

Brooding of Chicks: A Management Tool for A Healthy and Profitable Poultry Farm

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Brooding is an important managerial activity to produce healthy chicks, prevent the early mortality that led to profitable poultry farm. Newly born chicks lacking proper thermoregulatory mechanism required for temperature regulation of the body and it takes about two weeks to develop this mechanism. Chicks are very sensitive during this period. They also need some special care up to 4-6 weeks of age and that process is called brooding management. This period is crucial in achieving efficient growth and preventing undue mortality of chicks. There are two types of brooding.

A. Natural brooding

This system is commonly practised in backyard poultry farming. It is done by broody hens just after hatching, up to 3 to 4 weeks of age just after incubation by same hen. One hen can take care of 12-15 chicks. They must be provided with a brooding nest and protection at night. Cut feeding of grains or home waste may be practised for faster growth of chicks. The broody hen must be allowed to take out newly hatched chicks in the daytime for forage of food.

B. Artificial Brooding

An artificial source of heat is required for extra heat to chicks to maintain their body temperature. The temperature at the brooder required during the first week of the brooding period is 35 °C (95 °F) which has to be reduced @ 2.8 °C (5 °F) per week till the end of 4th week / up to 21 °C (70 °F). The heating sources may be electricity, gas, kerosene/ diesel, and infrared light depending on the type of brooder used.

Preparation of brooder house

Chicks should be brooded in a house that is not located near other poultry houses due to disease transmission. At least 300 ft. distance is required between two such houses but greater distance is preferable. Air moment must be from brooder areas to other poultry area and should be enclosed with a fence at least 100 ft. from the house.

Preparation on of brooder House

- a) Removal of old litter
- b) Cleaning and scrubbing the house
- c) Cleaning of the equipment
- d) Fumigation of the House using 3x concentration (1x conc.=20g of $Kmno_4$ + 40ml of formalin). Overnight fumigation of the house must be done 24 hours before housing chicks and should be ventilated at least for 3 - 4 hours before chicks arrival to remove traces of poisonous gas.
- e) Cleaning and fumigation of bulk feed bins
- f) Removal of all weeds and debris from the area outside the farm.
- g) Burning of feathers, mowing of the grass and making necessary road repairs.

If a track dip vat is involved, then it should be made empty, thoroughly cleaned and fresh disinfectants added.

Equipments of brooding

- a) Brooders/ Hovers (Electricity/ Gas/ coal brooders)
- b) Brooder guards
- c) Chick feeder
- d) Chick Waterers
- e) Curtains
- f) De-beaker (if required)

Important factors of brooding

Floor Space

It is an important attribute for welfare and better performance of the chicks. Increased chicks density leads to cannibalism and other issue (leg problems, injuries and increased mortality) in the flock. Following are the recommended space as per age:

- 1st one Week 10 sq inches/chick and
- 2nd week 25 sq inches /chick
- 4th week 45 - 65 sq. inches/ chick

A minimum of 700 Sq cm. should be maintained per chick up to 6th week of age.

Ideal brooder should be 5ft. diameter on 2.5ft. radius. Number of Chicks to be brooded under the hover depends on the brooder size. 10 Sq. inch of heating space are normally required for each chick. Two types of brooding area one is brooding or heating area (1/3rd of total area) and the other one is non-brooding or non-heating area (2/3rd of total area). Required floor space should co-ordinate with the heating area.

Litter management in brooding

There are many types of litter material used for brooding having following characteristics: light in weight, medium particle size, highly absorbent, should dry rapidly, soft and compressible, should have low thermal conductivity, should absorb a minimum of atmospheric moisture, cheaper in price, have good fertilizer value. Litter material should be uniformly spread of 2-3 inches thickness. Put the new paper on the litter (for about 1 week) to prevent chicks from eating litter material. Remove the top layer of paper daily to clean, turn it upside down after 4 or 5 days and finally removed after few days. During the first 3 Weeks of the chick’s life the litter should be only slightly moist. After that it should contain about 25% moisture.

Brooder/Chick guard

The movement of the chicks can be restricted with the help of the chick guards which are arranged in circular manner near the heat source. A cardboard or metal sheet of 0.45 m height placed in a circular manner at a distance of 0.85 to 0.90 m from the edge of the brooder acts as a brooder guard. Begin increasing the area on 3rd day. Guards should be used for 6-9 days (we can also go up to 18 days, but inner area to be increased frequently) after which they may be removed.

