**CHAPTER-I**

INTRODUCTION

Livestock plays an important role in the national economy of Bangladesh with a direct contribution of around 3 % percent to the agricultural GDP and providing 15 percent of total employment in the economy. The livestock sub-sector that includes poultry offers important employment and livelihood opportunities particularly for the rural poor, including the functionally landless, many of whom regard livestock as a main livelihood option. About 75 percent people rely on livestock to some extent for their livelihood, which clearly indicates that the poverty reduction potential of the livestock sub-sector is high. The backyard poultry units require minimum inputs and are often part of integrated crop- aquaculture-livestock farming systems. Their level of production is relatively low. Commercial production systems use birds of improved genetic stock and reared under semi- intensive or intensive management, their production level high, with high profitability. There are currently an estimated around 100,000 commercial poultry farms in Bangladesh, supported by 08 Grand Parent Farms and 130 Parent Stock Farms (National Livestock Development Policy,2007)**.**

The poultry industry has been successfully becoming a leading industry of Bangladesh. Considering the importance of the country’s poultry industry in order to ensure the sustainable economic development it is now high time to step forward for the better accumulation of resources available from this industry. This industry proves various opportunities of increasing GDP growth rate plus equitable distribution through arranging food security as well as ensuring self-employment at a large scale.

The growth of poultry industry both for egg and meat has been phenomenal during the last two decades in the developing countries including Bangladesh. However poultry rearing whether backyard or commercial farming creates provision for new employments and self employments providing an additional income especially for the rural women and acts as an important tool for poverty alleviation. Important factors in the continued growth of the poultry industry are the efficiency of poultry in converting vegetable protein into animal protein, the attractiveness and acceptability of poultry meat and eggs to people their competitive cost, the perceived healthfulness of poultry meat in human diets and the relative ease with which new technologies can be transferred.(Chowdhury *et al*,2003).

Broiler breeder production is one of the profitable production activities than broiler and layer production. The parent stock growers are always interested to select a strain that is well adaptable under local condition and is capable of producing quality hatching eggs for the hatcheries in accordance with their inherent potentiality (Hossain at al 2005).

The world’s most efficient broiler has the lowest feed conversion, best growth rate and an ability to thrive on low density, less costly nutrition. These attributes combine to give the Cobb500 the competitive advantage of the lowest cost per kilogram or pound of live-weight produced for the growing customer base worldwide.

The Cobb500 is a competitive breeder, providing excellent egg and chick numbers to complement the superior performance of the world’s most efficient broiler.

Cobb 500 is an English strain which shows an excellent production & reproduction performance in standard condition. It has a worldwide reputation for the lowest cost of producing chicken meat. Cobb geneticists have developed this breed by the research of more than 30 years progress using a combination of both traditional pedigree selection and new technology. They have developed a very high breeder performance of Cobb 500 .Such as Cobb 500 starts laying at 24 weeks of age .Age at 5% egg production is 24 weeks of age .At 65 weeks of age - total eggs/hen housed is 178, hatching eggs/hen housed is173 , peak hatchability 90 % ,broiler chicks/hen housed 146 (Cobb breeder management guide 2012). For such high breeder performance Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh choose Cobb 500 as a broiler parent stock for rearing.

Therefore the present study was undertaken at Renata Agro Industries limited Poultry Farm, Bhaluka, Mymensingh to observe the parent stock management practices with the following objectives.

1. To learn the management of broiler parent stocks Cobb 500.
2. To compare the achieved performance with the standard.

**CHAPTER-II**

**REVIEW OF LITERATURE**

[Mariana (](http://en.engormix.com/mbr-44122/mariana-ciacciariello) 2011) studied that the effects of light management on synchronization of sexual maturity, age at sexual maturity, peak production, persistency in lay and total hatching eggs produced in different strains of heavy breeder females.

Reyes et al. ( 2011) reported that the broiler breeder hens requires partitioning Metabolizable Energy (ME) requirements into maintenance, egg mass and body weight gain. Determining the daily energy requirement for maintenance and egg production in breeders requires separating the daily energy needs for egg production from energy needs of maintenance.

Robins & Phillips (2011) stated that although environmental factors, such as nutrition and husbandry contributes in growth rate but 50–60% of the increased growth rate is attributed to genetic selection.

D’Eath et al*. (*2010) & Rodenberg et al. *(*2010) both reported that more control and greater accuracy of measurement is thus gained at the expense of greater generality and an understanding of how the birds will perform in the environment in which they are actually to be kept.

Butter and Walter (2009) stated that Broiler breeders are often blood sampled from the wing vein under the supervision of an Official Veterinarian before the birds are transferred to the production farm, at around week 17-18, to check for any infection, and to check that the hens have sufficient antibodies to provide passive immunity to their offspring and protection against early infection.

Hocking (2009) reported that after peak production feed intake is decreased slowly to prevent fat deposition and too sharp a decrease in egg production.And also mentioned that the unrestricted fed broiler breeders have adverse changes in ovarian function leading to multiple ovulation and poor fertility during the production period, which is the main reason for applying restricted feeding.

Winter et al. (2009b) reported that in floor keeping systems for laying hens with manure storage under the perforated floor and in broiler barns it was found that ammonia concentrations could increase up to 50 ppm during the manure storing period.

Henderson et al. (2009) studied comparing performance of non-beak trimmed birds with birds beak trimmed with either an electro-cautery device or an automated infrared beak trimming device on the day of hatching, little measurable effect of beak trimming on early performance during the first six weeks of life was found.

Leone and Estevez (2008) studied, it was shown that cover panels also improved reproductive performance in broiler breeder flocks, probably by attracting females to the litter floor and reducing male-male competition for females and over-mating.

Ahmed (2008) reported that sudden excessive heat or cold lowered the egg production. Due to quick temperature change in the reproductive tract egg formed very slowly. Normally it takes about 23 hours to form an egg in the reproductive tract. Remedy of the problem is temperature controlled by thermometer and application of Vit-C in hot season.

Renema et al.(2007) stated that the effects of feed restriction on the welfare of broiler breeders has focussed mainly on females. Remarkably little work has been done in broiler breeder males. Males are less severely restricted than females during rearing.Also mentioned the feed restriction programmes are applied to achieve set target bodyweights at a particular age.

Raha (2007) stated that it is interesting to note that broiler farming is solely in the private sector particularly in the hands of small scale farmers.

Saleque (2006) reported that a few years ago the eggs of the parent stock and also day old chicks of broiler and layer were imported in our country, but now the demand of commercial layer and broiler DOC are fulfilled by our own parent stock breeder farm and they produce broiler parent stock DOC in their hatchery.

Mian et al. (2005) reported that hatcheries were found to sell larger portion of their day old chicks through their agents. Sometimes they sold a portion of their products directly to the commercial poultry farm owners.

Rahman (2003) reported that scientific breeding, feeding, management and disease control are the key points of success in poultry improvement farming.

Chowdhury et al.(2003) reported that exotic broiler parent stocks reared in open-sided house under Bangladesh conditions, in general, able to achieve expected body weight through they were found to be very sensitive to environmental stresses.

De Jong et al. (2002) stated that restricted fed birds show a hyperthermic response to feeding which lasts for about 1-2 hours, which is probably caused by high activity levels and an increase in metabolic rate during and after feeding.

Saleque (2001) stated that the constraints to productivity however, are not only related to disease but also to management systems, lack of supplementary feeding, predators, and inappropriate breeds.

Egg production in relation to body weight – Singh et al.(2000) mentioned that the genetic, phenotypic and environmental correlation of body weight at 12 weeks of age was found to be positive with all traits except age at sexual maturity while 36 weeks body weight was negatively correlated with age at sexual maturity and egg production.

**CHAPTER-III**

**MATERIALS AND METHODS**

**3.1 The study area:-**

The study was performed at a renowned pharmacautical company Renata’s Renata Agro Industries limited Poultry Farm, Bhaluka, Mymensingh, Bangladesh where popular broiler parent stock Cobb 500 was reared in Environmentally Controlled House.

**3.2 Study Period:**

The study was conducted for four weeks of time from 1st January to 30th January 2013 during my internship placement.

**3.3 Study Population:**

Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh has 3 units in 3 different places in which one unit contain 4 sheds. One shed contains 10000 birds.Total population of birds about 120000. But for the facilities of my study I had selected one specific part of flock containing 10000 bird of which 9000 were female birds & 1000 were male bird.

**3.4 Aim of study:**

My main aim was to compare the care, management & production performance of Cobb 500 broiler parent stock in the Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh with the recommended care, management & production performance of Cobb 500 in the “Cobb 500 Breeder Management Guide”.

**3.5 What is management?**

Management is the art and science of combining ideas, facilities, processes, materials and labour to produce and market a worthwhile product or service successfully. Poultry management usually refers to the husbandry practices or production techniques that help to maximize the efficiency of production. Sound management practices are very essential to optimize production. Scientific poultry management aims at maximizing returns with minimum investment. Only the efficient management can give the return as per aspect.

**3.6 Key Points of Poultry Parent stock Management:-**

**3.6.1. Bio-security**

Good biosecurity must encompass all the operations carried out by a caretaker of breeding stock. Procedures to prevent the introduction and spread of disease or contamination must be put in place for feed production, farm operations, hatchery, general maintenance and personnel. A breakdown in any single area will endanger the whole biosecurity program.

The following paragraphs outline the biosecurity measures that must be implemented at farm level.

* All personnel must understand the importance of following the biosecurity program.
* Each farm must have a perimeter fence to prevent unauthorized entry of people,vehicles and animals.
* Only essential personnel should enter the farm.
* Any vehicle that must enter the farm must be washed and disinfected at the gate.
* All farm workers and any other personnel who need to enter the farm must shower and change into a clean uniform.
* No other poultry, livestock or domestic pets of any kind should be allowed on parent farms.
* Any spilled feed should be cleaned up immediately.

