, which can include breed or strains, feed supply, management, temperature and other factors.

**Table 4: The result of this comparative productive traits between Hisex Brown and ISA Brown layer strains**

SL. No	Parameters	Layer strain	
		Hisex Brown	ISA brown
1	Body weight at maturity (18 weeks)	1.5kg	1.6 0kg
2	Body weight peak production (27 weeks)	1.7kg	2.00kg
3	Age at 50% egg production	20 week	21week
4	Age at peak production	26 week	28week
5	Length of peak production	9week	8week
6	Feed consumption/day/bird	118gm	122gm
7	Egg size/ Egg weight	53gm	54gm
8	Egg shell color	Brown	Brown
9	Total egg during production life	315	300
10	Number of birds	2010	4000

### Hen house egg production:

The first is the hen housed production, which is the number of eggs that a hen lays after placement in the in the laying house. For hen housed egg production zero egg is a valid observation for an individual hen. Hen that dies subsequent to placement in the laying house and hens that never lay are part of the hen housed population and they contribute to the hen –housed egg production. Hen housed egg production is a combination of three components –age at first egg; rate of egg production; from the start of egg production and viability. **The hen housed egg production of layers were calculated by the following formula: Hen Housed Egg production =  $\frac{\text{Number of eggs laid by hen in a particular time}}{\text{Total number of hen placed in to the room}} \times 100$ .** The proper management follows better production the selected farm the peak production 82% and 80%. Due to the early age production (24 wks age) the production % was less but it is was slightly more. But peak production started 26 weeks of age (same as guide line) which was constant for 32 weeks of age. The hen-housed egg production of two layer strains are shown below in Table 5. From this Table 5, it is clear that the egg production performance was better for Hisex Brown than that of ISA brown layers. The performance may be due to the variation of breed or strains, feed supply , management and other factors.

**Table 5: Hen house egg production**

Strain	Total	Production		
		Before peak	Peak	After Peak
Hisex Brown	2010	70%	82%	73%
ISA Brown	4000	72%	80%	70%

## **CONCLUSION AND RECOMMENDATION**

From the above study about Cox's Bazar Sadar Poultry Farm, it can be noted that the overall condition of all farm is very good. There location, structure, hygiene, shed management, flock management, litter management, vaccination, egg collection and their marketing all are acceptable level. During the placement feeding, housing, collection, cleaning and disinfection of the farm and disposal of shed waste were directly observed. Strict hygiene and bio-security measures were followed in every steps of farming operation. The measures taken during the study period were strictly maintaining the bio-security program in every step of farming operation; Proper hygienic measures should be taken; Vehicle disinfections should be done properly; should appoint a registered

The revelation from this study was that the egg production performance of Hisex brown was higher / better than ISA Brown. Under normal management Hisex is more perfect than ISA Brown .



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## **Biography**

I am Shahed Mohammad Raihan, son of Mr. Forkan Ahmad and Mrs. Safura Begum. I am from Moheshkhali, Cox's Bazar district. I passed my Secondary School Certificate (SSC) examination in 2011 and Higher Secondary Certificate (HSC) in 2013. I enrolled for Doctor of Veterinary Medicine (DVM) degree in Chittagong Veterinary and Animal Sciences University (CVASU), Chittagong Bangladesh in 2014-2015 session. I have immense interest to work in livestock sector.