

## INTRODUCTION

Poultry egg and meat are important sources of high quality proteins, minerals and vitamins to balance the human diet. Specially developed breeds of egg type chicken are now available with an ability of quick growth and high feed conversion efficiency. Depending on the farm-size, layer (for eggs) farming can be main source of family income or can provide subsidiary income and gainful employment to farmers throughout the year. Poultry manure has high fertilizer value and can be used for increasing yield of all crops.

India has made considerable progress in egg production in the last three decades. High quality chicks, equipment, vaccines and medicines are available. Technically and professionally competent guidance is available to the farmers. The management practices have improved and disease and mortality incidences are much reduced. Many institutions are providing training to entrepreneurs. The improved layer population has increased from 35 million in 1961 to 115 million in 1996. The egg production in the same period has increased from 2,340 million to 34380 million. The egg production registered compound growth rate of 6.83% during eighth plan period (1992-97). The per capita egg availability at present is 41 eggs; while as per ICMR recommendations about 182 eggs per person per year are required to balance the common vegetarian diet. Increasing assistance from the Central/State governments and poultry corporations is being given to create infrastructural facilities so that new entrepreneurs take up this business. Layer farming has been given considerable importance in the national policy and has a good scope for further development.

*Poultry* sector in Meghalaya is one of the growing activities taken up by

- Farmers,
- Individuals,
- Entrepreneurs,
- SHG & Co-operative Societies

## TYPE OF POULTRY BREEDS SUITABLE IN MEGHALAYA

- **Layer Birds** – these types of birds are meant for egg production. Some of the breed suitable for our climatic conditions are - BV- 380 brown egg shell, INDBRO, BV300 ( white egg shell)
- **Broiler** – these type of birds are meant for meat production. Breed suitable in Meghalaya are Vencobb – 400, Colour Broiler
- **Dual purpose Breed/ Low Input Birds** – These types of birds can be utilized for both meat as well as egg production. They include Kuroilers, Giriraja, Rainbow Rooster and Local Indigenous Chicken (Found mostly in West Khasi Hills District).

### LAYER

#### 1. BV Strains

- BV- 380 (Brown Shell)
- BV-300 (White Shell)

BV380 is chocolate brown feathered bird and is colorsexable variety.

- Female Body weight:-
- 21 week – 1.5 kg
- 72 week – 1.85 kg
- Egg Laying capacity = 272 egg per annum
- Requirement = 3sq ft. p/Birds



#### INDBRO Brown Layers

- Indbro Brown layer lay over 200 – 300 dark brown eggs in an year.
- The Coloured male chicks can be successfully raised for tough and tasty meat like native birds.
- The larger sized Brown layers are well suited for deep litter and free range rearin



### BROILER

#### Strain

- Vencobb – 400
- Attain 2 – 2.5 Kg in 52-56 Days
- Feed Consumption is 5-6 Kg till marketed



## **DUAL PURPOSE**

### **KUROILER**

- Dual purpose breed producing meat & Eggs
- Can live on a diet of kitchen waste
- Produce around 150 Egg per year
- Meat yield is 3.5 kg Male & 2.5 Kg Female



### **RAINBOW ROOSTER**

- Is a Multi colour dual purpose breed suitable for backyard rearing & organic Chicken production.
- The Rainbow Rooster has a faster growth rate. High egg laying and disease resistance



## SYSTEM OF REARING

### DEEP LITTER

- In this system of housing, the birds are kept in litter material.
- Highly suitable for broilers and grower breeder birds.
- Can have provision of enclosure surrounding the shed, where birds can be left out some time for scavenging.



*Fig. Deep Litter System of Rearing*

### BACKYARD FARMING

- Mean rearing of bird in scavenging condition breed for chicken for getting extra money to the farmer.
- Suitable for low input birds/ dual breed purpose breed like kuroiler, vanaraja, rainbow rooster and local non-descript birds



*Figure 1. Backyard System of Rearing*

### ENCLOSURE

- This system involves rearing of poultry on raised wire netting floor in compartments, either fitted with stands on floor of house or hanged from the roof.

- Feeders and waterers are attached to the enclosures from outside except nipple waterers, for which pipeline is installed through or above the enclosures.
- Auto-operated feeding trolleys and egg collection belts can also be used in this rearing system. The droppings are either collected in trays underneath the enclosures or on belts or on the floor or deep pit under the enclosures, depending on type.

### **SLATTER CUM LITTER**

- This system is commonly practiced for rearing birds for hatching eggs production, particularly meat-type breeders.
- Here, a part of the floor area is covered with slats.
- Usually, 60% of the floor area is covered with slats and rest with litter.
- Feeders and waterers are arranged in both slat and litter area.
- In case of breeder flock, nest boxes are usually kept on litter area.

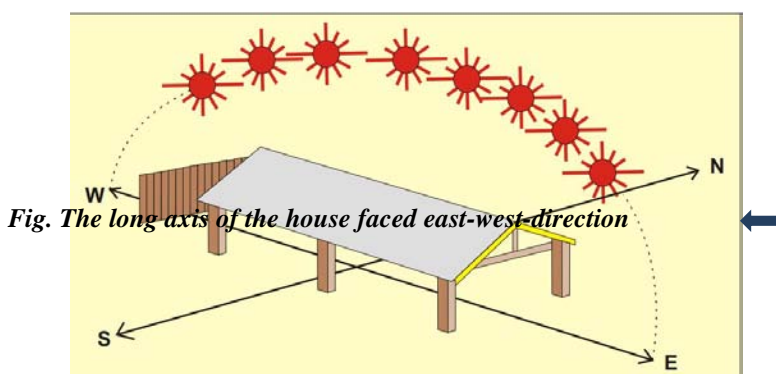
### **HIGH RAISED HOUSES**

- This type of housing provides sufficient ventilation.
- The side walls are completely made of mesh. The height of the shed is raised by 6-7 feet using concrete pillars.
- The distance between two pillars is 10 feet. Two feet wide concrete platforms are made over the pillars. M and L type enclosures are fixed upon the platforms.



## SITE SELECTION

- The location and design of the farm shall comply with the State Pollution Control Board.
- The farm shall not be located at least 100 meters from any major water.
- Drinking source and 500 meters from any other livestock / poultry farm enterprise.
- The farm should be fenced with barbed wire/ concrete boundary wall up to height of 8 feet with appropriately secured entrance and outlet.
- The farm shall raise green belt all round with minimum of two rows spaced apart of not more than 3 meters.
- Proper drainage / outlet for collection and discharge shall be provided for storm runoff / waste discharges (possibly explore the tenet of rain water harvesting).
- No obstruction shall be created for any water course within the farm or outside the farm boundary.
- Shall be located on a fairly raised and properly, drained site not liable to flooding.
- The long axis of the house faced east-west-direction, to avoid direct sunlight in areas which experience heat and draught in most part of the year. The long axis to be North-South if the farm is located in cold region
- Length depends on number, type of birds and system of rearing. Width not to exceed 9m or 30ft) to avoid ammonia accumulation in the shed.
- Should be easily accessible, easy to clean and disinfect between the flocks
- Distance between two different sheds of same type should be 30 ft. and of different type should be 100 ft.
- Good foundation to prevent seepage of water into the poultry sheds. The foundation of the house should be of concrete with 1 to 1.5 feet below the surface and 1 to 1.5 feet above the ground level.
- The walls and roofs should contain insulation and rodent proof materials. Should have side walk surrounding the shed to prevent entry of snakes. Preferably a layer of pebbles laid surrounding the shed.
- Ceiling height should be adequate for proper ventilation.
- The height of the sides from foundation to the roof line should be 6 to 7 feet (eaves height) and at the centre 10 to 12 feet.
- The sheds should be so located that the fresh air first passes through the brooder shed, followed by grower and layer sheds. This prevents the spread of diseases from layer houses to brooder house.



## SHED CONSTRUCTION AND HOUSING

- **Floor** - The floor shall be strong and non-yielding. The floor may be of either cement concrete or brick laid in cement mortar, stone slabs set in cement mortar. The floor shall be constructed at least 25 cm above the ground level.

In slatted type of house, the slats may be 2.5 cm wide and spaced 3 cm apart. The slats should preferably run lengthwise to the building. The slatted floor should be about 100 cm above the floor of the house.

### FLOOR SPACE RECOMMENDATION

AGE WEEKS	TYPE OF REARING	FEMALES			MALES		
		DL SQ. FT	SLAT SQ. FT	CAGE SQ. INCHES	DL SQ. FT	SLAT SQ. FT	CAGE SQ. INCHES
1 - 6	BROODING	0.3 - 1	0.3 - 1	56	1	1	75
7 - 16	GROWING	2.5	2.5	90	3	3	135
17 - CULLING	LAYING	3	2.6	124	-	-	180

- **Walls** - The lower portion of the walls on the long sides of the house, up to one-third height from the floor, shall be of, brick masonry, in cement mortar 20cm thick or stone patti with pillars made of reinforced cement concrete (20 x 20 cm), brick pillars plastered (30 x 30 cm), iron pipes or angle iron up to roof level at an interval of 3 to 4m.

The upper two-third portion of the walls shall be made of galvanized mild steel-wire netting of about 1mm in diameter having hole sizes of 12 x 12mm. When the big shed is divided into smaller compartments with a central passage, the partition walls between the compartments may be made 30 cm high in brick work and above that with galvanized wire mesh.

