

MANAGEMENT GUIDE FOR COMMERCIAL CHICKEN LAYER

Suitable stock for commercial egg production

- For commercial production of eggs local native birds as well as pure breeds of exotic origin such as White Leg Horn, Rhode Island Red etc are not suitable.
- Egg production of commercial hybrid layers are significantly higher than the pure breeds and hence are used for commercial egg production.
- Some of such hybrid layers named below are recommended: (a) Babcock (b) B V 300 (c) B V 380 (d) H & N (e) Keystone golden etc.
- These hybrid layers are marketed by various agencies in Assam and are available as day-old-chicks.

Average production potentiality of hybrid layers

SI No	Particulars	White eggers	Brown eggers
1	Age at first laying	130-138 days	140-148 days
2	Age at 50 % egg production	160-165 days	170-182 days
3	Hen day egg production	295-310	285-290
4	Hen housed egg production	290-295	285-290
5	Mortality rate up to the point of Laying	4 -7%	4 -5%
6	Mortality rate during egg production period	0.7%	0.5%
7	Average egg weight(g)	56-58	61-63
8	Feed required per egg produced (g)	140-145	150-158
9	Daily requirement of feed (g)	110-115	115-120
10	Feed requirement for every kg of egg production(kg)	2.32 – 2.38	2.40 – 2.45
11	Weight of the bird at the start of laying(g)	1350-1375	1475-1550
12	Weight of the bird at the end of laying (g)	1700-1750	2250-2325

Location of the farm

- The farm located near the urban areas as it ensures close proximity to the source of chick, feed, medicines, vaccines and the final market for the eggs.
- The site should be well connected with motorable road throughout the year.
- The site should have a good source of drinking water and uninterrupted supply of electricity.
- The land area should be little elevated from the surroundings to ensure good drainage. The site should be an open place to ensure plenty of sunshine available throughout the day and free movement of air.
- The farm should not be located very close to residential area or crowded place.
- The site should not be in close proximity to another poultry farm

Layout of the farm buildings

- The site should be fenced from all sides to prevent trespasses of stray animals or human beings.
- There should be only one entrance, with a proper gate large enough for a truck to enter easily.
- The office, stores and selling booth should be situated near the entrance of the farm .
- The feed godown should be constructed near the entrance so that vehicles carrying the feeds do not have to go inside for unloading.
- The poultry sheds should be constructed after the office and godown maintaining a minimum distance of about 45 meters (150 ft).
- The sheds should face east-west direction length wise and minimum distance between two sheds should be 10.5 meter (35 feet).

Construction of poultry sheds

- **Length:** The length of the house can be of any convenient size .
- **Width:** The width of the house should be 6.7 to 7.3 meter (22-24 feet).



Ridge ventilation

- **Foundation:** The foundation of the house should be of concrete with 60 cm(2ft) below the surface and 75 cm(2 ½ ft) above the ground level.
- **Height:** The height of the sides from foundation to the roof line should be 1.8 to 2.13 meter (6-7 ft) and at the centre 3.05 to 3.65 meter (10-12 ft).
- **Roof:** The shape of the roof should be gable type. Asbestos as a roofing material is considered to be best in our condition. The roof should have a slope of 1`22 meter (4ft) for every 3.05 meter (120 ft).
- **Overhang:** The overhang of roof should not be less than 1.07 meter (3.5 ft) .
- **Floor:** The floor should be made of concrete with rat proof device and free from dampness.
- **Sides:** The side of the house should have 60 cm (2 ft) half wall made of concrete and the rest to be kept open and fitted with wire mesh or expanded metal. The wire nets should be 2.5 x 2.5 cm (1 inch) size of 16 gauge strength.
- **End walls:** End walls on both sides may be closed from roofline to floor level

- **Doors:** There should be two doors of 1.98 x 0.90 meter (6.5 x 3 ft) size on the end walls. At the entry a foot bath of the size 45x 90 x 9 cm (1.5x3x0.4 ft) should be constructed.
- **Door step:** The door step should be made of concrete and should be detached by 15 cm (6 inch) from the plinth.
- **Water channel:** A water channel constructed along the passage proves very useful as it saves labour and prevents spilling of water. The channel must have proper gradient to ensure proper level water throughout.
- **Electrification:** In a poultry house the electric wiring should be permanent, proper and should meet all the safety requirements.