It is recommended that dead birds be disposed of by incinerating the carcasses on farm (**Cobb 500 breeder management guide,2008.P:46).**

Bio-security is necessary to prevent the introduction of disease organisms into the flock by any means. Some other bio-security practices include:

1. **Farm location and construction**

* It is best to build up the farm in an isolated area, at least 2-km distance from the nearest poultry farm.
* Should fence the perimeter of the farm to prevent unwanted visitors.
* All houses must have concrete floors.
* The design and construction of the houses should be in a manner that dose not provide openings for wild birds,vermin and animals to enter the buildings.

1. **Preventing disease transmitted by humans**

* Restriction of the movement of visitors to the poultry farms.
* If supervisory personnel must visit, they should make an effort to visit the youngest flock first.
* Should visits flock with disease problems last.
* All people entering the farm should follow a bio-security procedure. All visitors should shower and use clean & calendared farm clothes.

1. **Preventing disease transmitted by animals**

* Whenever possible, all in all out placement cycle of birds should be followed.
* A minimum downtime of two weeks between flock is recommended.
* Should provide an entry barrier to rodents and wild animal.
* Should keep wild birds out of all buildings.
* Should maintain an effective rodent control program.

**3.6. 2. Preparing the poultry house for chicken**

A clean, comfortable environment for poultry and elimination of any pathogenic organism from previous flock and / or outside contamination preparation of house is essential.

1. **Clean out and disinfection procedures**

* Removal any live or dead bird, all remaining feeds and supplies, all equipment, litter and manure and rodenticides.
* Washing of building and equipment with clean water and detergent.
* Disinfection of building and equipment
* Spreading of clean, dry litter materials.
* Installation of the equipment to receive the chicks

1. **Common floor treatment**

* Floor can be treated with boric acid, aluminum silicate, salt, sulfur powder, lime as per recommendation.

1. **Water line cleaning.**

* Should clean with disinfectant flowing with water along the water line.

**3.6.3. Housing of chicks**

**(i) Before arrival of chicks**

* Chick transportation from the airport must be in clean, sanitized, properly ventilated, temperature controlled vehicles.
* Ventilate the house to ensure all waste gases from disinfection and heating. Formaldehyde gas can create immediate uniformity problems and inhibit early growth rate.
* Start pre-heating the buildings 24 to 48 hours before the chicks arrive depending on climatic conditions. This will ensure the floor is warm and the air temperature is correct when the chicks are placed (**Cobb 500 breeder management guide,2008.P:1-2).**

The stockman should work only on the brooding farm.

* + Checking that everything is in good working order.
  + Distribution of feed and water in the house.

**(ii) On arrival of chicks**

* Cover the whole floor with litter to prevent heat loss.Uneven litter creates uneven floor temperature.
* Provide 2 supplementary drinkers for every 100 chicks and position them near the feed.
* Feeding equipment should not be placed directly under or too close to the brooders.
* Provide one feeder tray for every 75 chicks at day old.
* Do not allow chicks to consume stale feed.
* Unloading of all chick boxes and distribution of them in the house.
* Feeding of the chicks 5% glucose solution and vitamin C for stress relief.
* Quickly placing of the chicks near feeders and drinkers.
* After placing the chicks, again checking of the equipment and temperature of the house **( Cobb 500 breeder management guide,2008.P:1-2).**

**3.6. 4. Brooding**(1-14 days)

The first 14 days are one of the most important times of a bird’s life. Remember the four basics:Feed, Water, Temperature and Air Quality. The first 14 days of a chick’s life sets the precedent for good performance.

* Fresh feed and water should be available.
* Brooders and heaters should be checked regularly to ensure that they are working correctly.
* All chick boxes should be placed in the house with the appropriate number of boxes aligned with each brooder prior to releasing chicks.
* Check chicks two hours after placement. Ensure they are comfortable with the temperature.
* Crop assessment is a useful tool to judge how effectively chicks have found feed and water.The crop should be soft and pliable. If the crop is hard, this is an indication the chicks have not found adequate amounts of water. If the crops are swollen and distended with water, the chicks have not found enough feed

**( Cobb 500 breeder management guide,2008.P:4-5).**

**a.Brooder**

* Place not more than 30 chick/m²(.36ft2/bird). Observe chicks and adjust for their comfort, but be careful not to over heat ( **Cobb 500 breeder management guide,2008.P:5).**
* At day-old, chicks require a brooder temperature 32 to 35ºC and a house temperature of 26 to 27ºC.
* The brooder temperature can be reduced approximately 2ºC every four days.

**b.Guards**

Provide 14 to 18 inch (36-46 cm) brooder guards. One inch (2.5 cm) wire mesh guards are preferred in summer or in warm climates.

* Guards may be placed around each stove or run the length of the house. Remove the brooder guards after the 7th day **( Cobb 500 breeder management guide,2008.P:3).**

**c.Lighting**

* Lighting should be continuous for the first 48 hours following chick placement. Provide attraction lighting so that the chicks remain close to heat source. Provide an intensity of 20-60 lux (2-6 ft candles) the first week to help chicks find feed and water more easily **(Cobb 500 breeder management guide,2008.P:3).**

**3.6. 5. Drinker and water management**

It is to supply an adequate amount of portable water for chicken considering the following points:

**(A)Water quality**

* Water should be kept clean, cool and free from pathogens.
* Water must be available at all time when the temperature is higher than 30ºC(85ºF),when there is disease or a stress condition.
* It is recommended that calcium and magnesium salts(hardness) should be less than 20ppm and salinity less than 1,000 ppm.
* A chlorine level of 3-5 ppm is recommended at the drinker level.
* Never restrict intake of water during egg production.
* Testing of the chlorine level of the drinker.
* Testing of the water monthly to ensure acceptable coli form levels **( Cobb 500 breeder management guide,2008.P:4-5).**

**(B) Drinker management**

* It is essential to provide easy access to fresh, clean water so that feed intake and growth are maintained. Chickens normally drink between 1.6 – 2.0 times their feed intake on a daily basis at 21°C (70°F). Water consumption of more than 2.0 times the feed can occur in excessively high temperatures (above 30°C (86°F)). High consumption may also indicate errors in the feed formulation or leaking drinker systems **(Cobb 500 breeder management guide,2008.P:17).**

**(i) Open drinking system**

* Gradually have to move the chick drinker towards the automatic drinkers.
* Until seven days of age, the top lip of the drinker should be set to the height of the average bird’s back. After 7 days of age, the drinker should be gradually raised.
* The proper water depth is 1.9 cm.
* Drinker should be washed daily.

**(ii) Nipple drinking system**

* Should make sure the nipple drinker lines and litter are level.
* Just prior to pacing the chicks on the nipple drinking system, triggering all of the nipples to check perfect flowing of water.
* The height of the water lines should adjust in such a way that the lines are at the chick’s eye level for the first two days.

**3.6. 6. Beak trimming**

Beak trimming is not usually necessary for parents kept in fully controlled lighting.Beak conditioning may be necessary to control aggressive pecking in open sided houses or situations in which light intensity cannot be controlled.

**a.Females**

Check the females’ beaks closely at 18 weeks of age to be sure that they have not grown out to the extent that they may cause injury to their flock mates. Birds with overgrown beaks,spoon beaks, parrot beaks or other beak deformities that may prevent them from eating or drinking properly.

**b.Males**

It is essential that male beak trimming be carried out with precision to maintain uniformity and maximize fertility.Check the male’s beaks closely at 18 weeks of age and retrimming done when the birds that show beak overgrowth or any beak deformity **( Cobb 500 breeder management guide,2008.P:3).**

* Beak trimming males also reduces the risk of damage to the females during mating in the hen house and helps the male mate more effectively.
* should provide 24 hours of supplemental vitamin k prior to beak trimming.
* Should allow only experienced person to do the work.
* Should work slowly and carefully.

**3.6. 7. Vaccination**

The main purpose of a vaccination program is to prevent losses from a specific disease.Vaccination may create stress on the birds so give attention to the flock.

* Only vaccinate healthy birds.
* Read the label and follow the manufacturers’ instructions for vaccine reconstitution, dilution and administration.
* Do not use out-dated vaccines.
* Keep vaccines refrigerated at the manufacturers recommended temperature, avoiding heat and exposure to direct sunlight.
* Use the full dosage and do not dilute the vaccines.
* All used and open vaccine containers should be disposed to prevent accidental spread of the virus.
* Shake the vaccine well prior to administration and regularly during the operation.
* Monitor the health and antibody status of the flock on a routine basis **(Cobb 500 breeder management guide,2008.P:50-51).**

It has several methods (a) Water vaccination, (b) Spray vaccination, (c) Intra-ocular vaccination, (d) Intranasal vaccination, (e) Subcutaneous injection system. (f) Intramuscular injection, (g) Wing web punching and (h) Vaccination through feed.

**3.6. 8.**  **Growing period management**

* To manage environmental conditions and nutrient program to develop the most productive male and female breeders.
* Density: For temperate climate – 6.2 female birds / m² and 3.0 male birds / m² whereas. in hot climate – 4.8 female birds / m² and 2.75 male birds / m².

**(a)Feeding**

Females are fed ad libitum for the first 2 weeks and then their intake controlled to ensure they do not exceed the target weight at 4 weeks of age.

Parent males need to achieve the body weight standard each week for the first 4 weeks to obtain uniformity of the flock.

* Weekly feed increases should be based on body weight targets **(Cobb 500 breeder management guide,2008.P:20).**

3. **Controlled feeding**

* Most practiced method is limiting the quality of feed to be eaten daily.
* Starting of control feeding at the end of 7th weeks of age to decrease the fat deposition and make ready for production.
* Stop controlled feeding 17th weeks of age
* Feed ad-libitum until 30 weeks and start controlling the feed again.

**(b ) Flock uniformity :**The percentage of birds having a body weight between 10% above or below the average weight is called the flock uniformity **( Cobb 500 breeder management guide,2008.P:20).**

A uniform Parent breeder flock will be easier to manage and will produce more chicks per hen housed than an uneven flock. Good uniformity results from careful attention to the flock.