- **Roof** - The roof may be lean-to or gabled type. In case the width of the house is more than 10 m, gabled type of roof with ridge ventilation is recommended. The roofing material may be corrugated asbestos cement sheets, aluminium sheets, galvanized steel sheets, asphalted corrugated or plain light roofing materials or tiles corrugated or thatch. In thatch type, the thickness of the material shall be at the least 15 cm and it shall be made rain-proof and fire-proof. The eaves of the roof shall project out at least 1m to prevent the rain water entering into the house.
- **Doors** - The doors on the side walls may be 1.2 m wide and 1.5 m high. In the houses with central passage, the doors in the end walls may be 1.2 m wide and 2 m high and doors in the individual pens 0.6 m wide and 1.8 m high shall be provided. The bottom of the doors shall be 30 cm above the floor at the top of the passage in the side wall, the lower half of the door shall be solid and the upper half wire netted. A pop hole of size 25 x 30 cm may be provided.
- **Side walk** - To prevent the entry of rats and snakes it is preferable to have side walk by embedding with the wall of shed, a horizontal slab of 1.5 ft wide round the shed.

## SYSTEMS OF VENTILATION

- The deep litter house for chicks brooding shall have good quality, fresh litter of saw dust, straw or coconut coir material.
- The chick guards made of thin sheet of metal like tin or cardboard of 45cm height and varying length depending on number of chicks under brooder, arranged in circular fashion to avoid corners. Shall have brooder such as electrical and gas brooders. Chick feeders of conventional or automatic type in various designs such as linear, circular or hanging type. Water drinkers of fountain type or nipples.

## INTERNAL FIXTURES IN DEEP LITTER SYSTEM LAYER HOUSES

- **Perches** : The perches if provided may be in the form of straight-peeled timber ; not poles measuring 5 x 7.5 cm at their rectangular edges or of round bamboos having a diameter of about 5 cm conduit pipe. The distance between two perches, centre to centre, shall be at least 35 cm and the perches shall be supported by 5 x 10 cm cross pieces. The perches shall be fixed at least 25 cm away from the rear wall and shall be fixed at a height between 55 and 75 cm from the floor. Perch space shall be provided at the rate of 15 cm per chicken. In case of heavy breeds, it may be raised to 25 cm.
- **Nest box**: Provide 1 nest for every 5 hens or 1m<sup>2</sup> of collective nest for 120 hens. The nest shall be relatively deep (of 8cm depth), opening size of 18 cm with no air draughts and with 2 perches for the lower level and one for the upper, both set lower than the lip of the nest.



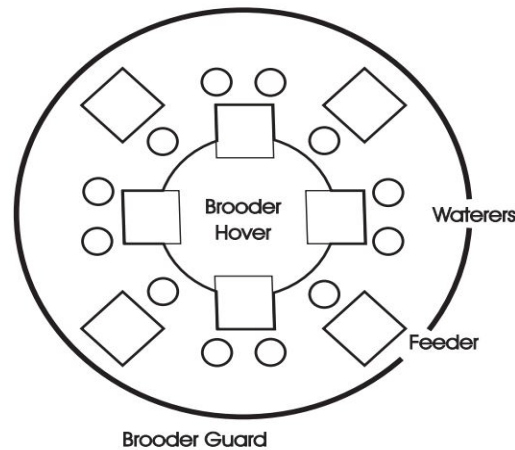
*Fig. Perches*  
*Fig. Nest Box*



## CARE AND MANAGEMENT

- Spray an insecticide just after the old birds have been removed.
- Remove all the non-stationary equipment and residual feed from troughs and bins.
- Eliminate all rodents and wild birds if any.
- Remove all the manure, litter, feathers, cobwebs, dust, and any other organic materials by scrapping with hard brush.
- Remove all weeds and rubbish from the area outside the house, burn feathers, etc.
- Remove dust/ feathers from wire mesh, crevices, cracks, cages and floor using flame gun.
- Wash equipment, fans, water tanks, feed bins, walls and floor by pressure / jet sprayer.
- The floor should be soaked with saturated washing soda for 24 hours (40g/l of water), and then water is drained out and flushed with clean water.
- Wash the interior of the building with an effective disinfectant solution.
- White wash the entire shed with good lime powder/ white cement. (Make paste of lime powder 2kg/100 sq. ft, copper sulphate 3% and Formalin 5%)
- Then allow the building to dry.
- Run through the water pipeline with a strong disinfectant solution like saturated bleaching powder / vinegar (1 ml/litre of water) / 35%  $H_2O_2$ , (15 ml/l) for overnight.
- Flush the waterline with normal water with pressure.
- If the building can be tightly enclosed, fumigate the building before the arrival of chicks.
- **Fumigation** - Fumigation with Formaldehyde gas can be obtained by mixing 40 ml of formalin with 20 g of potassium permanganate for volume of 100 cubic feet. Fumigation is more effective in presence of humid atmosphere than dry. Hence, spraying the walls and floors with water before fumigation is necessary. All the cracks, crevices and windows should be sealed till the fumigation is in process (normally 40 hours). Formalin is poured over the potassium permanganate, over the pots beginning from the farthest end of the shed.
- After the building is fumigated, close up for 24 hours and then air out for another 24 hours.
- Wherever fumigation is not possible it is suggested to wet the flooring and walls up to 3 feet height with formalin solution (5%) for a period of at least 6 hours.
- Assemble all brooding equipment and ensure that brooder, chick guard, feeder, drinker, etc at appropriate place.
- Test all equipment like brooder water valves, switches, feeder, and drinker and ensure that everything is in order.
- The above preparation for arrival of new chicks should be carried 10-15 days in advance.
- Flush the water lines prior to arrival, and make sure that no disinfectant is left in the waterlines when the chicks arrive.
- Two days before arrival of chicks spray litter at least three to four inches deep on the floor. Litter should be new and fresh.
- Side-walls covered with gunny cloth / tarpaulin curtains.
- Preheat the building 36 hours in advance so as to bring litter temperature to 28 to 31°C. The concrete floor under the litter must be heated as well until approximately 25 - 27°C.
- Switch on the light/ brooder to obtain the required brooding temperature well in advance at least 6-8 hours before arrival of chicks.
- Make sure that the nipples and round drinkers are on the correct height, nipples on eye level of the chicks, and round drinkers on the floor.

- Put paper under the nipples to attract the chicks and put also extra feed over the chick paper or paper trays.
- In case of cage brooding spread sheets of paper over the cage bottom to last for 7 days, remove one sheet every day.
- Check the nipples / round drinkers whether the water supply is sufficient nipples are used the chicks must able to see the water drop on the nipple.

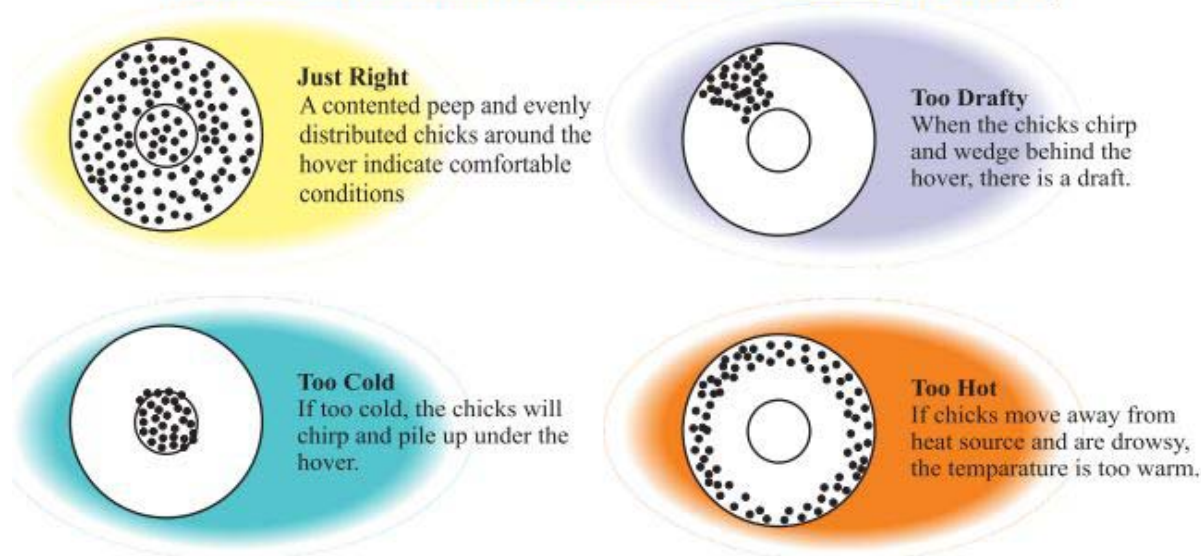


*Fig. Diagrammatic representation of arrangement of Brooding Unit*

#### **MANAGEMENT OF CHICKS UNDER BROODER (0-8 WEEKS)**

- Release the chicks gently into the brooder guard close to drinking water, immediately after arrival.
- Make sure that chicks first drink water to restore body fluids due to transit loss.
- During the first 2 days use tepid water at 25° to 30°C, added with electrolytes, Vitamin AD,EC and if necessary antibiotics.
- Maize grit/ feed mash may be spread on the paper at the beginning of brooding for easy identification of feed.
- Use chick guards for the first two weeks to confine chicks to floor brooder areas and prevent air drafts.
- The minimum space requirement under brooder shall be 45 sq cm per bird. Brooding should be started at 35°C at the beginning and reduced at the rate of 2.8°C per week till the end of 4 weeks depending upon season.
- Provide chick feeders within 5-7 days. Height of the feeder should be adjusted to the convenience of chick.
- Replace new papers every day till the chick guards are removed. Remove guard after 7-8 days.
- Spread out the chicks into the entire brooding pens. Add some more litter material before spreading of chicks.
- The removal of the supplementary starter drinkers should be done gradually, making sure that the chicks have acquired the habit of using the other drinkers.
- The drinkers should be cleaned daily for the first 2 weeks. From the third week they should be cleaned each week.