Poultry house equipments

Brooder: It is electrically operated equipment which has the arrangement of producing heat needed for the chicks for the first few weeks, of their life. A brooder with 1.22 meter (50 inch) diameter can be used to brood about 250 chicks.

1. **Chick guard:** Chick guards should be 30-45 cm (1-11/2 ft) in height and should have arrangements to add or remove guards as and when required for extension or reduction of the area.
2. **Feeders:** longitudinal feeders and hanging type of feeders.
3. **Waterers:** The waterers used in a poultry farm should be non-corrosive, leak proof, not easily breakable, non-rusting, inexpensive and durable.
4. **Nest boxes:** nest boxes are generally made of wood and each should have the size of 30x30x30 cm(1x1x1 ft) each box is useful for 4 birds.



5. **Miscellaneous equipments** include bird catching hook, bird catching screen, forked spade, catching crate, shovel, spade etc.

Qualities of day old chicks

- Chicks should be cleanly hatched.
- Chicks should have well dried fluff.
- Chicks should not have pasted up vent.
- They should have round bright eyes and should be alert and active.
- Chicks should be free from unhealed navels.
- They should not have any kind of deformities such as crooked leg, defective head or eyes or cross beaks.

System of rearing

- Intensive system of rearing poultry is of 2 types. They are deep litter system and cage rearing system of which later one is modern system of commercial layer farming.
- In deep litter system birds are reared on the floor by putting 3 to 4 inches of bedding material which is called litter. Paddy husk is generally used as litter material in Assam owing to its easy availability. However, substances like wood shavings, straw, ground nut shell, pea shells etc can also be used as litter material.

MANAGEMENT OF CHICK (0-8 weeks)

Preparation of the house

- At first the house should be completely depopulated. An approved insecticide like Malathion or Sevin to be used in accordance with the manufacturer's direction and sprayed inside and at least 3 meters (10 ft) outside the house. This should be done within 24 hours after the bird's removal and prior to the removal of litters and equipments.
- After about 48 hours all the equipments and litter should be taken out. Litter should be removed in closed bags and should be taken away from farm premises. The entire house should be cleaned thoroughly. The cleaning process includes scrubbing with brushes until the surface are visibly clean and flushing with clean water. Entire floor and the lower parts of the walls should be soaked and brushed with a detergent powder and scrubbed with hot water. While cleaning, due care should be given to the cracks and crevices of the house.
- When the building is completely dried the entire inside of the shed should be washed down with an effective disinfectant applied with high pressure sprayer. A solution containing 3-5 % cresol or 2-3% caustic soda or lime water can be used as a disinfectant. Disinfection of a shed implies the elimination from the house of all micro-organisms that are capable of causing disease.
- All equipment like feeders, waterers etc should be soaked thoroughly, scrubbed free of all adhering matters with a stiff brush, rinsed and sprayed with disinfecting solution. After cleaning, the equipments should be sun dried for a whole day.
- A fresh coat of white wash to the entire inside walls is also considered essential.
- New litter should be sprayed over the house and all the cleaned equipments should be returned to the house.
- A foot-bath containing a strong disinfectant should be provided at the entrance of the building.
- The house thus prepared should be kept locked till 2 days prior to arrival of chicks. No other person except the workers of the shed should be allowed to enter the house.

Preparation for brooding

1. The floor of the house should be completely covered with new litter material to a depth of approximately 5 cm (2 inch).
2. Arrangement for brooding should be done in the middle of the area, of the pen, leaving the end of the house unused. The area should be first covered with clean dried gunny bags over which newspapers are to be sprayed. This is done to prevent the chicks from eating the litter material.
3. The brooder is placed on the spreaded newspaper. Generally 6 numbers of 40 watt bulbs are used in the hover.
4. The corners of the brooding room or pen should be rounded off with card board. This is done to prevent the birds from pilling up in the corners after the removal of the chick guard.
5. To maintain the room temperature of the building, the nets of the sidewalls should be covered with curtains made of gunny bags or Hessian cloth hanged from outside. During the coolest part of the year a plastic curtain may also be used from inside the house in addition to the curtains used from outside of the building. Curtains should be fixed in such a way that it can be rolled back whenever felt necessary.
6. At least 12 hours before the arrival of chicks all the switches of the brooder and the house should be put on to maintain the required temperature of 95^o F(35^o C). This can be measured by putting a thermometer at the edge of the brooder 5 cm (2 inches) above the floor.
7. A few hours before the chicks arrival the waterers should be filled so that it will be of room temperature when the chicks arrive. The water should be boiled and cooled and mixed with glucose and vitamin. It is essential to provide 3 chick waterers for each 100 chicks for first 2 weeks.