Lighting Management

Artificial light in the poultry house is essential to encourage feed consumption, and optimum growth and to prevent birds from piling or stampeding when scared. Hang the brooder hovers with electrical bulbs of different capacity (60 / 100 watt) based on the season of the year and temperature. The temperature

may be adjusted based on the behavior of the birds as shown in the Fig 1. If the temperature is higher the birds move away from the heat source and start showing the typical system of panting. When temperature is inadequate, the chicks huddle under the brooder near to the heat source. At ideal temperature, chicks are uniformly distributed across the brooding area.

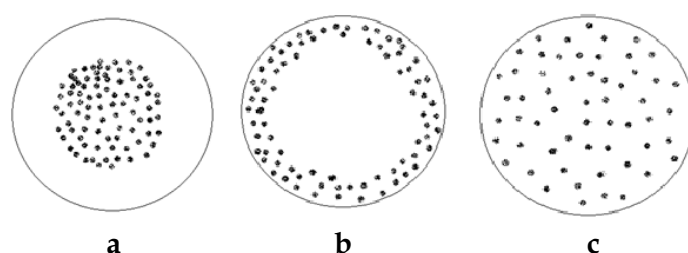


Fig 1. Distribution pattern of chicks at different temperatures (a. Inadequate temperature, b. high temperature, c. Ideal temperatures)

Lighting in broilers/meat type birds

Lighting in broilers should be started with 23 hours of continuous light with the light intensity of 2.0 foot-candle (20 lux) with one hour of darkness in the first 24 hours duration. Subsequently, dim light with an intensity of 0.5 foot-candle (5 lux) during all dark hours except for 1.0 hour must be given. Follow the light schedule as given in below table 1.

Table 1. Light schedule for commercial broiler chicks

Age of broiler (days)	Light Intensity (lux)	Photoperiod
0-7	20	23.0 h light: 1.0 h dark
8-35	5, increase light 2 h / week	17.0 h light: 6.0 h dark
36-49	5	23.0 h light: 1.0 h dark

Temperature

It is difficult to recommend any brooding temperature applicable to all types of brooders and all conditions. Usually however a temperature of 90 to 95^oF at a point of 6” (15 cm.) outside the canopy and 2” (5cm) above the top of the litter is satisfactory for

chicks at 1 day of age. As the chicks grow older the temperature may be reduced at a rate of 5°F per week till it reaches 70°F or room temperature. Chicks should be fully feathered before supplementary heat is removed. Brooding is done up to 4 Weeks to 5weeks in cold weather a 2nd to 3rd weeks in warm weather. As recorded, 62°F is the lower lethal temperature of day-old chicks cannot withstand. Chicks withstand colder than more heat. 117°F - high lethal temperature, chicks become dehydrated and more mortality.

Ventilation

Inflow of air (for Oxygen requirement) - 2cu ft. of air/ 100 chicks/ minute is required for effective ventilation. It can be achieved by the 2-3 air changes. Air changes depend on the no. of birds housed, no. of openings kept and dimensions of poultry house.

Feeder space

Given is 3.5 to 4cm /chick. Mainly we use linear feeder. Feed requirement depends on the age of the chicks.

Water

Chicks must learn quickly to eat and drink. Although they can get along without water and feed up to 3 days after hatching but such a delay will be detrimental. Any postponement will weaken and

dehydrate the chicks. Water is very much important as it serves many functions in the body. Water space to be provided is 25 to 100cm for every 100 chicks. Placement of waterer should be in between two feeders and exactly under the hover. Fill the waterers about 4hrs before the chicks arrive. This allows time for the brooder heat to warm the water. The water temperature should be 65°F (18°C) and above. Use always fresh and potable water. Water consumption is two times than the food consumption.

Curtain management

Gunny roll should be fixed throughout the shed from outside. It should be opened during day time and closed during evening hours depends. Curtain management should be depending on environmental condition.

Brooding is most essential component of poultry life. It is used to keep chicks warm during the crucial period of life when thermoregulatory system is under developed. It ensures proper growth of body tissue and developed tissue helps in getting proper body temperature and proper body framework. It also helps in development of good feather cover. For economical farm management, proper brooding should be utmost priority of a farmers.

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