**Common factors leading to body weight uniformity problems**

* + Presence of formaldehyde gas at chick placement
  + Extreme temperatures
  + Poor feed distribution
  + Incorrect feed amounts
  + Over stocking
  + Insufficient water supply
  + Too high or too low energy feeds
  + Insufficient light at feeding time
  + Incorrect feeder height
  + Irregular feeding times
  + Incorrect bird numbers or pen drift
* Disease or parasitic infection **(Cobb 500 breeder management guide,2008.P:4-5).**

**Grading:**

Bodyweight grading helps to maintain flock uniformity if it is done correctly. Females should be graded between 23 and 28 days.Males should be graded after 35 days of age. This grading may best be done by grading for fleshing and body conformation rather than bodyweight alone **(Cobb 500 breeder management guide,2008.P:21).**

**3.6.9. Required body weight increase from start to peak production:**

About 18-20% body weight increase is used when the body weight of the females is between 2800 and 3100 grams with a 0.5% to 3% average weekly production. If the flock starts production with a body weight lower than 2800 grams, the birds need more than 20% body weight increase to peak in order to have enough fat reserves to maintain production persistency. If the flock begins production with a body weight higher than 3100 grams then the flock can perform well with a body weight increase lower than 18% simply because the females have already accumulated an adequate amount of fat reserves **(Cobb 500 breeder management guide,2008.P:31).**

**3.6. 10.** **Ventilation**

* To provide the best air quality to the chicken while maintaining comfortable temperature and humidity in the poultry house which include: (a) Natural ventilation and (b) Tunnel ventilation.

**3.6. 11. Lighting**

* The response of the hens to light stimulation is based on their condition, body weight and age. In light controlled housing, delay light stimulation if the flock still contains significant numbers of underweight birds.The age at first light stimulation could be 20 or 21 weeks of age. When transferring birds from dark-out rearing to open sided laying houses **(Cobb 500 breeder management guide,2008.P:13).**
* To control intensity and duration of light to provide to the birds in order to produce sexual maturation at the desired time and sustain production.

**3.6.12.** **Management of females during production**

To obtain the maximum numbers and size of hatching eggs through the entire production period female management is important.

**(a)Weighing birds**

To measure body weight, weigh between 60 - 100 birds per pen each week or 1%-2% of the population. At 7 and 14 days weigh a bulk sample of birds or 10 birds weighed together in a bucket. Thereafter, weigh birds individually at the same time on the same day of every week.

* Pullets and males should weighed weekly until 40 weeks thereafter through the end of the production period.

The supervisor should examine each bird carefully for body condition and sexual activity.

**Follow these simple procedures to ensure accuracy:**

* Weigh **every** bird including small birds (cull sexing errors during this operation.)
* Record body weight **( Cobb 500 breeder management guide,2008.P:18).**

**(b) Female feed management from light stimulation to peak production:**

From the point of light stimulation to peak production is one of the most critical periods in the life of a breeder flock in terms of nutrition. After light stimulation the female will partition the available nutrients between maintenance, growth and the development of the reproductive system. A well designed management program can influence how this partitioning takes place.

From light stimulation to onset of production feed according to body weight. When the birds are light stimulated with the right body condition, this period usually requires small feed increases (4-6 g/bird/day or 0.9-1.3 lbs/100 bird/day).

Conservative feeding programs from light stimulation to onset of production will also help with:

* Female body weight control.
* Egg weight control.
* The reduction of onset of production mortality (prolapses, SDS, heart attacks,
* fatty liver, etc.) **( Cobb 500 breeder management guide,2008.P:28).**

**Production feeding:**

|  |  |
| --- | --- |
| **Production period(%)** | **Feed required(gram per bird)** |
| **5** | **130** |
| **15** | **136** |
| **25** | **142** |
| **35** | **148** |
| **45** | **154** |
| **55** | **160** |
| **65** | **166** |

**(Cobb 500 breeder management guide,2008.P:30)**

**(c)Post peak feeding/Feed reduction:**

The hen carries some of the genes for excellent broiler performance that are seen

in her progeny. The female can easily become overweight, causing problems with

persistency of lay and fertility in the later stages of her life. Therefore, one must be

careful in feeding the flock after peak production, reduction of the daily amount fed is important in order to keep the hens performing adequately.

The first reduction is normally 2 - 2.5 grams per bird (0.5 lbs/100 birds) for the first

week.This can be followed one week later with another reduction of the same amount.

**(Cobb 500 breeder management guide,2008.P:32-33)**

**(d)Managing a very high producing flock**

* + - Should calculate the production percentage of egg
    - By correlation of body weight gain with production percentage the amount of feed have to be determined.

**3.6. 13. Floor management**

* Stocking density 6-8 birds / m²
* Litter management :Regular tiring for prevention of cake formation& disinfactent spraying for prevention of pathogen.
* Nest training and nest ratio 4-5 hens /nest.

**3.6.14. Monitoring of egg mass**

To obtain standard hatching egg size throughout the life of flock :

* Egg mass is determined by multiplying the daily production times the average weight of the eggs. Even though the flock may be past peak production, the egg size may be increasing, and the hens will require the proper nutrients to sustain production **( Cobb 500 breeder management guide,2008.P:33).**
* (a) Egg weighing and
* (b) target fertility and hatchability.

**(a)Egg Weighing**

Weigh at least 90 eggs immediately following the mid-morning collection, excluding only double-yolk and cracked eggs. Daily egg weights when plotted on a graph will give an indication of potential problems that should be investigated immediately.

**Underweight eggs**

* Underfeeding
* Low levels of energy or protein feeds
* Inadequate water supply
* Disease
* Extreme house temperatures
* Underweight birds

**Overweight eggs**

* + Overfeeding
  + High levels of energy or protein feeds
  + Overweight birds

Egg size is largely determined by the body weight of the female at photostimulation.

* Delayed lighting will give larger eggs initially and probably throughout the life of the flock **( Cobb 500 breeder management guide,2008.P:42).**

**3.6.15. Care of hatching eggs**

**a.Egg collection**

* Collect eggs at least four times daily and during peak production periods six

collections are recommended.

* Wash hands before and after each egg collection, and before and after handling floor eggs.
* Prevent hair line cracks by handling eggs carefully at all times. Eggs should be collected in plastic or fiber trays **(Cobb 500 breeder management guide,2008.P:43).**

**b.Egg storage** –

* Eggs should be allowed to cool down gradually to the farm egg store temperature before putting them into the egg store. Keep a record of the maximum and minimum temperatures and the relative humidity in the egg store. There are three storage areas: farm egg room, transport, and hatchery egg room.**Temperature fluctuations during egg storage time will cause a higher early embryonic mortality and poorer quality chicks.The** **optimum temperature 12 to 18ºCand humidity 75 to 85%** **(Cobb 500 breeder management guide,2008.P:44-45).**

**c.Handling of hatching eggs:**Handled with care.

**d.Hatching egg disinfection** : Fumigation an disinfection in the hatchery.

**3.6.16. Feeding the male breeder:**

* Ration formulation of male breeder should be different from female birds.
* Germinated grain should be given at the matured age for improvement of semen quality.
* Ensure that good positive growth takes place during the first 4 weeks after light stimulation, when testis development takes place.
* After 16 weeks of age stimulate the males constantly with feed to maintain body weight and testes development **(Cobb 500 breeder management guide,2008.P:35-37).**

**3.6**. **17. Male : Female ratio**: Maximum Male: Female 1: 10

**3.6.18. Dead bird disposal :**

* Incineration of dead bid is the best method of dead bird disposal.
* If not possible a pit should be made at a safe distance from the farm house for dead bird disposal.

**3.6.19.Disinfection:**

**Step by Step**

* Empty house of all poultry
* Clean out all organic matter and remove far off site
* Remove all portable equipment for cleaning and disinfecting outside building
* Wash down all the inside surfaces with heavy-duty detergent, under pressure if possible
* Apply disinfectant with guaranteed activity against viruses and bacteria that can infect poultry
* Use an insecticide and rodenticide where these vectors of disease are present
* Fumigate with formaldehyde – active material
* Replace equipment, put down litter and preferably fumigate again before house is re-stocked **(Cobb 500 breeder management guide,2008.P:48).**

**3.6.20. Record keeping**

Keeping complete and accurate records is an essential part of managing Cobb parent stock.

Everyday management decisions are based on the following list of key records.

**a.Rearing**

Daily records:total mortality,culls,feed,temperature,water consumption,feed clean-up time.

Weekly records:Body weight,Unofprmity.

b.Production

Daily records:total mortality,culls,feed,temperature,water consumption,feed clean-up time,total egg number,egg weight,hatching egg number,fertility.

* Weekly records:Body weight,Unofprmity **( Cobb 500 breeder management guide,2008.P:41).**

There are some other points should be records regularly.

* Breed of male and female.
* Date received.
* Vaccination completed at the hatchery.
* Vaccination completed at the farm
* Production cost.

Management is the key factor which can lead the performance of any parent stock and properly and accurately managed stock can produce excellent performance which is desirable for the profitability of the parent stock.

**CHAPTER IV**

**RESULTS AND DISCUSSION**

During my study period I observed the following differences between the existing management of broiler parent stock Cobb 500 at Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh and the standard/ recommended management of broiler parent stock Cobb 500 in the “Cobb 500 Breeder Management Guide.” Farm data (achieved /actual) was collected from record book of Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh .Standard / Recommended data are collected from the “Cobb 500 Breeder Management Guide 2012.”

**4.1 Preparation of the poultry house:** (Before arrival of a new flock)

After removing all equipments, litters used for previous flock the shed was cleaned properly with three types of cleaning practice for making the room pathogen free.

**(a)Dry cleaning**

Dry cleaning was done by using different types of sweeping instrument like

brush, coconut leaf made sweeping instrument etc. to remove the dirt as high as possible.

**(b)Water Cleaning**

Then the house was watered with detergent. After that the room was washed thoroughly with clean water. The liming was done, liming means the whole surface was covered with a layer of lime solution. The lime was used as a disinfectant. Then the room was left for drying for 15 days. During this period routine spray was done with different disinfectant like spraying with formalin (10 litter water +2/3 litter formalin).