Providing first feed to chicks

- Feeds should be provided at least 2 hours after the chicks are placed in the brooder. The feed should be sprinkled over the entire area covered by newspaper and encircled by the chick guard. After a few hours, feed should be given in flat type feeder lids or clean egg trays.

Requirements of brooding

- **Temperature:** For the first few weeks chicks require artificial warmth until they are well feathered.

Temperature requirements for brooding chicks

Age in days/weeks	Brooding temperature
0-7 days/1 st week	95 ° F(35.0 ° C)
8-14 days/2 nd week	90 ° F(32.2 ° C)
15-21 days/3 rd week	85 ° F(29.4 ° C)
22-28 days/4 th week	80 ° F(25.6 ° C)
29-35 days/5 th week	75 ° F(23.9 ° C)

- **Ventilation:** Good ventilation is needed to bring in fresh air and to remove carbon-di-oxide, ammonia fumes and other harmful gases, to control the moisture level in the house, to regulate temperature and to help in controlling

various diseases.

- **Litter:** The litter is used as a bedding material which is needed mainly to give comfort to the birds. A good quality litter serves as an insulator in maintaining uniform temperature and also acts as a kind of buffer during the summer or winter. Litter also act as a blotter by absorbing the liquid portion of the faeces and at the same time allows evaporative loss of moisture to the air. Further litter acts as a cushion and bird can pick up some vitamins and unidentified growth factors from the litter.

Feeding

Feeding of chicks:

- The chicks are provided with a type of feed called chick feed from day-old age to the end of 8th week of age. It contains about 22 percent crude protein and about 2700 kilocalorie metabolizable energy.
- During the first few weeks, it is advisable to put feed in the feeders at least 4 times a day. Feeders should be cleaned from litter materials before filling it and while placing new feed in the feeders, it should be mixed up thoroughly with the left over feed. At the start, the feeders must be kept full so as to encourage the chicks to eat. Subsequently, the level of feed in the feeder must not be more than half full.
- During this 8 week period each chick should be provided with 5 cm (2 inch) feeder space and 2.5 cm (1 inch) water space.
- Placement of feeders at proper height is essential for the chicks to eat properly.
- Feeders should be distributed uniformly so that whatever the position of the bird in the house it is not far away from the source of feed. This is especially important during the early days of chick's life.
- During the brooding period feeders should not be arranged directly under the heat source. After the removal of the brooder the feeders should be arranged parallel to the rays of natural light falling in the house to avoid producing shadows.
- Before putting new feed in a feeder, one end of the feeder should be lifted, preferably the end far away from light so that all the left over feeds goes to the end near the light.
- Inadequate number of feeders in a chick house may cause crowding and spillage of feed. It is also essential to maintain the feeder height, throughout the raising period.

Ration for egg type chickens should contain the following nutrients as per BIS standards

Nutrients	Units	Chick (0 – 8 weeks)	Grower (9 -20 weeks)	Layer (21-72 weeks)
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Moisture(maximum)	(%)	10	10	10
Crude protein(min)	(%)	22	16	18
Metabolizable energy(min)	Kcal/kg	2800	2600	2700
Crude fibre (max)	(%)	7	8	8
Calcium	(%)	1.0	1.0	2.75
Available phosphorus(min)	(%)	0.5	0.5	0.5
Lysine(min)	(%)	1.0	0.7	0.5
Methionine (min)	(%)	0.45	0.25	0.25
Manganese	mg/kg	55	55	55
Vit A	IU/Kg	4000	4000	8000
Vit D	IU/Kg	600	600	1200
Feed consumption /bird/kg	Kg	2.0	5.5	40.0 (110-120 g/day/bird)

Watering chicks

The following are some important points, which farmers should remember while watering chicks