## DIAGRAM OF CHICKS DISTRIBUTION UNDER BROODER



### MANAGEMENT OF GROWERS (9-20 WEEKS)

- Birds at the age of 9 weeks shall be transferred to growers/ rearing house.
- Transfer the birds only during night time to avoid stress. Provide medicated water with anti-stress compound preferably 2 days before and after transfer.
- Keep provision for cross ventilation. Provide required space for feeder and waterer in the grower house.
- Offer grower mash in liner grower feeder.
- Waterers and feeders should be adjusted as per the need of the birds. Avoid feed wastage and water spilling.
- De-beaking may be followed if necessary before 16 weeks. Provide balance feed. Keep chick feeders filled. Provide clean fresh water at least twice daily.
- Check the body weight of bird at 8, 12, 16 and 20 weeks to know about the gains in body weight which indicates the growth of a bird and uniformity of the flock.

### LIGHTING PERIOD

Age in weeks	Duration of light
0 – 8 weeks	No artificial lighting is needed. Only natural light
8 – 16 weeks	Natural light duration is 12 hours, if less compensate by artificial light.
16 weeks onward	Add extra artificial light half an hour every week so that the total light duration reaches 16 hours in a day. (** but if natural light is sufficient, no need to add extra artificial light)

## MANAGEMENT OF LAYERS

### Transfer to layer house.

- Transfer the birds to layer house prior to the start of production.
- Before shifting to layer house, ensure that the facilities in layer house are proper. (like enclosures / litter, lighting and ventilation)
- Shifting shall be done only during cooler part of day or at night.
- Do not perform any other operations 1 week prior to transfer like vaccination, deworming and taking body weight.

## LITTER MANAGEMENT

- Use fresh and good quality litter material.
- Litter shall be raked at least twice daily to help drying.
- In layers, rake the litter only after egg collection.
- In case of wet litter, rake with the help of scoop thoroughly to break the clumps.
- In well managed litter, moisture will be between 25 to 30 percent, such manure when pressed into a ball in hand breaks into pieces on opening the fist, where as a wet litter forms a solid ball and dry litter falls out like a powder.
- Provide proper floor space for birds to ensure normal moisture content in litter.
- Hydrated lime @ 1kg or superphosphate of lime @ 0.75kg per sq.m can be used for wet litter.
- Floor raised at least 0.3 to 0.5m above the ground level to avoid seepage of water.
- Interior Overhangs to the roof must be adequate to protect in rain water.
- Leaky or overflowing waterers not to be used. Change the location of waterer frequently. Change the wet litter with fresh dried ones.
- Proper ventilation to remove excess moisture.

## METHODS OF MATING

- **Pen mating** - When mating is done in single sire pens 1 male is mated to 10-12 females at the most.
- **Flock mating** - In flock mating a number of males and females are bred together in a larger poultry house. One male is mated to 10-12 females for egg type stocks and 1 male to 8-10 females for meat type stocks, to obtain desired fertility.
- **Stud mating** - In this method male is confined in a small coop or pen and females are brought individually to male for mating. In this method males are utilized properly but require more labour than flock and pen mating. Outstanding males are utilized by this method.
- **Shift mating** - In this system, males are shifted after they have been in pen for long time to produce enough progeny for evaluation of females.

## FEEDING MANAGEMENT

### Forms of feed

- **Mash feed:** Obtained by grinding and mixing of the raw materials. It is most commonly used feed, easy to prepare and economical
- **Pellet feed:** Prepared by exposing the mash feed to heat treatment under pressure. The heat destroys the microorganisms and anti-nutritional factors in raw materials enabling the feed for better digestibility. This system of feed minimises the feed wastage.

- Crumbles: the pellets are broken into granules. The feed preparation is little expensive compared to mash and pellets.

### Layer Feeding Schedule (1<sup>st</sup> week to 24<sup>th</sup> week)

Sl. No	Age in Weeks	Type of Feed	Weight of Feed /day/bird
1.	1 <sup>st</sup> Week	Chick Feed	15 gms
2.	2 <sup>nd</sup> Week	-do-	25 gms
3.	3 <sup>rd</sup> Week	-do-	35 gms
4.	4 <sup>th</sup> Week	-do-	40 gms
5.	5 <sup>th</sup> Week	-do-	43 gms
6.	6 <sup>th</sup> Week	-do-	46 gms
7.	7 <sup>th</sup> Week	-do-	49 gms
8.	8 <sup>th</sup> Week	-do-	52 gms
9.	9 <sup>th</sup> Week	Grower Feed	55 gms
10.	10 <sup>th</sup> Week	-do-	59 gms
11.	11 <sup>th</sup> Week	-do-	62 gms
12.	12 <sup>th</sup> Week	-do-	65 gms
13.	13 <sup>th</sup> Week	-do-	68 gms
14.	14 <sup>th</sup> Week	-do-	71 gms
15.	15 <sup>th</sup> Week	-do-	74 gms
16.	16 <sup>th</sup> Week	-do-	77 gms
17.	17 <sup>th</sup> Week	-do-	80 gms
18.	18 <sup>th</sup> Week	-do-	85 gms
19.	19 <sup>th</sup> Week	Layer Feed	90 gms
20.	20 <sup>th</sup> Week	-do-	95 gms
21.	21 <sup>st</sup> Week	-do-	108 gms
22.	22 <sup>nd</sup> Week	-do-	116 gms
23.	23 <sup>rd</sup> Week	-do-	120 gms

### LAYER VACCINATION SCHEDULE

Sl no	Age	Name of the vaccine	Dose	Route
1	Day old	MAREK VACCINE	0.2 ML	S/C
2	5-7 <sup>TH</sup> Day	LASOTA VACCINE	1 DROP	I/O I/N
3	14 <sup>TH</sup> Day	IBD VACCINE	1 DROP	DO
4	28 <sup>TH</sup> Day	LASOTA VACCINE	With milk powder	D/w
5	35 <sup>th</sup> Day	IBD VACCINE	DO	D/W
6	7 <sup>TH</sup> week	Fowl pox	0.2 ml	i/m
7	8 <sup>th</sup> week	R2B VACCINE	0.5 ml	i/m
8	11 <sup>th</sup> week	Debeaking	½ of upper & lower beak for female	¼ of upper beak only
9	13 <sup>th</sup> week	Fowl cholera vaccine	0.5 ml	s/c upper neck region
10	20 <sup>th</sup>	Lasota booster	In milk	Preferably by 10 AM in morning

- *Deworming should be done once every 3 months starting from 1 to 2 months of age*





*Fig. Intraocular route*



*Fig. Intramuscular route*

## **Broiler Management:-**

### **COMMERCIAL BROILER FARMING**

A broiler is a tender meat young chicken of either sex that grows from a hatch weight of 38-40 gms to a weight over around 1 Kg 700 gm. in about 6 weeks' time only. Broilers today has emerged as the fastest growing segment for poultry industry with the increased acceptance of chicken meat in city, town and villages, the demand for broiler is growing in a fast pace. During the last few decades, poultry farming has taken a quantum leap from a backyard venture into a fastest growing sector. In order to get maximum benefit from this industry, a proper knowledge on its technicality viz: breed, housing, feeding, management etc is essential.

Breeds of broilers reared for meat production are:

1. Commercial Broiler Breed:

- a. Colour broiler.
- b. Vencobb

2. Dual Purpose breed:

- a. Red Vanaraja
- b. Kuroiler Dual
- c. Rainbow rooster

### **HOUSING AND MANAGEMENT OF COMMERCIAL BROILERS**

A comfortable and growth specific housing area is essential for achieving optimum growth / body weight gain in broiler farming. Following are the parameters to be taken care of for better housing and management:

#### **SELECTION OF SITE:**

- Sufficient area of land.
- Good water supply.
- Preferably higher land to avoid water logging.
- Considerably far from housing estates and human activities.
- Good road connection for easy transportation.
- Electricity.
- Market access for procurement of inputs and selling of farm produces.

#### **HOUSING DESIGN:**

1. Good ventilation.
2. Space requirement 1 sqft / bird in deep litter system.
3. Lengthwise direction - east to west.

**Housing System:** Raised floor system Deep litter system For building a low cost housing system, locally available material like bamboo, mud, thatch roof/chitraetc can be used.

**Management:** Management is the vital part of the broiler farming to achieve desired production. Following are the important parameters to be considered in management system: 1) Breed selection- Quality day-old chicks should be selected.

2) ***Preparation before arrival of chicks:***

- Spray sanitiser on litter and entire poultry house.
- Removal of previously used litter and wash the house equipment.
- Spray selected disinfectants.
- Clean water pipelines.
- Fumigation of poultry house with suitable agents.