**(c) Fumigation**

After 15 days of drying period, fumigation was done with formalin and potassium per management at the rate PPM: Formalin =1:2 ratios. Then the room was closed for 24 hours. After that it was opened. Before arrival of the chicks, the room was preheated for 2-3 days.

**4.2 Brooder House Management for chick both male and female:**

**4.2.1. Preparation of Brooder House:** In my study area cage brooding was performed. The hover was set approximately 3 feet above from the chick level. Only gas brooder was used for brooding of chicks. Hard Board was used as guard for prevention of spreading of bird. Paper was used for bedding material.

**4.2.2 Brooding temperature**

**Table 1:-** Comparative study on brooding recommended and actual / kept brooding temperature existing management system of Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh.

|  |  |  |
| --- | --- | --- |
| **Day** | **Temp. for brooding (ºC)** | |
| **Recommended** | **Kept** |
| 1 | 35-33 | 35-33 |
| 2 | 33-32 | 33-32 |
| 3-7 | 32-29 | 32-29 |
| 7-14 | 29-26 | 29-26 |
| 14-21 | 26-23 | 26-23 |
| 21-28 | 23-21 | 23-21 |
| 28-35 | 21-20 | 21-20 |
| 35 and later | 20 | 20 |

From the above data it can be said that special care was taken during brooding of chicks. For regular monitoring three worker always remain in the brooder house alternatively. The Standard & kept brooding temperature were recorded from the Cobb 500 breeder management guide and the record book of the farm respectively. From the analysis of data it is seen that the farm strictly maintain the brooding temperature

**4.2.3 Air Management /Ventilation:**

Actually temperature and ventilation was maintained there according to the condition of the birds. During brooding when the chicks gathered in the periphery then the hover was placed somewhat above from the previous height. But when the chicks gathered under the hover, then the hover placed down .During summer water is sprinkled over the roof in brooder house. And incase of layer birds as they kept in environmentally controlled house so the ventilation is maintain automatically. The ventilation was maintain by switching of the fan.

**4.2.4 Feeding and Watering:**

During brooding period feed was given by spreading on the paper at an early age .Than with the age increase linear feeder was used there. At first bell drinker was used for drinking of water. With the age increase nipple drinker was used. generally adlibitum water was given . It was 1.8 times more than feed consumption .

**4.2.5 Bedding Material:**

During cage brooding paper was used as a bedding material. After transfer into grower house litter material was used for bedding material.

**4.2.6 Vaccination programme:-**

Same schedule was practiced for all the birds reared in Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh.

**Table 2-** Vaccination schedule for Cobb 500 Broiler Breeder.

|  |  |  |  |
| --- | --- | --- | --- |
| **Age (day)** | **Age (Week)** | **Name of Vaccine** | **Route** |
| 4th | - | IBD Live (INTER) | Eye |
| 5th | - | Cocci Vaccine | Water |
| 6th | - | Debeaking | \_ |
| 7th | 1 | MA5 Clone 30+ ½ dose IBD Killed | Eye & S/C |
| 9th | 2 | Reo live | S/C |
| 12th | 2 | IBD live + ½ dose ND killed | Eye & S/C |
| 13th | 2 | IB 4/91 | I/O |
| 16th | 2 | ND Lasota | Eye |
| 26th | 3 | IBD live | Eye |
| 35th | 5 | Reo Live | S/C |
| 42th | 6 | ND+IB Killed | S/C |
| 45th | 7 | Fowl Pox | Wing Web |
| 56th | 8 | Fowl Cholera (killed) | I/M or S/C |
| 63th | 9 | Salmonella (killed) | S/C |
| 70th | 10 | 4/91 IB | I/O |
| 80th | 12 | Coryza (Optional) | I/M or S/C |
| 84th | 12 | Fowel cholera (killed) | I/M or S/C |
| 91th | 13 | Salmonella (killed) | S/C |
| 98th | 14 | AE + Pox | Wing Web |
| 105th | 15 | Coryza(Optional) | I/M or S/C |
| 112th | 16 | ND+IB killed MA5+(IB live) | S/C &Eye |
| 126th | 18 | EDS Killed | S/C |
| 147th | 21 | ND+IB+IBD+Reo killed | S/C |

**4.3. Growing period management of Female bird:**

**Lighting stimulation**

The lighting program during growing, production allows for a better control of age at sexual maturity in both males and females. The consequence of too early onset of production are often more detrimental than a slight delay. Too early light stimulation will cause egg bound of hen and death. At the study farm the brooding period lighting was 24 hours and after brooding, by gradual decreasing way the growing period lighting was 8 hours.Lighting management autometically controlled in the Environmentally controlled house (E.C. House).

**4.4 Management of Female Bird During Laying Period**

**4.4.1 Housing system:-**

The birds were kept in the Environmentally controlled house (E.C. House) in the Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh.The Environmental temperature was controlled by cooling pad. There was also exhaust fan to remove the hot air that keeps the room cool always. Temperature was regularly monitoring by a thermometer.

**The house is facing East-West**

Length of house → 400 feet.

Width of house → 40 feet.

Cooling Pad → 45 feet.

Exhaust fan → 12

Roof of the house → Made by tin.

**4.4.2 Floor System**

Now-a-days the commercial broiler breeder hens are usually reared on different types of floor system. One of them is the stat cum litter system . In the study farm upon which my study was conducted the broiler breeders (of the strain Cobb 500) were reared on slat cum litter system of flooring.

**4.4.3 Slat cum litter system:-**

In this system, about two-third (60%) areas was covered with slats of each side and one third (40%) areas was covered with litter materials. The litter used was rice husk with a depth of 6 inches. The slats were used in the house through the “ down the edge of house fashion. In this system the middle area contain litter materials and the surrounding area covered with slats. The top of the slat was 16cm above the top of the litter.

**4.4.4. Lighting Management:-**

Lighting is an important thing for the breeders at the period of layering specially. During this time light should never be reduced in time or in intercity. Broiler breeder hens come into lay in response to increases in the day length when male at the appropriate time. The response of the hens to light stimulation is based on their condition, body weight and age. Cobb 500 Parents should be reared in light proof housing. The light intensity in such house must be less than 0.5 lux when the lights are switched Dark out houses should provide total light control. Start chicks on 24 hours of light reducing to 8 hour by 23 weeks of age. The age at which 8 hours day length is reached will depend on feed consumption time. Generally the 8 hour day length can be started when the birds consume their every day restricted amount of feed in 5 hours or less.

**Recommended lighting program in E.C housing.**

**Table 3 :** Comparative study on lighting management :

|  |  |  |  |
| --- | --- | --- | --- |
| **Age (weeks)** | **Age (days)** | **Light (hours)** | **Light intensity (lux)** |
| 1 to 3 | Day-old to 21 | Decreasing from 24 hours at day 1 to 8 hours by 14-21 days | Days 0-2 maximum light (>20 lux) reducing to 20 lux by day 7 |
| 3-20  20  21  22  23  24  25  26  27  27+ | 21-140  141  148  155  162  169  172  183  190  190+ | **-**  +4  +1  +1  +1  +1  **-**  **-**  **-**  **-** | 5-10  40-60  40-60  40-60  40-60  40-60  40-60  40-60  40-60  40-60 |

The farm also used the above lighting schedule.



**Graph-1: Management of lighting system**

**4.4.5. Litter management**

Rice husk was used as litter material. Before using the rice husk it was made disinfected by spraying with proper disinfectant like formalin (2/3 litre formalin + 10 water) at the rate of 300 ml solution /m2 with concentration of 7 ml /litre. After making the litter materials properly disinfected it was used on the floor. In the brooder house the height of the litter was 4. But other then brooding period it was 6-8 inch height. It was tried always to maintain the litter dry. For that the litter was scratched and rolled ups and down by scratches at least once a week and cake was removed. A part from this, regular spraying was done over the litter with proper disinfectant. The culled litter was sold at the rate of 25 taka per bag.

**4.4.6. Floor space requirement:-**

**Table 4 . Comparative study floor space requirement of chicken.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Floor space requirement** | |
| **Standard (sq ft/bird)** | **Given (sq ft/bird)** |
| Female | Brooding  (0-5 days) | 0.36 | 0.36 |
| Growing  (6day-16 weeks) | 1.75 | 1.75 |
| Laying  (15wks-65wks) | 2.75 | 2.75 |
| Male | Brooding  (0-5 days) | 0.36 | 0.36 |
| Growing  (6day-16 weeks) | 3.00 | 3.00 |
| Production  (16wks-65wks)  cage rearing | 1.5 | 1.5 |

**4.4.7. Feeding and watering:**

The feed that are supplied to the male and female breeders in their laying period are produced by Renata Agro Poultry feed mill.The feed that supplied to birds was made by the farms own feed mill. These feeds having the optimum level of nutrient required for the breeder.

The feeds ware supplied by automatic chain feeder. Usually the feeds were given once daily for a short period usually at 5.00 am for 10-14 minutes.

For watering nipple drinker is used according to the height of the bird. 1 nipple is used for 5 bird water supply ad libitum.