- Mortality of chicks can be reduced by using boiled and cooled water throughout their brooding period or at least up to first 4 weeks of their life.
- At no stage waterers should be allowed to become dry. Lack of water in a shed for a few hours can slow down the growth rate of the chicks.
- Availability of drinking surface is more important than amount of water in waterers. Hence, several small waterers are better than a few large ones.
- Waterers should be changed to bigger ones as the birds grow.
- Waterers should be placed in such a way that at no stage birds have to walk more than 3 meters (10 ft) to a waterer. The maximum distance between two waterers should be 2,5 meter (8 ft)
- Placing waterer at the same site cause wet spots around the waterers and may result disease outbreak. Hence, waterers should be placed daily at different sites.
- Fresh water should be used always. Left over in waterers should be discarded.
- All the waterers must be washed nicely with a detergent powder daily in the morning before filling it. Waterers should be refilled in the afternoon.

Light management for chicks

- For better growth and survivability chicks require adequate amount of light.
- The word light implies to both the natural sunlight and artificial electric light.
- Proper management of light in a flock of chicks ensures the following:
- Chicks learn to eat and drink fast.

- Helps in maintaining the proper growth rate.
- Increases feed conversion efficiency.
- Cannibalism can be controlled.
- Mortality of chicks particularly during the first week of brooding can be kept at minimum.
- For the first 48 hours after receiving the chicks all night continuous light of bright intensity should be provided to the chicks.
- From 3rd day onwards chicks should be provided with 23 hours of continuous light with one hour of darkness.
- One hour of darkness will favour better growth and give the bird an experience of darkness to avoid panic during power failure. This one hour of darkness is given generally after the sunset. During this period all the lights of inside and outside the sheds must be put off. The lights are turned on one hour after total darkness and kept until dawn.

Debeaking

- The trimming of the upper beak of a chicken is known as debeaking which is done to contain cannibalism in a flock.
- It is done by cutting and cauterizing the upper beak of the bird at the point half way between the tip of the beak and the nasal opening.
- To debeak a bird electrically operated equipment named debeaker is used.
- First debeaking is done at 7 to 10 days of age.
- This is to be repeated at the age between 12 to 14 weeks of age again.

MANAGEMENT OF GROWERS (9-20 weeks)

Feeding and watering:

- During this period they are given a special kind of feed known as grower feed which have about 16 percent crude protein.
- The floor space requirement for each bird ranges from 0.111 to 0.139 sq meter (1.2 to 1.5 sq ft) during the grower period.
- Longitudinal/ hanging feeders of large size should be used for providing feed to grower birds.
- During this period the feeder space for each bird should be 6.5 cm 92.6 inch.
- For the initial few weeks growers should be provided water with automatic or pan and grill type of waterer.

Deworming:

- The growers need to be dewormed once in every month with drugs like Piperzine, Albomar, Levamisole, etc. In this regard expert opinion for the local veterinarian should be taken.

Litter management:

- In the management of litter, the objective should be to maintain a moisture content of 20 to 30 per cent.
- Dampness causes wet litter, soiled plumage, breast blisters and excessive liberation of ammonia gas.
- Stirring of litter everyday prevents caking up. This is done generally after the 2 week of age. Caked litter if noticed should be removed immediately.
- When the litter gets moist due to humidity in the rainy season, super phosphate may be mixed at the rate of 1 kg per 9.3 sq meters (100 sq ft).

Selection of pullets:

- The best of the pullets should be selected for egg production.

- The pullets should be uniform in size and weight.
- Pullets with morphological defects such as lameness, blindness, emaciated etc should not be selected for transferring them to layer house.

Transfer of pullets to the layer house:

- Pullets should be transferred to layer house before laying.
- Birds should be transferred at the age of 16-17th weeks, so that the stress period will be over by the time they start producing eggs at 20th weeks of age.

MANAGEMENT OF LAYERS (21 -72 weeks)

- Chickens at the point of laying is known as pullet.
- Present day hybrid chicks starts laying from 19-20 weeks of age and continue laying for a period of one year or more.
- For each bird 2.5 sq ft of floor space is required.

Preparation of the house:

- The house should be cleaned and disinfected before and should be made ready well ahead of pullets arrival.
- The feeders and waterers should be placed well before the arrival of pullets. In case of laying flock hanging feeders are used.
- For every 25 birds there should be one large size hanging feeder.
- The laying nest should be placed 7-10 days before the onset of egg production.
- For every 4-5 birds there should be one laying nest. The nests should be placed by the side of the walls at about 30cm (1ft) above the floor level.
- Litter material or paddy husks should be placed inside the box, so that eggs do not break while being laid.