### 3) Brooding:

- Start brooder 24 hours prior to arrival of chicks.
- Adjust the temperature of hover to 95° F at first week and reduction by 5° F every week until 70° F.
- Place chick guard for first week.

4) **Ventilation:** The house should be designed with cross ventilation to allow fresh air to circulate inside the shed by providing wire mesh net on two opposite sides.

5) **Lighting:** Continuous lighting from day old till marketing.

6) **Floor space requirement:** 0.8 to 1 sqft / bird.

### 7) Deep Litter Management:

- Litter materials should be either saw dust, rice husk, chopped wheat straw etc depending upon availability.
- Fresh litter should be used for rearing pullets and new batches of birds.
- In order to avoid caking of litter due to high moisture level, humidity of the house should be maintained along with regular stirring of litter.

### POULTRY FEED

As feed is the major cost of poultry production which significantly affects the production performance of the birds. So feed and feeding is the most important consideration for efficient poultry farming. Improper feeding not only affects the production performance but also causes several deficiency diseases. Also, the feed needs to have all the nutrients (carbohydrates, protein, fats, minerals & vitamins) in right proportion. In addition some additives to facilitate digestion and growth is often added in reputed commercial feed.

### TYPES OF FEED:

- Pre-starter 0-10 days
- Starter 11-21 days
- Finisher 22 days till marketing

### FEEDING SCHEDULE OF BROILER BIRDS

SL NO	AGE IN WEEKS	TYPE OF FEED	QUANTITY OF FEED /DAY/BIRDS
01	0 - 1 WEEK	Broiler Pre -starter	15 gms
02	1 - 2 WEEK	Broiler Starter	40 gms
03	2 - 3 WEEK	Do	60 gms
04	3 - 4 WEEK	Do	80 gms
05	4 - 5 WEEK	Broiler finisher	120 gms
06	5 - 6 WEEK	Do	140 gms
07	6 - 7 WEEK	Do	160 gms
08	7 - 8 WEEK	Do	170 gms

### Vaccination Schedule

Sl no	Age	Name of the vaccine	Dose	Route
1	Day old	MAREK VACCINE	0.2 ML	S/C
2	5-7 <sup>TH</sup> Day	LASOTA VACCINE	1 DROP	I/O I/N
3	14 <sup>TH</sup> Day	IBD VACCINE	1 DROP	DO
4	28 <sup>TH</sup> Day	LASOTA VACCINE	With milk powder	D/w

## Backyard Poultry farming

- The low input bird can lay around 130 - 140 eggs per year if the flock is taken good care of. The egg production is almost double that of local chickens which have an egg production of 70 eggs per year. With good management the low input bird will start laying eggs at 22 - 26 weeks. Example of Low Input Birds include Kuroilers, Giriraja, Rainbow Rooster, Local Indigenous Chicken. Low input birds producing 130 – 140 eggs per year. Local chicken producing 70 eggs per year.

## Principles of good housing

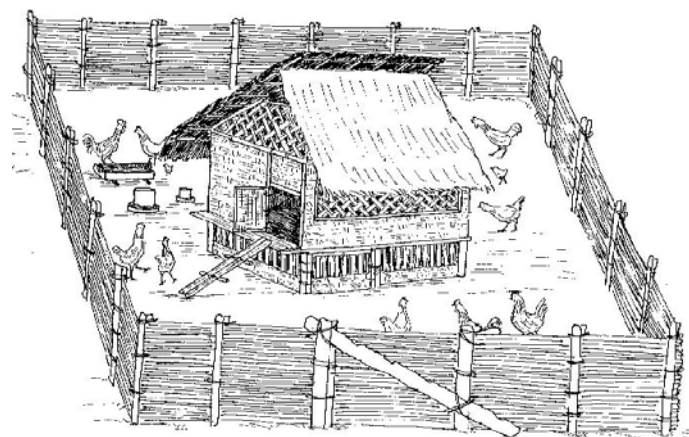
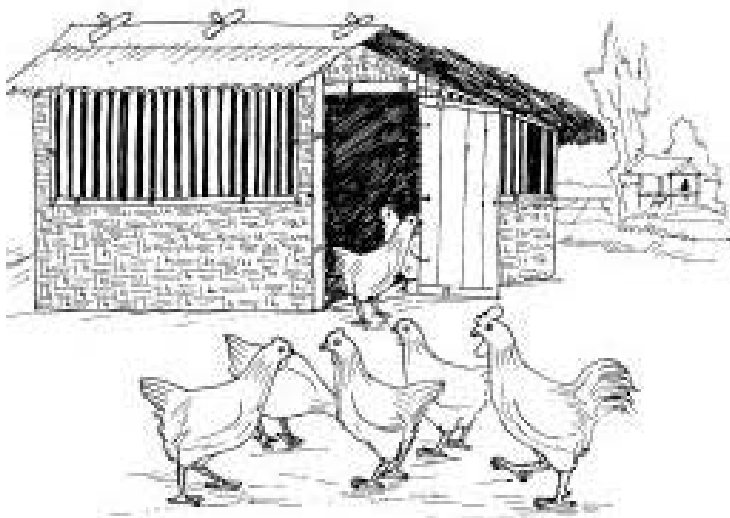
- The chicken house should protect against heavy winds (closed walls on the side of the prevailing wind).
- Protection against rain is achieved by a well-constructed roof with overhang, made of thick thatch or galvanized iron-sheets. Chickens hate wet feet and dirty, smelling floors. It makes them sick.

### 1. Housing with earth floor and litter

- For chickens to be productive, they need good housing containing feeders, drinkers, nests, roosts or perches and litter. The litter (5 cm) can be made from dried chopped grass, sawdust, crushed maize cobs, and rice husks. etc.

### 2. Housing on stilts and slatted floor

- This type of housing is an alternative to the earth floor with litter. The house is on stilts with slatted floor of wood or bamboo (1 cm thick bamboo sticks, with 1-2 cm space in between). The space under the house, where the manure falls, must be fenced so that the chicken cannot go there.
- **Advantages are:**
  - Better protected against predators like snakes, rats, etc.
  - Little contact with manure (source of parasites and diseases like coccidiosis).
  - No need for litter thus saving labor.
  - Better ventilation and cleaner air.



*Fig. Housing System for Rural Poultry Farm. Fig. Night Housing with Enclosed Area*

## EQUIPMENT

**1. Feeders :-**Feeder can be made out of any material (like a piece of old tyre).there should be 6-8 cm of space per chicken). To prevent wastage, lips should measure 2 cm. Feeder should be able to adjust to the size of the chickens (adjustable with stones/timber,height of the hanging wire).

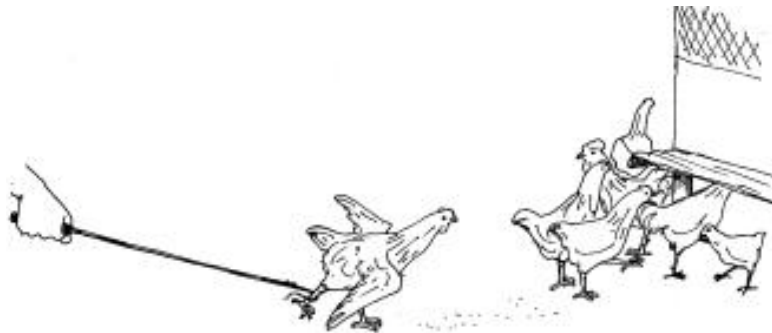
**2. Drinkers:-**Drinking water is essential for chickens regardless of whether they are kept inside a house or are scavenging outside. In dry, hot climates, chickens may consume twice as much water than they do in high land areas. Therefore, watch the water consumption carefully. Never allow chickens to run out of clean water. Good, fresh drinking water keeps your chickens healthy and increases egg production.

**3. Nests:-**A nest should be available when your chickens start laying eggs (1 - 2 nests per 5 hens).They can be made out of all kinds of materials and should be placed on the darkest side of the house, preferably where the sun will not reach the chickens. Line them with fresh litter and keep them clean. In hot climates, nests should be in a well-ventilated, but draft-free place.

**4. Litter -** Litter reduces the risk of disease: this is particularly so for small chicks which are susceptible to cold, humidity and air currents. litter is dry moisture-absorbing material which is spread on the floor (straw, hay, shredded paper, wood shavings, sawdust, rice husks, etc.). Litter absorbs chicken droppings and waste water from your drinkers.

## SELECTION and CULLING

- Good hens may look a bit dirty and pale because of the laying of many eggs or taking care of their clutch.
- A culling hook can be used to catch chickens for examination. The hook catches the chicken by the leg.



*Fig. Catching a chicken with a culling hook*

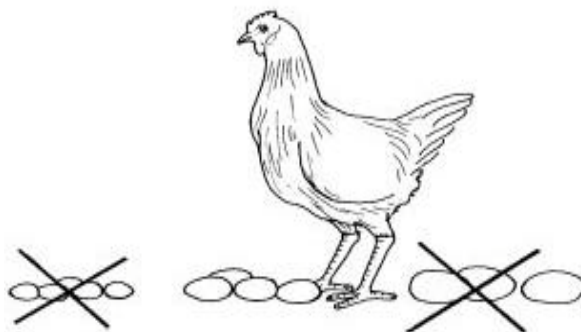
## HATCHING and BROODING

### 1. Improved hatching management

- With improved hatching management, more chicks will come out of the total number of eggs the hen started to brood and hatch.
- The number of eggs produced and the number of chicks hatched depends on:
  - The quality and the quantity of feed provided to the chicken.
  - The cock: hen ratio. To make sure that the eggs are fertile, not more than 10 hens should be served by 1 cock. If the farmer has more than 10 hens, another cock should be added.