**Table 5 : Ration formulation for different stages of bird**

They called it Maize-soya based diet.They does not use any Animal Protein sources in the ration of the bird.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of Ingredients** | **Starter** | **Grower** | **Pre Breeder** | **Breeder** |
| Maize | 64% | 66% | 69% | 65% |
| Soybean meal | 30% | 19% | 22% | 17% |
| Full fat soya | - | - | - | 8% |
| Wheat bran | 1.5% | 10% | 3% | - |
| Limestone | 1.6% | 1.8% | 3% | 7.3% |
| MCP | 1% | 1.4% | 1% | 1% |
| Common salt | 0.25% | 0.25% | 0.25% | 0.25% |
| NaHCO3 | 0.3% | 0.3% | 0.3% | 0.3% |
| Breeder Vitamin | 0.1% | 0.1% | 0.1% | 0.1% |
| Breeder Mineral | 0.15% | 0.15% | 0.15% | 0.15% |
| Choline chloride | 0.15% | 0.15% | 0.15% | 0.15% |
| DL-Methionine  (Met-AMINO®) | 0.15% | - | 0.1% | 0.2% |
| Lysine | 0.1% | - | - | 0.05% |
| Toxin Binder  (Microfix-Plus®) | 0.2% | 0.3% | 0.2% | 0.2% |
| Acidifier  (Biotronic-SE) | 0.3% | 0.3% | 0.3% | 0.3% |
| Zn & Mg  (Availa –Z/M) | 0.1% | 0.1% | 0.1% | 0.1% |
| Multienzyme | 0.04% | 0.04% | 0.04% | 0.04% |
| Selenium | 0.15% | 0.015% | 0.015% | 0.015% |
| Phytase enzyme  (Rena-Phytase) | 0.13% | 0.13% | 0.13% | 0.13% |

**Table 6:Comperative study of calculated and Recommended nutrient levels**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Starter** | **Grower** | **Pre-Breeder** | **Breeder** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nutrients | Cal | Rec | Cal | Rec | Cal | Rec | Cal | Rec |
| ME(kcal/kg) | 2860 | 2796 | 2750 | 2581 | 2860 | 2761 | 2860 | 2761 |
| CP(%) | 19 | 18.54 | 15 | 14.45 | 16 | 15.43 | 16 | 15.43 |
| Calcium(%) | 0.95 | 1.00 | 0.9 | 0.99 | 1.5 | 1.45 | 3 | 2.89 |
| Available  Phosphorus  (%) | 0.45 | 0.45 | 0.45 | 0.40 | 0.45 | 0.43 | 0.45 | 0.43 |
| Lysine(%) | 1.8 | 1.00 | 0.75 | 0.59 | 0.8 | 0.72 | 0.85 | 0.72 |
| Methionine  (%) | 0.45 | 0.44 | 0.26 | 0.27 | 0.35 | 0.32 | 0.45 | 0.34 |

**[Note:Cal =Calculated value ,Rec=Recommended value ]**

From the above analysis almost all the nutrient levels higher than the recommened levels,but the energy given to birds was much higher than the recommended,so that cam be cause of energy store in the body which may become further cause of lower production.

**4.4.8 Body weight gain & uniformity monitoring:-**

The Body weight of 10% birds were taken from each flock once weekly at the weekend in empty stomach. The main objective during rearing is to reach the target body weight and uniform growth rate according to the standard. It is a great advantage for flock management to achieve a uniform flock during laying. It is crucial to maintain uniformity n the flock. When flock uniformity become low, it is necessary place those higher and heavier birds in separate pan. The lighter bird should be given extra feed for achieving weight and the heavier birds should restrict the feeding till reduces the weight.

In the study farm body weight were taken from 10% of birds weekly at the weekend in empty stomach. Here great emphasize is given on the average body wt according to the age related body wt of breeder management guide and Calculation of average body wt was done based on the body wt of breeder management guide.

**4.4.9 Laying nest:-**

In slat cum litter system of rearing nest was supplied to the hen for egg laying .One nest containing 24 boxes. A single box was 12×12×12 inches and a single box was offered for 4 hens. Tenis balls were kept in the nest to stimulate the bird for laying. During that period regular culling of non productive hens were done to decrease the cost . There were 94 nests in one house .These nests were arranged on slat in one row at an equal distance from each other.

**4.4.10 Male & Female ratio:-**

In the study farm Female & Male were kept togather in slat cum litter system in EC house and the male : Female was 1:10

**4.4.11 Reproduction:-**

Natural mating was performed by the birds.

**4.4.12 Egg collection:**

* In environmental controlled house, eggs were collected manually. Then eggs were cleaned, dried and stored in the storage room. At temp 18-20ºC,Egg collection depends upon percentage of production such as at 50% production 3 times daily,60% production 4 times daily,80% production 5 times daily.Collection completed about 12pm.

**4.5. Hatchery Management:**

**4.5.1 Hatching Egg Collection:-** In Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh Male and female ratio was 1:10. Cobb500 starts egg production from 18weeks of age.Eggs were collected from shed 6-8 times in a day.

**4.5.3 Transporting of hatching eggs from farm to hatchery:**

Eggs were transported from farm to hatchery by their own egg lorry. After reaching to the hatchery eggs are unloaded immediately to the grading room.After unloading broken , dirty and deformed eggs were separated. The dirty eggs were cleaned with luke warm water (45°C) having 50%H2O2 and cotton. Then the eggs were dried. Clean eggs were spraying only with disinfectant (Glycol 40% + 17% Formaldehyde 40% + 15% Gluteraldehyde 50% + 5% Benzalconium chloride 13% )

**4.5.6 Selection and grading of hatching eggs:**

Eggs having the following criteria were discarded­**-**

* Small sized egg
* Mishappened egg
* Large egg
* Double yolked egg
* Thin shelled egg

Uniform sized eggs were selected for good hatchability. The weight of hatching eggs should be 53 to 56 gms (Mahmud Jamilur 03) After selection of hatching eggs were disinfected with disinfectant solution spray and eggs having little dirt were washed with luke warm water containing 50% H202

**4.5.4 Fumigation of eggs:**

Fumigation of egg was done by mixing 200 ml formalin (40% solution in water of formaldehyde gas) and 100 ml potassium permanganate. Fumigation of hatching eggs was done thrice with single strength for thirty minutes.

**4.5.2 Storage of eggs:**

Again fumigation of eggs were stored in the storage room.Capacity of storage about 400000 eggs to the hatchery.

Eggs were stored in cooling room which temperature was 18-20°C and relative humidity was 85%.The room was equipped with a cooler unit and humidifier. A ceiling fan was there to maintain a continuous flow- of air. Eggs can be stored in the cooling room for 3-5 days.

During storage egg should be set small end down & large end up **(Siddiki Abuzar 03)** farm followed that.

**Table 7: Suggestive egg storage conditions: (Md Elias Hossain 2000)**

|  |  |  |  |
| --- | --- | --- | --- |
| Period of stage | (0-4)days | (5-7)days | (8-14) days |
| Temperature (°C) | 17-18 | 16-17 | 14-16 |
| Relative humidity (%) | 80 | 85 | 85 |
| Egg position | Broad end up | Broad end up | Broad end up |

In the study farm the above conditions were maintained for egg storage.

.**4.5.7 Hatchery Operation And Get Hatches:**

There are only one type of incubator used in Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh.

**Karamsar:** There are total 6 setter machine in the hatchery. Capacity of each setter machine is 19000. No. of Hatcher machine is 6. Capacity of Hatcher machine is 4752.The setter tray capacity of egg 132. Eggs are set alternatively in the setter in multistage system and in every three days in Hatcher.

**Table 8 : Temperature and humidity maintained in different types of incubator of Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Season** | **Particulars** | | **Karamsar** |
| Summer | Temperature  (°F) | Setter | 99.5 |
| Hatcher | 98.5 |
| Relative Humidity (%) | Setter | 86.5 |
| Hatcher | 87.8-88.0 |
| Winter | Temperature  (°F) | Setter | 99.8 |
| Hatcher | 98.8 |
| Relative Humidity (%) | Setter | 86.5 |
| Hatcher | 87.8 |

**4.5.8:Preperation of Setter and loading of eggs into Setter**

All the setting trays were washed with water and bleaching powder. Then the trays were sprayed with antiparasitic acid solution (50% H202-2 L, Acetic acid-l.0 L, 50% H2S04 -11.0 ml mixing)@3ml / L water. Then the trays were dried in the sunlight. Before setting of eggs setter has to be fumigated by mixing 40cc formaldehyde and 20gm potassium permanganate for each 9.3 sq. meter space. The pot where the chemicals were mixed should be large enough. After keeping the pot in setter the door has to be immediately closed for 3 hrs. After fumigation eggs were trayed vertically with the broad end uppermost. Second fumigation was made in the setter after placing of eggs in trays by 17.5gm KMnO4 & 25cc formalin for each 9.3 sq. m. for 30 minutes. Then machine was started. Temperature of the setter was adjusted at 99.5°F and relative humidity remain 60%. A thermometer was fitted in inside the incubator for maintaining proper temperature. The incubator has a glass window fitted in front of the hatching egg tray, through which the temperature reading was taken. A water tray with sponge over in it was kept inside the incubator and was filled with water about hatching time. For the best hatch results 21% O2 and 0.5% CO2 are required. Eggs remain in setter for 18 days.

**4.5.9 Turning of eggs.**

In the setter machine eggs were set by large end up. Eggs were turned in every 1 hours interval automatically till 18th day of incubation. Eggs were checked in the inside of the setter machine by using torchlight. Checking was done to determine bursting of eggs. During checking a little formalin was given in a plate and kept in the setter machine.

**4.5.10 Candling of eggs.**

Candling is done at the 18th day of incubation when eggs were transferred from setter to hatchers. Candling was done in a dark room. During candling, infertile eggs were removed. Infertile eggs tend to explode and contaminated the neighboring eggs. It resulting a poor hatch. Transfer and candling was done as fast as possible to avoid too much cooling down of the eggs.

**4.5.11 Preparation of hatcher and transfer of eggs from setter to hatcher.**

When piping occurs within 5 to 10% eggs. Then eggs were transferred from setter to hatcher. Beforetransferring eggs, hatcher trays were removed, cleaned, washed and in the same way as the setter trolley. Then fumigation was done in the hatchery by using 50 part KMnO4 and 100 parts formalin (1:2) in a earthen pot. During fumigation ventilators and the door remain closed. Formaldehyde and potassium permanganate create a gas by chemical reaction which is effective in killing germs. The Hatcher door was kept closed for at least one hour. Then all ventilators and the door were opened. When gas was completely expelled out the eggs were transferred to the hatcher trolley. Temperature and humidity of the hatcher are 98.5°F and 75% respectively. Formalin (40 ml in 60 ml water) was taken in a plate and kept at the corner of the machine. A correct functioning thermometer and hygrometer (wet bulb thermometer) was kept visible in each hatcher. The water from the egg during incubation influence the quality of chicks. if more water loss from the egg\_ the following result are found such as Dry chicks, small chicks, early hatch, reduced hatch etc. If less water loss from the egg the following result are found such as unhealed navels, weak chicks, red hock, delay hatch etc. (Mahmud 1ami1 2003).