Feeding and watering of layers:

- Pullets should not be given layer feed till they attain 5 % egg production.
- The birds should be give feed twice a day.
- Each bird requires about 110 to 115 gms of feed per day in case of whiter eggers. For brown eggers the feed requirement is 120-125 gms per day per layer.
- Birds should be provided with fresh drinking water every morning.
- It may be noted that layers drink 3-4 times more water than the feed they consume per day.

Lighting:

- There exists positive relation between light hours provided to bird and their egg production.
- Lighting should be increased gradually from 20th week i.e. on set of egg production till it reaches 16 hours per day and maintained at that level thereafter.
- The bulb should be fixed at 8 feet above the floor and good reflectors should be used to direct all light to the bird areas. The bulbs should be checked and cleaned regularly.

Collection of eggs:

- Eggs should be collected 4 times in a day.
- The first collection to be done at 9 AM followed by 12 AM, 2 PM and lastly at 4 PM.
- Eggs should be collected in egg trays or bamboo made basket.

Culling of poor layers:

- Culling is the procedure of selection and rejection of unproductive and poor producers.
- Poor layers should be culled to minimize the cost of production. By doing so farmer can save some amount of money for not needing to buy feed for the non-layers
- The characters that should be taken into consideration for distinguishing good and poor layers are as follows.
- **Appearance:** The healthy bird is more active, more alert, vigorous, well fleshed but not fatty, tight feathering with tail and wings carried up. Deviation of any of these characteristics is the indication of poor layers
- **Moulting:** Moulting provides an indication about the laying capacity of a bird. It is natural and physiological process to renew old feathers at the end of first year of laying. Early moulters are usually poor layers, whereas late moulters are usually good layers.
- **Broodiness:** There may be a few broody birds in a flock. A broody bird will sit in the nest box but will not come out unless forced. They are non-layers and thus cullable.

Health care

Suggested Vaccination Programme for Layers

Age	Disease and Vaccine	Administration
Day-old	Marek's disease HVT- strain	Subcutaneous (S/C) at hatchery
5-7 days	Ranikhet disease F/ LASOTAVH strain	Nasal drop or Oral drop Drinking water
14-15 days	Infectious Bursal disease (IBD) 'MB' intermediate strain	Oral drop Or Drinking water
4-5 weeks	Fowl pox ' BM' strain	Intramuscular (I/M)
6-8 weeks	Ranikhet disease R2B strain	Intramuscular (I/M)
8 weeks	Gumboro disease (Live) (Only in area of out break prone)	Oral drop Or Drinking water

13-15 week	Infectious bronchitis	Oral drop Or Drinking water
14-15 weeks	Fowl pox ' BM' strain	I/M
15-18 weeks	Egg drop Syndrome 76 (Killed) Adjuvant	I/M
16-18 weeks	Ranikhet disease R2B strain	I/M

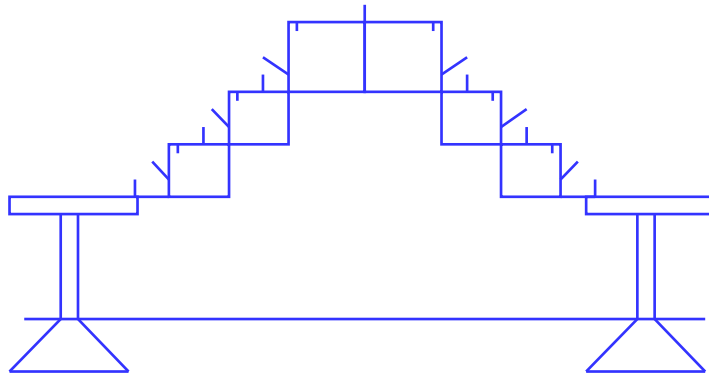
N.B. Vaccination should be done to only the healthy birds. Do not vaccinate sick birds.

MODEL PROJECT FOR A MEDIUM SIZE COMMERCIAL LAYER FARM OF 10000 CAPACITY ON ELEVATED PLATFORM CAGE LAYER HOUSE



ELEVATED PLATFORM CAGE LAYER HOUSE

3-tire, M-type layer cage



ELEVATED PLATFORM CAGE LAYER HOUSE