- The laying, brooding and hatching place.
- The way the eggs are stored during the period the hen is producing eggs.
- The age of the eggs given to the hen for hatching.
- Increasing the number of eggs produced means that the hen has to be provided with good chicken feed.
- Ensure that your chicken has a proper nest to produce the eggs.
- **Egg Selection:-**
  - Very dirty (covered with chicken droppings etc.) or eggs which are found on the floor or outside the chicken house. Too old (more than 10 days).
  - Select only those eggs which are clean and uniform in size. When you open an egg, a bad egg looks flat or very flat, while a good egg is round.
  - When your hens are laying, it is important to collect the eggs frequently and regularly (especially in the morning when most of the eggs are laid). For the sake of encouraging your hen to make use of the laying nest, leave only one egg in each nest. To be sure you leave the same egg, mark this egg with a pencil (a pencil mark does not spoil the egg)

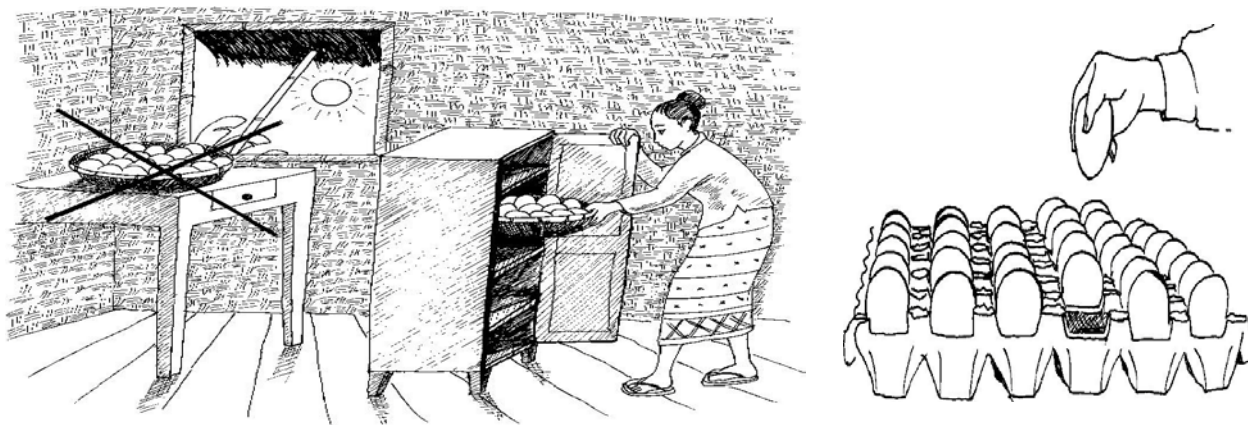


**TOO SMALL;** below 45 grams (these eggs might be without a yolk)

**NORMAL;** 45 - 70 grams

**TOO BIG;** over 70 grams (these eggs might contain two yolks)

- **Egg Storage**
  - Your eggs should be stored properly. Store your eggs in a cool and dark place. The cooler the place (best between 15 - 20 °C), the longer you can store your eggs.
  - To increase the possibility of successful hatching:
    - Ensure that no direct sunlight falls on the eggs.
    - Never store your eggs on the floor. Prevent draughts in the place where you store the eggs.
    - Store your eggs with the pointed side downwards. In this way the air cell of the egg is upwards. To achieve this you could see an egg tray.
    - When you have to store eggs for one week, you should turn them upside-down every day.
    - Do not wash eggs; washed eggs are unlikely to produce chicks. Very dirty eggs and eggs from the floor are not kept for hatching. You can distinguish stored eggs from different hens by marking them with a pencil.
    - The maximum period for storing eggs depends on the way the eggs are stored and the outside temperature the cooler the region, the longer you can store eggs without spoiling.
    - As an indication, eggs can be stored up to 7-10 days, after wards the chance of obtaining chicks will be reduced.



### VACCINE SCHEDULE FOR BACKYARD POULTRY FARMING

Sl no	Age	Name of the vaccine	Dose	Route
1	Day old	MAREK VACCINE	0.2 ML	S/C
2	5-7 <sup>TH</sup> Day	LASOTA VACCINE	1 DROP	I/O I/N
3	14 <sup>TH</sup> Day	IBD VACCINE	1 DROP	DO
4	28 <sup>TH</sup> Day	LASOTA VACCINE	With milk powder	D/w
5	35 <sup>th</sup> Day	Fowl pox	0.2 ml	i/m
6	7 <sup>TH</sup> week	R2B VACCINE	0.5 ml	i/m

- Deworming should be done once every 3 months starting from 1 to 2 months of age.

## PREVENTION AND CONTROL OF DISEASE:

In poultry industry primarily emphasis is given more on prevention and control than curative measures.

Some of the common diseases in poultry are

- **Viral Diseases -**

- **Ranikhet / New Castle Disease**

- Symptoms:

- i. Affects all the birds of the farm.
      - ii. Difficulty in breathing.
      - iii. Nasal discharge.
      - iv. Anorexia.
      - v. Greenish diarrhoea.
      - vi. 90-100% mortality.

- Prevention: Early vaccination with F1 followed by R2B vaccines

- **Marek's Disease**

- Symptoms:

- i. Affects all the birds.
      - ii. Droopy wings, lameness, paralysis.
      - iii. 60- 70% mortality.

- Prevention: Vaccination.



- **Infectious Bursal Disease**

- Symptoms :

- i. Typical posture of drooping head
      - ii. closed eyes
      - iii. Depression, soiled vent
      - iv. White diarrhoea

- Prevention : Early vaccination with live vaccines and strict biosecurity measures.



- **Avian Influenza**

- Symptoms :

- i. Congestion, cyanosis of comb, wattle.
      - ii. Edema in legs
      - iii. Open mouth breathing

- Prevention : Depopulation of infected stock, cleaning and disinfection of all buildings, hygiene and good bio security measures



- **Bacterial Diseases-**

- **Salmonellosis**

- Symptoms:

- i. Chalky white diarrhoea.



- ii. Sudden death.
- iii. Pasted vent.
- iv. Affects all age groups.
- v. Depression. and loss of weight.

- Treatment:

- a. Use effective antibiotic (contact nearest veterinary centre).
- b. Recovered birds act as a source of disease and thus better to cull.

- **Colibacillosis**

- Symptoms:

- i. Affects all age groups.
- ii. Diarrhoea.
- iii. Dizziness.
- iv. Swelling of joints.
- v. Oedematous comb and wattle.
- vi. Mortality rate - 90%.



- Treatment: Antimicrobials (contact nearest veterinary centre).

- **Fungal Diseases-**

- **Brooder pneumonia / aspergillosis**

- Symptoms:

- i. Affects chicks.
- ii. High mortality.
- iii. Respiratory problem.
- iv. Swollen eye and head.



- Treatment: Use antifungal (contact nearest veterinary centre).

- **Helminthic Diseases-**

- Symptoms:

- Affects mostly layer birds.
- Inappetance.
- Poor body growth.
- Ruffled feather.
- Diarrhoea.

- Treatment: Use anthelmintic every two- three months (contact nearest veterinary centre)

- **Protozoan Diseases-**

- **Coccidiosis**

- Symptoms:

- i. Bloody diarrhoea.
- ii. Droopy Feathers
- iii. High mortality rate.

- Treatment:

- i. Proper management.
- ii. Use anticoccidiosis (contact nearest veterinary centre).



**A suggestive disease prevention & control programme follows:**

- Start with disease free stock.
- Vaccinate chicks against Ranikhet & Marek's disease at Hatchery.
- Use coccidiostats to prevent coccidiosis.
- Keep feed free from aflatoxins.
- Do not allow visitors or outsiders and attendants inside the poultry house unless they wear disinfected boots and clean clothing.
- Cover floor with clean litter at least 3 inches deep.
- All-in-one system of rearing should be followed to ensure minimum disease problems.
- Foot-bath provision at the entrance of the farm is a must.
- Provision of adequate clean and fresh water should be available.



## RECORDS KEEPING

Record keeping helps keep track of both physical performance and expenses, it can aid in monitoring the progress of your flock. Records are important to the financial and also physical health of business or operation. Efficient and profitable poultry operations are not guaranteed by good record keeping, but success is unlikely without them. Records are essential tools for management to maintain a successful flock. Record keeping involves keeping, filing, maintaining and categorizing inventory, financial, production and health information for one's flock. This can be accomplished by hand recording or by using computer software. Record keeping is important. Records tell an owner or manager where the business/operation has been and the direction in which it is going. Records show the strength and weaknesses of the poultry operation. They provide useful insight to financial and physical stability for one's flock.

### 1. Standard registers to be kept in Breeding Farms

#### 1.1. Basic Registers

**1.1.1. Attendance and Daily wages register:-**This register will cover the details of the employees, their attendance and wages paid to contract labour.

**1.1.2. Building Register:-**This register will contain details of all the civil structures, its maintenance expenditure, and annual depreciation.

**1.1.3. Equipment Register:-**Various farm equipment and machineries like feed mill, vehicles, cages, incubators, feeders, waterers etc. would be recorded in this register.