**4.5.12 Detection of any fault in incubator:**

Detection of any fault in incubator is accomplished by the following technique:-

.i) Firstly average egg weight was taken before loading in the setter (Loading wt).

ii) Further average egg weight is taken before transporting eggs from setter to hatcher (Transferring w-t.).

iii) The result was obtained by the following way:­-

Loading wt. - Transferring wt

Weight loss = × 100

Loading wt.

iv. Interpretation:

a. If weight loss is in between 10-12 %. then there is no defect in machine.

b. If weight loss is less than 9%\_ then temperature and humidity fall from the standard

level.

c. If weight loss is more than 12.5%. then temperature and humidity raise from the

**4.5.13 Take out of chicks:**

On the 21st day all chicks were hatched. Ventilation was opened completely. Humidifier was switched off at the same time. This allows the chicks to dry properly. The trolleys were only taken out if the hatcher after all eggs has been hatched.

**4.5.14 Grading of chicks:**

After hatching chicks were graded. Grading was done by the following way

**Grade-A:**

* Health and rigor (round bright eyes, sturdy legs, ability to stand firmly,)
* Well grown
* Trueness of type
* Freedom of any deformity

**Grade-B:**

Chicks with unhealed navels, stand up well.

**Grade-C**:

Chick with crooked legs or toes, odd shaped beaks. eyes missing, pasty vents are discarded.

**4.5.15 Delivery of the chicks:**

Chicks were packed in paper box with hole for ventilation .40 & 50 chicks per box are packed in summer and winter respectively. Some paper pieces are kept in the boxes as bedding the baskets are kept in a well ventilated area. It is advisable to deliver the chicks at night during summer due to cool weather (lslam & Sultan 2005).

**4.5.16 Disposal of hatchery waste:**

Bins fitted for collection of hatching debris were closed and removed from the room in which hatching takes place as soon as possible. They were well washed, disinfected. Any hatching debris from incubators in which disease has been diagnosed or is suspected and contaminated material were buried.The infertile eggs that collected during candling those eggs are destroied and thrown into the pit.

**4.5.17 Standard/Recommended Biosecurity Maintenance For Parent stock management.**

Good biosecurity must encompass all the operations carried out by a caretaker of breeding stock. Good biosecurity maintenance ensure the prevention & transmission of diseases. So each form should maintain strict biosecurity in the following way-

* Should Choose an isolated area when developing new parent farm facilities.
* Each farm must have a perimeter fence to prevent unauthorized entry of people, vehicles and animals. Only essential personnel should enter the farm.
* Farms should contain flocks of a single age. As a general rule, the distance between flocks of different ages should be no less than 600 M (2000 ft). when single age placement is not possible and caretakers must enter flocks of different ages, always work in the youngest birds first.
* The farm houses should be environmentally controlled. So it will help to keep the chance of contamination.
* All building must be vermin & wild bird proof.
* All farm workers and the supervisory personnel who need to enter the farm must shower & change in to a clean uniform.
* Uniforms of the workers should be clean color coded and calendared. So it will help to control personnel movement and disease transmission within the farm or age group.
* Foot water bath should be used before entering each age group shed and regular changes of foot water bath water should be done.
* No other poultry livestock or domestic pets of any kind should be allowed on parent farm.
* Isolation of sick bird should be done in different shed .
* Post mortem of the bird should be done in their own laboratory far from the shed.
* Dead birds should be disposed by incinerating the carcass on farm.
* A vermin control program should be practiced at all times. It is important to maintain a clean, rubbish free environment. Rotate brands of bait regularly to prevent vermin developing resistance. Any spilled feed should be cleaned up immediately.
* All in all out system should be followed.

**Biosecurity Maintenance in the study farm (**Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh**)**

1. This farm chosen an isolated area for developing new parent farm.
2. This farm had a perimeter fence to prevent unauthorized people, vehicles and animals.
3. All the sheds of the farm houses were environmentally controlled. So. It help to minimize the contamination.
4. All the workers took shower wore clean, color coded and calendared clothes before entering into the farm.
5. Foot water bath was used before entering into each shed.
6. There were different worker for working into different shed.
7. Regular disinfection procedures are followed both outside the shed and inside the shed. Liming outside the shed and spray were regularly used inside the farm.
8. Feed delivery vehicles entered into the farm after disinfectant spray .
9. That farm contained four environmentally controlled shed for both male & female bird for this there was no chance of pathogen transfer through semen & caretaker in the environmentally controlled house.
10. This farm contain different age group flock at different shed. The distance from one shed to another shed was apx 800 ft which is not standard. So there was a chance of contamination from one flock to another flock.
11. There was isolation shed for sick birds. So, there was no chance of transmission of microbes easily from sick bird to healthy bird.
12. There was no pest mortem room. Post mortem was done into the laboratory. So, there was no chance of contamination.
13. All the house was rodent prof but not wild bird proof. Rat, mongoose & snake sometimes attach the flock.

**Comments:**

In Bangladesh point of view Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh almost filled the recommendation with little mismanagement.Most of the practices are good practice for these the farm is free from Salmonella,IBD,ND,Lower load of E.coli.They produce Salmonella free chicks in their hatchery

**Table 9 :Comparative study of recommended and given feed to the Cobb 500 birds** .

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(weeks)** | **Feed intake**  **Grams (female)**  **Recommended** | **Feed intake Grams)**  **(female**  **Given** | **Age**  **(weeks)** | **Feed intake Grams**  **(male)**  **Recommended** | **Feed intake**  **(male) Grams**  **Given** |
| 1 | Ad libitum | Ad libitum | 1 | Ad libitum | Ad libitum |
| 2 | 20 | 20 | 2 | Ad libitum | Ad libitum |
| 3 | 38 | 38 | 3 | Ad libitum | Ad libitum |
| 4 | 44 | 44 | 4 | 60 | 60 |
| 5 | 47 | 47 | 5 | 62 | 62 |
| 6 | 49 | 49 | 6 | 65 | 65 |
| 7 | 51 | 51 | 7 | 68 | 68 |
| 8 | 53 | 53 | 8 | 70 | 70 |
| 9 | 55 | 55 | 9 | 74 | 74 |
| 10 | 56 | 56 | 10 | 76 | 76 |
| 11 | 58 | 58 | 11 | 78 | 78 |
| 12 | 59 | 59 | 12 | 80 | 80 |
| 13 | 60 | 60 | 13 | 82 | 82 |
| 14 | 61 | 61 | 14 | 85 | 85 |
| 15 | 64 | 64 | 15 | 87 | 87 |
| 16 | 68 | 68 | 16 | 89 | 89 |
| 17 | 74 | 74 | 17 | 91 | 91 |
| 18 | 81 | 81 | 18 | 93 | 93 |
| 19 | 89 | 89 | 19 | 99 | 99 |
| 20 | 97 | 97 | 20 | 106 | 106 |
| 21 | 105 | 105 | 21 | 113 | 113 |
| 22 | 111 | 111 | 22 | 120 | 120 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(weeks)** | **Feed intake**  **Grams (female)**  **Recommended** | **Feed intake Grams)**  **(female**  **Given** | **Age**  **(weeks)** | **Feed intake Grams**  **(male)**  **Recommended** | **Feed intake**  **(male) Grams**  **Given** |
| 23 | 116 | 116 | 23 | 125 | 125 |
| 24 | 121 | 121 | 24 | 129 | 129 |
| 25 | 126 | 126 | 25 | 135 | 135 |
| 26 | 131 | 131 | 26 | 135 | 135 |
| 27 | 140 | 140 | 27 | 135 | 135 |
| 28 | 149 | 149 | 28 | 135 | 135 |
| 29 | 158 | 158 | 29 | 135 | 135 |
| 30 | 166 | 166 | 30 | 135 | 135 |
| 31 | 166 | 166 | 31 | 135 | 135 |
| 32 | 163 | 163 | 32 | 135 | 135 |
| 33 | 164 | 164 | 33 | 135 | 135 |
| 34 | 162 | 162 | 34 | 135 | 135 |
| 35 | 162 | 162 | 35 | 135 | 135 |
| 36 | 163 | 163 | 36 | 136 | 136 |
| 37 | 165 | 165 | 37 | 136 | 136 |
| 38 | 165 | 165 | 38 | 136 | 136 |
| 39 | 165 | 165 | 39 | 136 | 136 |
| 40 | 165 | 165 | 40 | 137 | 137 |
| 41 | 165 | 165 | 41 | 137 | 137 |
| 42 | 165 | 165 | 42 | 138 | 138 |
| 43 | 165 | 165 | 43 | 138 | 138 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(weeks)** | **Feed intake**  **Grams (female)**  **Recommended** | **Feed intake Grams)**  **(female**  **Given** | **Age**  **(weeks)** | **Feed intake Grams**  **(male)**  **Recommended** | **Feed intake**  **(male) Grams**  **Given** |
| 44 | 165 | 165 | 44 | 138 | 138 |
| 45 | 165 | 165 | 45 | 138 | 138 |
| 46 | 165 | 165 | 46 | 138 | 138 |
| 47 | 165 | 165 | 47 | 138 | 138 |
| 48 | 1655 | 1655 | 48 | 138 | 138 |
| 49 | 165 | 165 | 49 | 139 | 139 |
| 50 | 165 | 165 | 50 | 139 | 139 |
| 51 | 165 | 165 | 51 | 139 | 139 |
| 52 | 165 | 165 | 52 | 139 | 139 |
| 53 | 165 | 165 | 53 | 139 | 139 |
| 54 | 165 | 165 | 54 | 139 | 139 |
| 56 | 165 | 165 | 56 | 139 | 139 |
| 57 | 165 | 165 | 57 | 139 | 139 |
| 58 | 165 | 165 | 58 | 140 | 140 |
| 59 | 165 | 165 | 59 | 140 | 140 |
| 60 | 166 | 166 | 60 | 140 | 140 |
| 61 | 170 | 170 | 61 | 140 | 140 |
| 62 | 170 | 170 | 62 | 140 | 140 |
| 63 | 170 | 170 | 63 | 140 | 140 |
| 64 | 170 | 170 | 64 | 140 | 140 |
| 65 | 170 | 170 | 65 | 140 | 140 |

From the above data it can be said that the farm fulfilled the feed requirement of Cobb 500 parent stock.

**Table 10 :Comparative study of recommended and achieved body weight gain of Cobb 500 Female and Male.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Female)**  **Recommended** | **Body weight gain**  **Grams**  **(Female)**  **Achieved** | **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Male)**  **Recommended** | **Body weight gain**  **Grams**  **(Male)**  **Achieved** |
| 1 | 160 | 155 | 1 | 150 | 153 |
| 2 | 280 | 275 | 2 | 350 | 300 |
| 3 | 400 | 405 | 3 | 500 | 490 |
| 4 | 520 | 530 | 4 | 640 | 645 |
| 5 | 620 | 640 | 5 | 800 | 838 |
| 6 | 720 | 747 | 6 | 960 | 990 |
| 7 | 820 | 856 | 7 | 1115 | 1150 |
| 8 | 920 | 936 | 8 | 1270 | 1260 |
| 9 | 1020 | 1050 | 9 | 1420 | 1440 |
| 10 | 1105 | 1148 | 10 | 1550 | 1550 |
| 11 | 1190 | 1258 | 11 | 1660 | 1654 |
| 12 | 1280 | 1340 | 12 | 1770 | 1798 |
| 13 | 1365 | 1425 | 13 | 1880 | 1940 |
| 14 | 1450 | 1520 | 14 | 1990 | 2045 |
| 15 | 1530 | 1590 | 15 | 2100 | 2120 |
| 16 | 1610 | 1686 | 16 | 2210 | 2260 |
| 17 | 1745 | 1796 | 17 | 2330 | 2435 |
| 18 | 1880 | 1930 | 18 | 2470 | 2550 |
| 19 | 2015 | 2085 | 19 | 2620 | 2730 |
| 20 | 2150 | 2252 | 20 | 2800 | 2980 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Female)**  **Recommended** | **Body weight gain**  **Grams**  **(Female)**  **Achieved** | **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Male)**  **Recommended** | **Body weight gain**  **Grams**  **(Male)**  **Achieved** |
| 21 | 2410 | 2511 | 21 | 3060 | 3180 |
| 22 | 2575 | 2667 | 22 | 3210 | 3310 |
| 23 | 2735 | 2850 | 23 | 3360 | 3411 |
| 24 | 2900 | 3007 | 24 | 3495 | 3500 |
| 25 | 3000 | 3110 | 25 | 3630 | 3699 |
| 26 | 3100 | 3112 | 26 | 3760 | 3790 |
| 27 | 3200 | 3250 | 27 | 3880 | 3900 |
| 28 | 3300 | 3340 | 28 | 3950 | 3980 |
| 29 | 3380 | 3418 | 29 | 3995 | 4050 |
| 30 | 3440 | 3505 | 30 | 4041 | 4150 |
| 31 | 3460 | 3545 | 31 | 4066 | 4200 |
| 32 | 3480 | 3515 | 32 | 4092 | 4150 |
| 33 | 3500 | 3600 | 33 | 4118 | 4290 |
| 34 | 3520 | 3655 | 34 | 4144 | 4335 |
| 35 | 3540 | 3636 | 35 | 4169 | 4270 |
| 36 | 3560 | 3677 | 36 | 4195 | 4290 |
| 37 | 3580 | 3710 | 37 | 4221 | 4303 |
| 38 | 3600 | 3740 | 38 | 4247 | 4350 |
| 39 | 3620 | 3760 | 39 | 4273 | 4375 |
| 40 | 3640 | 3770 | 40 | 4298 | 4392 |
| 41 | 3660 | 3788 | 41 | 4324 | 4425 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Female)**  **Recommended** | **Body weight gain**  **Grams**  **(Female)**  **Achieved** | **Age**  **(Weeks)** | **Body weight gain**  **Grams**  **(Male)**  **Recommended** | **Body weight gain**  **Grams**  **(Male)**  **Achieved** |
| 42 | 3675 | 3810 | 42 | 4350 | 4498 |
| 43 | 3690 | 3820 | 43 | 4370 | 4510 |
| 44 | 3705 | 3840 | 44 | 4401 | 4618 |
| 45 | 3720 | 3852 | 45 | 4427 | 4690 |
| 46 | 3735 | 3865 | 46 | 4453 | 4685 |
| 47 | 3750 | 3870 | 47 | 4479 | 4695 |
| 48 | 3765 | 3898 | 48 | 4504 | 4700 |
| 49 | 3780 | 3910 | 49 | 4530 | 4712 |
| 50 | 3795 | 3930 | 50 | 4556 | 4737 |
| 51 | 3810 | 3938 | 51 | 4582 | 4755 |
| 52 | 3820 | 3945 | 52 | 4607 | 4770 |
| 53 | 3830 | 3955 | 53 | 4633 | 4808 |
| 54 | 3840 | 3960 | 54 | 4659 | 4835 |
| 55 | 3850 | 3980 | 55 | 4685 | 4863 |
| 56 | 3860 | 4000 | 56 | 4711 | 4890 |
| 57 | 3870 | 4010 | 57 | 4736 | 4983 |
| 58 | 3880 | 4025 | 58 | 4762 | 4912 |
| 59 | 3890 | 4035 | 59 | 4788 | 4938 |
| 60 | 3900 | 4045 | 60 | 4814 | 4965 |
| 61 | 3910 | 4048 | 61 | 4839 | 4990 |
| 62 | 3920 | 4055 | 62 | 4865 | 5090 |
| 63 | 3930 | 4070 | 63 | 4991 | 5200 |
| 64 | 3940 | 4090 | 64 | 4917 | 5350 |
| 65 | 3950 | 5000 | 65 | 4943 | 5500 |

From the analysis of the above data it can be said that there are very insignificant amount of differences between the standard body wt gain & achieved body wt gain. so, it may be concluded that the Cobb 500 female and male performed well under control housing system in our country.

**Graph-2: Comperative study of weekly body weight gain of female**

**Graph-3:Comperative study of weekly body weight gain of male**

**Table 11: Comparative study of recommended and achieved weekly egg production %**

|  |  |  |
| --- | --- | --- |
| **Age**  **(week)** | **Weekly Egg Prod%** | |
| **Recommended** | **Achieved** |
| 24 | 5 | 2 |
| 25 | 15 | 13 |
| 26 | 35 | 34 |
| 27 | 60 | 50 |
| 28 | 78 | 70 |
| 29 | 82.5 | 79 |
| 30 | 83.5 | 82 |
| 31 | 83.5 | 83 |
| 32 | 83 | 83 |
| 33 | 82 | 81 |
| 34 | 81 | 81 |
| 35 | 80 | 80 |
| 36 | 79 | 79 |
| 37 | 78 | 78 |
| 38 | 77 | 77 |
| 39 | 76 | 76 |
| 40 | 75 | 74 |
| 41 | 74 | 74 |
| 42 | 73 | 72 |
| 43 | 72 | 72 |
| 44 | 71 | 71 |
| 45 | 70 | 70 |
| 46 | 69 | 68 |
| 47 | 68 | 68 |
| 48 | 67 | 66 |
| 49 | 66 | 66 |
| 50 | 65 | 64 |

|  |  |  |
| --- | --- | --- |
| **Age**  **(week)** | **Weekly Egg Prod%** | |
| **Recommended** | **Achieved** |
| 51 | 64 | 64 |
| 52 | 63 | 62 |
| 53 | 62 | 62 |
| 54 | 60 | 60 |
| 55 | 59.5 | 59 |
| 56 | 58.3 | 58 |
| 57 | 57 | 57 |
| 58 | 55.8 | 54 |
| 59 | 54.5 | 54 |
| 60 | 53.3 | 53 |
| 61 | 52 | 51 |
| 62 | 50.8 | 50 |
| 63 | 49.5 | 49 |
| 64 | 48.3 | 47 |
| 65 | 48.0 | 46.4 |

The egg production achieved at 24 weeks of age was 2% which was lower than the recommended production i.e. 5%. The peak production was 83% achieved at 31 weeks of age which is approximately equal to the recommended egg production i.e.83.5%. The average egg production was somewhat lesser than the target production but as it was near about close to the target egg production % of that strain so it can be said that Cobb 500 performed well under control housing system in our country.

**Table 12: Comparative study of recommended and achieved weekly Hatch % of egg**

|  |  |  |
| --- | --- | --- |
| **Age**  **(weeks)** | **Weekly Hatch% of egg** | |
| **recommended** | **achieved** |
| 24 | 72 | 73 |
| 25 | 78 | 79.97 |
| 26 | 80 | 82.60 |
| 27 | 82 | 83.82 |
| 28 | 84 | 84.60 |
| 29 | 85 | 85.23 |
| 30 | 86 | 86.20 |
| 31 | 87 | 87 |
| 32 | 88 | 88.9 |
| 33 | 89 | 90.74 |
| 34 | 90 | 91.5 |
| 35 | 89.8 | 91.5 |
| 36 | 89.5 | 90.81 |
| 37 | 89.3 | 90.02 |
| 38 | 89 | 90.33 |
| 39 | 88.8 | 90.52 |
| 40 | 88.5 | 90.58 |
| 41 | 88.3 | 90 |
| 42 | 88 | 89.5 |
| 43 | 87.8 | 90 |
| 44 | 87.5 | 89 |
| 45 | 87 | 90.04 |
| 46 | 86.5 | 89 |
| 47 | 86 | 89 |
| 48 | 85.5 | 88 |
| 49 | 85 | 88 |
| 50 | 84.5 | 87.5 |

|  |  |  |
| --- | --- | --- |
| **Age**  **(weeks)** | **Weekly Hatch% of egg** | |
| **recommended** | **achieved** |
| 51 | 84 | 87.5 |
| 52 | 83.5 | 86 |
| 53 | 83 | 86 |
| 54 | 82.5 | 86 |
| 55 | 82 | 86 |
| 56 | 81.5 | 85 |
| 57 | 81 | 86 |
| 58 | 80.5 | 85 |
| 59 | 80 | 84 |
| 60 | 79.5 | 83 |
| 61 | 79 | 81 |
| 62 | 78.5 | 80 |
| 63 | 77.8 | 79 |
| 64 | 77 | 78 |
| 65 | 76.8 | 77 |

The maximum hatchability % was observed 91.5% at 34 weeks of age which was somewhat higher than the starboard hatchability that is 90% in that weeks. In all times the achieved hatchability % were more than the recommended hatchability %. On the basis of above finding it may be concluded that Cobb 500 performed very well under control Housing system in our country.