**1.1.4. Feed and feed ingredient register:-**For each feed ingredient the details such as opening balance, receipts, issues, storage loss and closing balance would be entered.

**1.1.5 Feed additives and medicines register:-**The details of feed additives, medicines, vaccines, disinfectants, chemical, purchased and utilized.

**1.1.6 Petty items or miscellaneous purchase / expenditure register:-**All miscellaneous purchases such as tools, stationery, bulbs and other day to day expenditure may be recorded.

**1.2 Technical Registers:** The registers for each species, breed and type of bird may be maintained to keep track of the production and economics of each unit.

**1.2.1. Breeding Farm Register :-**For each batch, the production performance register for the entire period of rearing has to be recorded. Species wise & breed wise registers have to be maintained for each batch to enable calculation of economics.

**1.2.2 Egg turn out register:-**The details of egg turnover by all the batches species wise maintained in the farm at a time. The details of pullet eggs, broken eggs and eggs not suitable for setting may also be maintained. The day to day sale price of eggs may be recorded daily.

#### 1.2.3. Hatchery records

**1.2.3.1 Stock register:-**The columns of the hatchery record would be date, opening balance, receipts, settings, discards and sales, chicks produced, chicks sold, chicks culled / "weaklings, free chicks and remarks.

**1.23.2. Batch-wise hatchery sheet:-**number of eggs set, type of eggs, strain, source of eggs transferred to hatchery, infertile eggs discarded at candling, number of good chicks hatched, number of weak chicks, number of male chicks and mode of disposal, per cent total hatchability and per cent fertility.

**1.2.3.3. Chick out turn and disposal register:-** The species wise or breed wise chick out turn and disposal particulars such as date, opening balance of chicks, chicks hatched, chicks sold, chicks used for own purpose, chicks discarded, chicks given as free margin, closing balance, price per chick and remarks. In the remarks column the details of Marek's disease vaccination and other particulars may be entered.

## **2. The registers for Poultry Performance Tests**

2.1 **Layer farm:** The registers to be maintained should keep track of the production and economics of each unit. Batch wise and pen wise, production performance register for the entire period of rearing has to be maintained.

2.2 **Broiler farm:** For each batch wise and pen wise, production performance register for the entire period of rearing has to be maintained.

## HATCHERY DESIGN

- **Location**
  - The building should be located as far as possible from other buildings housing livestock and poultry in particular, and direction of prevailing winds should be taken into consideration.
  - Not situated on a level, higher than 2500ft (760m) above sea level otherwise lack of oxygen.
  - Shall be located 500 ft away from poultry sheds.
  - The location shall have adequate supply of good quality water.
- **Lay-out**
  - Preferably the hatchery is designed to have one entrance and one exit to avoid unnecessary traffic.
  - The design of the hatchery should be based on suitable work flow and air circulation principles. It should be constructed so that there is a one way flow for the movement of eggs and chicks, and the air flow also follows this same one way direction
  - Shall be in such a way that the hatching eggs are received at the entrance, and the chicks removed at the exit i.e, egg and chicks should follow in the hatchery from one room to the next, necessary in the hatching process.
  - There should be no back-tracking.
  - Necessary space for future expansion.
- **Construction**
  - The hatchery buildings should include physical separation of all work areas.
  - A well-insulated building with separate ventilation for the work areas.
  - The height of the ceiling should be atleast 10 ft.
  - All the walls, floors and ceilings should be made of smooth materials with a glazed, hard, nonabsorbent finish.
  - Wall surfaces should have a minimum of joints and fastenings that impede effective cleaning.
  - Fireproof material should be used in constructing the walls of the hatchery
  - Door openings without thresholds and with such dimensions that carts and racks can be moved through it. The door openings should be 8 ft high and at least 4 ft wide, and doors double-swinging.
  - All floors must be concrete, preferably with imbedded steel to prevent cracking
  - The floor must be slopped to drains in each room of the hatchery. Slope of the floor should never be greater than 0.5 inch in 10 feet.
  - All drains need to be trapped, particularly in hatching and pull areas, to prevent blockages from eggshell and debris.
  - The entire drainage system must be designed to handle large quantities of wash water and solid matter.
  - The ventilation system must ensure that air moves from the clean to the dirty areas and never the reverse, i.e in the same direction as the eggs, from setters to hatchers.
- **Structures**
  - The hatchery rooms shall be adequate in size and depends on capacity of the incubators and number of eggs that can be set or chicks hatched per week.
  - Preferably the structure shall have the following separate rooms for hatching process
  - Egg receiving and egg storage; one way direction.
  - Egg traying,
  - Fumigation;
  - Setting;

- Hatching;
- Sorting, sexing and placing chicks in boxes;
- Material storage, including egg and chick boxes, egg flats, box pads, chemicals and other items;
- Facilities for washing equipment and disposal of waste.
- **Change over room**
  - At the entrance preferably a small room for dress change over for all persons entering the premises
  - The room shall have wash basin for hand sanitization.
  - Before entry to the hatcher, provision made for foot bath.
- **Egg-Receiving / handling room**
  - Eggs should be delivered to the hatchery through a specialized door. The farm workers shall deliver the Hatching eggs at the entrance of this room.
  - Grading and traying the hatching eggs, shall be done in this room. The space not only depends on the number of eggs that has to be graded and trayed, but also on the equipment used; e.g. egg boxes, setting carts, grading machine.
  - The optimum temperature for this room is 18-20°C and the Relative Humidity should be 70-80%.
- **Egg storage room**
  - The room should be well insulated and have no windows. It should be supplied with wood-slat platforms.
  - The height of room should be about 8 ft high, ventilated with complete air movement, cooled, and humidified.
  - The room shall have forced-air type of refrigeration unit to keep a uniform temperature throughout the room.
  - If a cooling system is not present, during the night fresh cool air may be let in, while during the hot periods of the day, the egg storage room should be kept locked.
  - A humidifier can be maintained to have optimum relative humidity in the room.

*Fig. Egg Storage Room*



- **Fumigation room**
  - The fumigation room should be located between the egg handling and setting room and functions as a sluice.
  - Room should be as small and airtight as possible in order to reduce the amount of fumigant used.
  - The fumigation room should be equipped with:

- Slow rotating ventilator for distributing the formaldehyde gas between the racks of eggs.
- An exhausting ventilator, installed on the ceiling, which can be closed during fumigation time and opened to take away the gas.
- Air-inlets at the bottom, which can also be closed during fumigation time and be opened when the exhaust ventilator is in operation.

- **Setting room**

- Setters are kept in this room. The size of the setter room will depend on the make of the equipment used.
- A minimum space of 3 feet should be allotted between the sides of adjacent setters and from wall to sides or back of the setters. Similarly, minimum of 10 feet should be allotted in front of two setters when kept face-to-face arrangements
- The ventilation capacity depends on the type of the machines and the volume of the room. A slight overpressure ventilation system may be provided.
- Install plastic tubes on the air-outlet of the incubators to take away the heat generated from the incubator.

*Fig.*



*Setter in a Setting Room*

- **Candling and transfer room**

- Candling and transferring of the eggs be done in this room, to be constructed between the setting and the hatching room.
- Provide enough space for the carts with eggs, for the equipment that is use and for the people to work.
- Provisions should be made to dark the room to facilitate easy candling.

*Fig. Candling room*





## Hatching room

- Hatchers are kept in this room
- Provide space similar to that in setter room.
- The room should be well separated from the setting room by a sluice and the door towards setter room is to be tightly closed and to be opened at the time of egg transfer only.
- Install an air exhaust ventilation system on the air outlet of the incubators, Chick handling room. Space for the room depends on the number of chicks and the dimension of the carts. Here the chicks are sex-separated, graded, vaccinated and placed in chick boxes.



*Fig. Hatcher in Hatching Room*

- **Wash Room**
  - The room should be used for washing, cleaning and disinfection of the hatching carts, chick boxes and other equipment.
  - Necessary pipelines with high-pressure pumps to be provided in this room,
  - A water tub can be constructed where the trays and chick boxes can be soaked
- **Storage room**
  - This room is necessary for the storage of the cleaned and disinfected chick boxes and other fittings.
- **Waste room**
  - This room is used for temporary storage of waste-bins with dead chicks and egg shells.
- **Other rooms**
  - Shower — and toilet facilities for the workers
  - Room for equipment like: stand —by generator, water cooler and water purifying systems Standby and Alarm systems
  - All hatcheries must be provided with an automatic standby generator to provide sufficient power to operate the hatchery when the main supply fails.
  - Alarm systems should indicate power or systems failure, and alert hatchery personnel to the problem.
  - All incubators should have secondary alarm systems to indicate high of low temperatures independent of either the main electricity supply or the machine's own control systems.

## **TURKEY FARMING**

- Turkey occupies an important position next to chicken.
- Meat is the leanest among all domestic avian species.
- Indigenous and non-descript turkey are also found in Kerala, Tamil Nadu and Uttar Pradesh.
- Turkey farming are very popular in western countries.
- Major turkey producers are United States, Canada, Germany, France, Italy, Netherlands and United Kingdom.
- Turkey is a largegallinaceous bird belong to family Meleagridae native of north and Central America domesticated in Europe.
- Efforts are being made to develop turkey farming at CPDO Hessarghatta, Kerela and Tamil Nadu are leading states.

## **TURKEY TERMINOLOGIES**

- Tom: Adult male turkey
- Hem: Adult female turkey
- Poult: Young one of Turkey
- Snood or Dew Bill: The fleshy protuberance
- Caruncles:- Fleshy protuberance on the head and neck
- Dew lap :A large flap skin below the Chin
- Beard :- A tuft of hair in upper chest region
- Strut : Male mating behavior

## **VARIETIES OF TURKEYS**

- Broad breasted bronze
- Broad breasted white
- Beltsville small white
- White turkey is more suitable in Indian condition.
- Broad breasted bronze
  - Basic plumage color is black and not bronze.
  - The female have black breast feathers with white tips.
  - Help in sex determination as early as 6 week.

- Broad breasted white: - this is a cross between broad breasted bronze and white Holland with white feathers.

## **EGG PRODUCTION**

- Turkey start laying from 30<sup>th</sup> week of age.
- Production period is 24 week from point of laying.
- Hen lay as 80-100 eggs annually.
- 70 % of egg will be laid in the afternoon.
- Turkey eggs are tinted about 65-80 gm in weight
- The content of turkey egg are as follows:-
  - Protein—13.1%
  - Lipid ---11.8%
  - Carbohydrate—1.7%
  - Mineral content-0.8%
  - Cholesterol –15.67-23.97 mg/gm of yolk

## **TURKEY MEAT**

- Turkey meat has nutritional properties for curative nutrition
- Leanest in nature
  - Protein—24%
  - Fat ---6.6%
  - Energy value—162 calorie /100 gm of meat.
  - Mineral -potassium ,calcium ,magnesium, iron ,selenium, zinc and sodium are present.
  - Rich in essential amino acid, niacin vitamin B6 and B12 also rich in unsaturated fatty acid ,essential fatty acid and low in cholesterol.

## **MANAGEMENT PRACTICES FOR TURKEY**

- Management practices are similar to poultry except during 1-15 days of life
- Incubation period -28 days

Temperature		Relative humidity
Setter	99.5	61-63
Hatcher	99.5	85-90

## **BROODING**

- Summer – 0-4 week.
- Winter - 0-6 week.
- Brooders used are hover brooder, electrical brooder infra-red bulbs, gas brooder or traditional brooding system.
- Temperature maintained is 32° C to be reduced every week by 5° C.

### **POINTS TO BE NOTED DURING BROODING PERIOD**

- Floor space requirement for 0-4 weeks is 1.5sq.ft/bird
- Brooder house should be made ready 2 days before the arrival of poults.
- Poult guard of at least 1 ft height must be provided.
- Starting temperature is 95 degree Fahrenheit followed by weekly reduction of 5 degree Fahrenheit per week up to 4 weeks of age.
- Shallow waterers should be used.

#### **FORCE FEEDING:-**

- In force feeding, milk should be fed at the rate of 100ml per liter of water and one boiled egg at the rate of one per 10 poults upto 15 days that will compensate the protein and energy requirements of the poults.
- Poults can be attracted to the feed by gentle tapping of the container with the fingers. Colored marbles or pebbles placed in feeders and waterers will also attract poults towards them. Some chopped green leaves should also be added to feed to improve feed intake.

#### **REARING SYSTEM**

- a. Free range system of rearing**

Advantages:-

- It reduces the feed cost by fifty percent
- Low investment
- Cost benefit ratio is high

Health cover: - turkeys in free range system are highly susceptible for internal and external parasites. Hence once a month deworming and dipping is essential

- b. Intensive system of rearing**

Housing:-

- Distance between two houses should be at least 20 meters.
- Young stock house should be at least 50 to 100 meters away from the adult house.
- Width of the open house should not exceed 9 meters.
- Height of the house may vary from 2.6 to 3.3 meters from the floor to roof.
- An overhang of one meter should be provided
- House durable and moisture proof
- Care to be taken that adequate floor space and feeder space to accommodate large birds



## **Catching and handling of turkey**

- Use of stick.
- For catching turkey darkened room is best suited.
- Pick with both legs without injury.
- Mature turkey should not be kept hanging for 3-4 minutes.



## **SPACE REQUIREMENT FOR TURKEY**

Age	Floor space(sq Ft)	Feeder Space(cms)	Water space(cms)
0-4 week	1.25	2.5	1.5
5-16 week	2.5	5.0	2.5
16-29 week	4.0	6.5	2.5
Turkey breeder	5.0	7.5	2.5

## **FEEDING OF TURKEY**

- The method of feeding in turkey is based on the practical experience conducted at Regional Poultry Breeding Farm, Kyrdekulai.
- Turkey feed consist of turkey starter feed and turkey finisher.
- Energy, protein, vitamins and mineral requirements are high compared to chicken.
- Feed turkey during cooler part of the day.
- Provide shell grit to avoid leg weakness 30-40 gm per day.

## **FEEDING SCHEDULE OF TURKEY**

### **FEEDING OF POULTS**

### **TYPE OF FEED**

- 0-1 week---16 gm/bird /day
- 1-2 week---30 "
- 2-3 week---36 "
- 3-4 week---60 "
- 4-5 week---72 "
- 5-6 week---90 "
- 6-7 week---96 "
- 7-8 week---100 "
- 8-9 week---112 "

Turkey Starter  
"  
"  
"  
"  
"  
"  
"  
"  
"

## FEEDING OF GROWERS/FINISHERS

- 9-10 week-- 128 gm/bird/day
- 10-11 week-- 134 "
- 11-12 week-- 140 "
- 12-14week-- 150 "
- 14-15 week-- 154 "
- 15-18 week-- 160 "
- 18-20 week-- 170 "
- 20 week above 220 "

## TYPE OF FEED

Turkey Finisher  
"  
"  
"  
"  
"  
"  
"

### Breeding Practices:

### PHYSICAL APPEARANCE OF FORM

- Toms are heavier and have black bread in the upper breast region.
- Dew bill is relatively large ,plum and elastic
- Caruncles appear by about 5<sup>th</sup> week and is referred to as shooting the red
- Male poultts strut even at day old.
- **Natural mating**:-Male:female ratio is 1:5 for medium type and 1:3 for large type. On an average 40-50 poultts is expected from each hen. Toms are rarely used after first year due to reduced fertility. Toms are change every 15 days.

### Economic Parameters in Turkey Farming

Male – female ratio	1:5
Average egg weight	65 gms
Average day old poult weight	50 gms
Age at sexual maturity	30 wks
Average egg number	80 – 100
Incubation Period	28 days
Average body weight at 20 weeks	4.5 – 5(f) 7-8 (m)
Egg production period	24 wks
Marketable age	14-15(m) 17-18(f)
Marketable weight	7.5 kg (m)5.5kg(f)
Food efficiency	2.7-2.8
Average feed consumption up to marketable age	24-26kg(m)17-19(f)
Mortality during brooding period	3-4 %

1:5 male female ratio at RPBF Kyrdemkulai





## VACCINATION SCHEDULE IN TURKEY

Age	Type of Vaccine	Route
7 <sup>th</sup> day	ND – F1 Strain	Eye drop
10 <sup>th</sup> day	IBD Strain	Eye drop
28 <sup>th</sup> day	NDVH – Lasota	Eye drop
6 <sup>th</sup> week	Fowl Pox	Sub Cutaneous
8 <sup>th</sup> week	Cholera Vaccine	Sub Cutaneous
10 <sup>th</sup> week	R2B	Intra Muscular
14 <sup>th</sup> week	Fowl Pox	Sub Cutaneous
18 <sup>th</sup> week	RDVK	Sub Cutaneous

## QUAIL FARMING

### Tips about quail

- Early maturity -6 weeks .
- 10gm Chick; upto 200 gm adult;
- Less space required for farming.
- Market is driven by, claimed aphrodisiac & anti asthmatic property.
- Domestic species in not restricted under forest act.
- Domesticated Quails has gained commercial importance as a source of egg and meat for human consumption.
- Quail farming is emerging as a potential alternative to chicken and other poultry farming.
- Coturnix quails are valuable source of animal protein.
- Quail farming offers the quickest means of increasing the production of high quality protein where there is acute shortage of proteinaceous food.



### Egg Production

- Japanese quails lay smaller eggs (7-10gms) than chicken but are prolific layers.
- Females lay as early as 6 weeks of age.
- Under favourable environment they produce averaging 250 or more eggs per year.
- Quails eggs are thin shelled and break easily.
- Quails hens are usually in full egg production by about 50 days of age.

### Housing

- Rooms need to be well insulated, well ventilated and free from draught.
- Adult quail require 145cm of floor space per bird.
- Often in community pens, they will not build a nest but hide their eggs in the litter.
- If two groups of quails are to be combined put them in an unfamiliar cage or pen.

### Management and reproduction of quails

- Quails are delicate and need better care during the first two weeks.
- The brooding temperature should be adjusted as per the behaviour of the chicks.
- The battery brooding up to 3 weeks of age gives better results than the floor brooding due to small size of the chickens.
- Domesticated quails reproduce when they attain their age of 10 to 20 weeks.

- One male should mate 1 to 3 females for production of fertile eggs.
- The egg should be collected for hatching after 4 days after the introduction of males to females.
- Hatching eggs should be stored at the temperature of 15.5°C at 80% humidity

### **Brooding and care of small chicks**

- Quail chicks can be brooded in several types of commercial or game-bird battery brooders.
- The feeder and water space requirement are 2-3cm and 1-1.5cm.
- Coturnix chicks need extra heat until they are feathered. Brooding temperature for young birds is very important for successful management.
- The heat to start with in the brooder should be slightly lower than that of the incubator.