**Table 13 : Comparative study of Standard and achieved weekly egg weight(grams) of Cobb 500 parent stock** .

|  |  |  |  |
| --- | --- | --- | --- |
| Age  weeks | **Standard**  ( Egg weight)  grams | Age  weeks | **Achieved**  (Egg weight)  grams |
| 24 | 48.5 | 24 | 48.0 |
| 25 | 49.9 | 25 | 40.5 |
| 26 | 51.3 | 26 | 52.0 |
| 27 | 52.7 | 27 | 52.9 |
| 28 | 54.2 | 28 | 54.0 |
| 29 | 56.1 | 29 | 56.0 |
| 30 | 57.2 | 30 | 57.7 |
| 31 | 58.3 | 31 | 58.2 |
| 32 | 58.9 | 32 | 58.8 |
| 33 | 59.7 | 33 | 60.0 |
| 34 | 60.7 | 34 | 60.8 |
| 35 | 61.4 | 35 | 61.3 |
| 36 | 61.7 | 36 | 61.8 |
| 37 | 62.5 | 37 | 62.4 |
| 38 | 62.7 | 38 | 62.6 |
| 39 | 63.2 | 39 | 63.1 |
| 40 | 63.7 | 40 | 63.5 |
| 41 | 64.3 | 41 | 64.2 |
| 42 | 64.7 | 42 | 65 |
| 43 | 65.1 | 43 | 65.3 |
|  |
| Age  weeks | **Standard**  ( Egg weight)  grams | Age  weeks | **Achieved**  (Egg weight)  grams |
| 44 | 65.5 | 44 | 65.6 |
| 45 | 65.9 | 45 | 65.8 |
| 46 | 66.3 | 46 | 66.2 |
| 47 | 66.7 | 47 | 66.5 |
| 48 | 67.0 | 48 | 66.9 |
| 49 | 67.4 | 49 | 67.3 |
| 50 | 67.8 | 50 | 67.7 |
| 51 | 68.1 | 51 | 68.0 |
| 52 | 68.4 | 52 | 68.3 |
| 53 | 68.7 | 53 | 68.6 |
| 54 | 68.8 | 54 | 68.5 |
| 55 | 68.9 | 55 | 68.7 |
| 56 | 69.0 | 56 | 68.8 |
| 57 | 69.1 | 57 | 69.1 |
| 58 | 68.9 | 58 | 69.0 |
| 59 | 69.0 | 59 | 69.0 |
| 60 | 69.2 | 60 | 69.1 |
| 61 | 69.3 | 61 | 69.1 |
| 62 | 69.4 | 62 | 69.4 |
| 63 | 69.5 | 63 | 69.5 |
| 64 | 69.7 | 64 | 69.8 |
| 65 | 69.8 | 65 | 69.8 |

The achieved eggs weight at 24 weeks,34 weeks and 50 weeks are 48.0 grams ,60.8grams and 67.7 grams respectively where as Standared are 48.5grams,60.7grams and 67.8grams which is almost equal to the standared. On the basis of above finding it may be concluded that Cobb 500 performed very well under control Housing system in our country.

**Table 14 : Comparative study of Standard and achieved weekly Mortality % of Cobb 500** .

|  |  |  |
| --- | --- | --- |
| **Age**  **(Weeks)** | **Mortality%** | |
| **Standard** | **Actual** |
| 1 | 0.5 | 0.3 |
| 2 | 1 | 0.5 |
| 3 | 1.3 | 0.8 |
| 4 | 1.6 | 1 |
| 5 | 1.8 | 1.01 |
| 6 | 2 | 1.5 |
| 7 | 2.2 | 1.9 |
| 8 | 2.4 | 2 |
| 9 | 2.6 | 2.02 |
| 10 | 2.8 | 2..04 |
| 11 | 3 | 2.5 |
| 12 | 3.2 | 2.9 |
| 13 | 3.4 | 3.00 |
| 14 | 3.6 | 3.1 |
| 15 | 3.8 | 3.3 |
| 16 | 4 | 3.5 |
| 17 | 4.2 | 3.77 |
| 18 | 4.4 | 3.86 |
| 19 | 4.6 | 3.91 |
| 20 | 4.8 | 3.96 |
| 21 | 5 | 3.98 |
| 22 | Transfer to Layer House |  |
| 23 |  |

|  |  |  |
| --- | --- | --- |
| **Age**  **(Weeks)** | **Mortality%** | |
| **Standard** | **Actual** |
| 24 | 0.25 | 0.3 | |
| 25 | 0.50 | 0.42 | |
| 26 | 1.00 | 0.70 | |
| 27 | 1.65 | 0.88 | |
| 28 | 2.15 | 1.80 | |
| 29 | 2.55 | 1.77 | |
| 30 | 2.85 | 2.04 | |
| 31 | 3.15 | 2.75 | |
| 32 | 3.45 | 3.32 | |
| 33 | 3.75 | 4.00 | |
| 34 | 4.05 | 4.07 | |
| 35 | 4.35 | 5.00 | |
| 36 | 4.60 | 5.09 | |
| 37 | 4.85 | 5.39 | |
| 38 | 5.10 | 5.41 | |
| 39 | 5.35 | 5.11 | |
| 40 | 5.60 | 5.81 | |
| 41 | 5.85 | 5.66 | |
| 42 | 6.10 | 5.03 | |
| 43 | 6.35 | 5.52 | |
| 44 | 6.50 | 5.22 | |
| 45 | 6.65 | 5.92 | |
| 46 | 6.80 | 6.00 | |
| 47 | 6.95 | 6.02 | |
| 48 | 7.10 | 6.05 | |
| 49 | 7.25 | 7.06 | |
| 50 | 7.40 | 7.45 | |

|  |  |  |
| --- | --- | --- |
| **Age**  **(Weeks)** | **Mortality%** | |
| **Standard** | **Actual** |
| 51 | 7.50 | 7.90 |
| 52 | 7.60 | 7.36 |
| 53 | 7.70 | 7.80 |
| 54 | 7.75 | 7.00 |
| 55 | 7.80 | 7.01 |
| 56 | 7.85 | 7.06 |
| 57 | 7.90 | 7.08 |
| 58 | 7.95 | 7.09 |
| 59 | 8.00 | 7.80 |
| 60 | 8.05 | 7.92 |
| 61 | 8.10 | 8.00 |
| 62 | 8.18 | 8.08 |
| 63 | 8.26 | 8.89 |
| 64 | 8.34 | 8.90 |
| 65 | 8.41 | 8.98 |

From the above data it is seen that Mortality% of Male & Female in different weeks of age are variable the standard value. From the medication register it was found that there was Salmonella free flock,load of E.Coli were minimal in Renata Agro Industries limited Poultry Farm,Bhaluka,Mymensingh. May be that was the natural cause such as injuries,heat strock,suffocaion etc of higher mortality .

**Graph-4: Comperative study of weekly egg production percentages of Cobb 500 parent stock.**

**Graph-5: Comperative study of weekly hatchability percentages of Cobb 500 parent stock.**

Graph-6: Comperative study of weekly mortality percentages of Cobb 500 parent stock.

**CHAPTER – V**

**PROBLEMS AND RECOMMENDATION**

Renata Agro Industries Limited Poultry Farm,Bhaluka, Mymensingh is one of the leading parent stock farm in our country .It gets popularity for supplying good quality chicks which is Salmonella free, to the broiler farmer. During my study period I had seen that their management was very good . So the body weight gain , production% and the hatching% of Cobb 500 were higher than the recommended value .But I had observed the mortality% was somewhat higher than the standard value . I think the prevalence of these diseases were due to some mismanagement in Biosecurity maintenance which I had observed in that farm .I think that if they maintained the following Biosecurity Rules strictly they could minimize the mortality.

1. For decreasing chance of contamination all shed should contain a single age group of birds.
2. The distance from one shed to another must be more than 2000ft.
3. Post mortem room should be established and a great distance should be kept from the hen rearing shed.
4. All the house should make vermin proof.
5. Strictly avoid the wild bird entrance.
6. Strong rodent control program should take regularly.

**CHAPTER-VI**

**CONCLUSION**

From the current study it may be concluded that it is possible to achieve target body weight , production , hatching percentage of egg of Cobb 500 in our country .Result showed that the average observed weekly body weight gain and recommended body weight gain of Cobb 500 female at 24weeks, 28 weeks, 32 weeks, of age were 3007gm vs 2900gm , 3340gm vs 3300gm , 3515gm vs 3480gm respectively . The average observed weekly body weight gain and recommended body weight gain of Cobb 500 male at 24weeks, 28 weeks, 32 weeks of age were 3500gm vs 3495gm , 3980gm vs 3950gm , 4150gm vs 4092gm respectively . The average observed weekly egg production percentage and recommended egg production percentage of Cobb 500 at 24weeks, 28 weeks, 32 weeks of age were 2%vs 5% ,70%vs78%, 83% vs 83% respectively . The average observed weekly hatchability percentage of egg and recommended hatchability percentage of egg of Cobb 500 at 24weeks, 28 weeks, 32 weeks of age were 73%vs 72%, 84.5%vs 84%, 88.9%vs 88% respectively . From the analysis of data it can be said that there are very insignificant amount of differences between the observed data and recommended data .Therefore it may be inferred that Cobb 500 performed well under the existing management system.

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