### **Feeding of Quails**

- Starter feed 0-3 week
- Grower feed 4-5 week
- Layer feed 6 week onwards
- Young chicks make a larger gain in bodyweight and the dietary requirement of protein and amino acids are greater during this period
- Adult Japanese quail eat between 14-18g feed per day.
- 

### **Quail disease and their control**

- Quails are very sensitive to abrupt environmental changes, particularly during the first 2 week.
- Antibiotics may be given during this period in water or feed.
- Quails do not need any type of vaccination.
- *Aspergillus fumigatus* causes pneumonia in quails. This can be checked by adding calcium propionate @ 2kg/tonne of feed.

## MANAGEMENT GUIDE ON DUCKS

### Duck farming has following advantages:-

1. Ducks lay more egg per bird per year than chicken.
2. The size of the duck egg is larger than hen egg by about 15 to 20 gms.
3. Ducks require lesser attention and thrive well in scavenging conditions.
4. Ducks supplements their feed by foraging. They eat fallen grains in paddy fields, insects, snails, earthworms, small fishes and other aquatic materials.
5. From commercial point of view, ducks have a longer profitable life. They lay well even in second year.
6. Ducks do not require any elaborate houses like chicken
7. Ducks are quite hardy, more easily brooded and more resistant to common avian diseases.
8. Marshy river side, wet land and barren moors upon which chicken or no other type of stock will flourish, are excellent quarters for duck farming.
9. Ducks lay 95 – 98% of their eggs in the morning before 9.00 AM. Thus saving lot of time and labour.
10. Ducks are suitable for integrated farming systems such as duck-cum-fish farming, duck farming with rice cultivation. In duck-cum-fish farming the droppings of ducks serve as feed for the fishes and no other feed or manuring of the pond is necessary for fishes (200-300 ducks per hectare of waste area). Under integrated duck farming with rice cultivation, the ducks perform four essential functions viz., intertillage as they search for food, their bills loosen up the soil around the rice plants-weeding, insect control and manuring.
11. Ducks are good exterminators of potato beetles, grasshoppers, snails and slugs. In areas plagued liver flukes, ducks can help correct the problem (2 to 6 ducks per 0.405 hectare of land). Ducks can be used to free the bodies of water from mosquito pupae and larvae (6 to 10 ducks per 0.405 hectare of water surface).
12. Ducks are quite intelligent, can be tamed easily, and trained to go to ponds and come back in the evening of their own.

### BREEDS

- Among the egg laying breeds, Khaki Campbell is the best producer.
- Individual egg production of almost an egg a day in this breed for well over twelve months has been recorded and flock averages in excess of 300 eggs per duck per year are not uncommon.
- Khaki Campbell ducks weigh about 2 to 2.2 Kgs, and drakes 2.2 to 2.4 Kgs.
  - Egg size varies from 65 to 75 gms.
- White Pekin is the most popular duck in the world known for table purpose.
  - It is fast growing and has low feed consumption with fine quality of meat.
  - It attains about 2.2 to 2.5 Kgs of body weight in 42 days of age, with a feed conversion ratio of 1:2.3 to 2.7 Kgs.



*Fig. Khaki Campbell*





**Fig. White Pekins**

### **INCUBATION**

- The incubation period of Khaki Campbell duck is 28 days.
- In forced draft incubators satisfactory results are attained at a temperature of 37.5 to 37.2° C (99.5 to 99° F).
- The wet-bulb reading on the thermometer should be 30 to 31° C (86 to 88° F) during incubation for the first 25 days and 32.7 to 33.8° C (90 to 92° F) for the last three days of hatching.
- Eggs are sprinkled with lukewarm water having sanitizer once a day from 2nd day to 25th day and cooled for a maximum period of half an hour.
- Candling is done on 7th day.
- The eggs are turned hourly.
- Eggs are transferred to hatcher on 25th day.

### **BROODING (0-4 Weeks)**

- The brooding period of Khaki Campbell ducklings is 3 to 4 weeks.
- For meat type ducklings such as Pekin, brooding for 2 to 3 weeks is sufficient.
- Provide floor space of 90 to 100 sq.cms. per ducklings under the brooder.
- A temperature of 29 to 32° C (85 to 90° C) is maintained during the first week. It is reduced by about 3° C per week till it reaches 24° C (75° F) during the fourth week.
- Ducklings may be brooded in wire floor, litter or batteries.
- A wire floor space of 0.046m<sup>2</sup> (1/2 sq. ft.) per bird or solid floor space of 0.093 m<sup>2</sup> (1 sq.ft.) per bird would be sufficient up to 3 weeks of age.
- Water in the drinkers should be 5 to 7.5 cm (2 to 3") deep just sufficient to drink and not dip themselves.

### **REARING (15-16 Weeks)**

- Ducklings may be reared in intensive, semi-intensive or range system.
- Under intensive system, allow a floor space of 0.279m<sup>2</sup> (3 sq.ft.) up to 16 weeks of age.
- Under semi-intensive system, a floor space of 0.186 to 0.279m<sup>2</sup> (2 1/2 to 3 sq.ft) per bird is allowed in night shelter and 0.929 to 1.394 m<sup>2</sup> (10 to 15 sq.ft.) as outside run per bird upto the

age of 16 weeks. Usually ducklings are allowed to move to runs at the end of 3 to 4 weeks of age depending upon weather.

- Water in the drinkers should be 12.5 to 15 cm (5" to 6") deep to allow minimum immersion of their heads. Partitions upto the height of 60-90cm (2 -3") inside the pens and the outside runs are adequate for control.
- Under range system a flock of 1000 can be reared per 0.405 hectare (one acre).

#### **ADULT STOCK (above 17 weeks of age)**

- Under intensive system, a floor space of 0.371 to 0.465\* (4 to 5 sq.ft.) per duck is essential, whereas in semi-intensive system, a floor space of 0.279m<sup>2</sup> (3 sq.ft.) in the night shelter and 0.929 to 1.394m<sup>2</sup> (10 to 15 sq.ft.) as outside run bird would be adequate.
- For wet mash feeding in a 'V' shaped feeder, allow 10 to 12.5 cm. (4 to 5") feeding space per duck but for dry mash or pellet feeding adlib in hoppers, a feeding space of 5 to 7.5 cm.(2 to 3") per duck would be sufficient.
- High egg laying strains of ducks come into production at 16 to 18 weeks of age. About 95 to 98% of eggs are laid by 9.00AM. One nest box of size 30x 30 x 45 cms.(12 x12 x18") to every three ducks be provided. In case of laying breeds a mating ratio of 1 drake to 6-7 ducks and in table breeds 1 drake to 4-5 ducks is allowed.
- Photo period of 14 to 16 hours per day is essential for optimum production.
- In free range, 1000 ducks are kept per 0.405 hectare (1 acre) depending upon greens.

#### **HOUSING**

- Ducks do not require elaborate houses.
- The house should be well ventilated, dry and rat proof.
- The roof may be of shed type, gable or half round.
- It may have solid or wire floors.
- The wire floors are not popular with breeders.
- Under semi-intensive system the house should have easy access to outside run as the ducks prefer to be outdoors during the day time and even during winter or rains.
- Generally the proportion of night shelter to outside run is 1/4:3/4.
- The run should gently slope away from the houses to provide drainage.
- Normally a continuous water channel of size 50cm. (20") wide and 15-20cms. (6-8") deep is constructed at the far end, on both sides, parallel to the night shelter, in the rearing or layer house.
- Though duck is a water fowl and very fond of water, WATER FOR SWIMMING IS NOT ESSENTIAL AT ANY STAGE OF DUCK REARING.
- However, water in drinkers should be sufficiently deep to allow the immersion of their heads and not themselves. If they cannot do this, their eyes seem to get scaly and crusty and in extreme cases, blindness may follow. In addition, they also like to clean their bills periodically and wash them to clear off the feed.
- While in meat strains a slight increase in body weight of ducks at seven weeks of age has been noticed (weight advantage of swimming ducks to non-swimming ducks is 0.3%), but for egg laying strains, swimming is a disadvantage.



## FEEDING

- Ducks may be grown on dry mash, a combination of dry and wet mash or pellets. Ducks prefer wet mash due to difficulties in swallowing dry mash.
- The pellet feeding, though slightly costly, has distinct advantages such as saving in amount of feed, minimum wastages, saving in labour, convenience and improvement in sanitary conditions.
- Ducks are good foragers.
- The use of range, pond or supplementary green feed, reduces the feed cost.
- **DUCKS SHOULD NEVER HAVE ACCESS TO FEED WITHOUT WATER.**
- During the first eight weeks, birds should always have access to feed, but later on they may be fed twice a day i.e. first in the morning and then late afternoon.
- Khaki Campbell duck consumes about 12.5 Kgs. of feed upto 20 weeks of age.
- Afterwards the consumption varies from 120 gms and above per bird per day and depending upon the rate of production and availability of greens.

## Vaccination Schedule

Sl no	Age	Name of the vaccine	Dose	Route
1	3 – 4 weeks	Duck cholera	1 ML	S/C
2	After 1 month of last vaccination	Duck cholera	2 ML	S/C
3	8- 12 weeks	Duck Plague	1 ML	S/C