Acta Scientific Veterinary Sciences (ISSN: 2582-3183)

Volume 6 Issue 3 March 2024

Conceptual Paper

Brooding of Chicks

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Received: January 25, 2024

Published: February 16, 2024

Brooding is the primary step involved in poultry rearing and one should create a good as well as effective brooding mechanism in order to get better result from the flock the importance of brooding lies in an aspect that the Chicks are poikilotherm (variable body temperature) animal at the day of hatch, Brooding period, the chick gradually change into a homeotherm (stable body temperature) animal until the chicks achieve this mechanism they require additional heat also at the day of hatch, Three major systems are not fully developed. Which includes Thermoregulatory mechanism,Yolk absorption ,digestive system. Effective brooding will help to improve all these systems.

Brooding of chicks

A newly hatched chick does not develop the thermo- regulatory mechanism fully and takes about two weeks till they get their feathers fully grown to develop this mechanism and homeostasis. In such situations, artificial brooding is practiced providing heat for the chicks this will helps to prevent "cold shock" since the environmental temperature may be lower than the hatcher (The place where chicks are hatched) temperature. Brooding can be broadly classified into two I. Natural brooding II. Artificial brooding . Natural brooding is done in the presence of a mother hen , a mother hen taking care of its chicks by transferring her body temperature to its chicks but in commercial poultry rearing it is not possible to brood the chicks with the help of a mother hen because the number of chicks hatched will be enormous so that artificial brooding is the possible way to brood such a big number of chicks ,in artificial brooding heat is provided with the help of charcoal, gas, bulb etc .The primary purpose of this brooder is to provide sufficient temperature of the chicks 35oc in the first day and this temperature can be reduced subsequently until it reaches the atmospheric temperature.

Spot brooding

The type of brooding in which only a specific area inside the house is used to make brooding arrangements The heat source will be local and particularly in the shape of a ring (round brooding) the chicks movement is limited within the ring and they will not have any access outside the ring until the brooding period is over.

Whole-house brooding

The type of brooding in which the complete house will be in brooding temperature so the chicks can move freely inside the house without any restriction in their movements. The heat source is larger and more widely spread.

Requirements of brooding

- Brooder guard - 40ft length/ 350 chicks
- Brooder hovers
- Curtains (Good quality)
- Chick drinker - 7 no.s/350 chicks
- Chick feeder - 7 no.s/350 chicks
- Round plate feeder - 1 no./50 chicks, Tyre feeder - 1 no./100 chicks
- Digital Hygrometer, Thermometer - Each 1 number
- Lights - 40 Watts/400 sq.ft (CFL or Tube lights in the center line of the shed)
- News paper - 4 kg/1000sq.ft
- Brooder – Charcoal (28kg/350 chicks) or LPG (30kg/700-1000 chicks)
- Litter material - Husk (400 kg/ 1000sq.ft)

Brooder

Brooder has mainly three elements including Heating source, Reflectors and Brooder guard

Particulars	Functions
Brooder guard	Restrict the movement of chicks within the heat source
Brooder hover	Reflect the heat into the brooding area
Curtain	To prevent the heat loss from the poultry house
Feeder and drinker	Provide feed and water to the chicks
Hygrometer	To measure temperature and humidity
Light	To provide heat and light
Brooder	To provide heat
Litter material	To absorb moisture from droppings
News paper	Spread above the litter on first day of brooding

Table 1

Heating source

The equipment which is used to provide additional heat for the chicks is known as heating source there are different kinds of heating source available in the market like electrical brooder, gas brooder, infra red bulbs , incandescent bulbs, charcoal brooder , mud pot brooder etc.

- Charcoalbrooder/kerosenestove: Where electricity is not available, ordinary charcoal/kerosene stoves are used to provide supplementary heat to chicks. These stoves are covered with plate/pans to dissipate the heat. Coal (Mud-pot-Bukhari) is used to heat the room Coal Heaters - one is sufficient for 300chicks
- Gasbrooder: Natural gas, LPG or methane is connected to heating element which is hanged 3 to 5 feet above the chick to provide heat.Gas –brooder - one is sufficient for 700 chicks
- Electrical brooder: It is also thermostatically controlled heating system of 300watt with a reflector and a thermostat that spread required amount of heat uniformly above large area, this avoid crowding of chicks under brooder directly. Electrical brooder - one is sufficient for 250 to 300 birds.
- Infra-red bulbs: It is a self-reflecting bulb. 250 watts IR bulb used to provide brooding for chicks. Infrared red bulb - one is sufficient for 150 to 250 chicks.
- Incandescent bulb: Incandescent bulbs of 100 watts or 60 watts (One watts/Chick)

Reflectors

These reflectors are also called Hovers. There are two kinds of hovers available I. Flat type hover – this type of hover consists of ordinary electric bulb and a flat aluminium material above it which will reflect the heat back to the brooding ring II Canopy type hover – The type of reflectors which is in concave shape consisting of ordinary electrical bulb,

Brooderguard/chickguard

They are used to prevent chicks from straying away from heat supply until they learn to maintain their body temperature. We have to provide brooder guard with a diameter of 5 feet, height 1.5 feet. for making brooder guard we can use materials like cardboard sheet, GI sheet, wire mesh etc.

Brooding arrangement/Receiving of chicks

After culling the previous adult birds, clean and disinfect the poultry house is necessary a down time (The time interval between two flocks) of 3 to 4 weeks may be provided between 2 batches as down tome.. The 5 feet diameter brooder guard can hold about 200 to 250 chicks. At the centre of brooder guard, provide any one of brooders Spread litter material about 2" height in a circle and then spread old newspaper over the litter material in order to prevent the chicks from eating litter material. Arrange feeders and waterers alternatively. Switch on the heating source at least two hours before the arrival of the chicks in order to maintain required brooding temperature. Provide electrolyte, glucose and vitamins in the drinking water for first 2 to 3 days to overcome stress. After arrival of chicks, leave the chicks under heating source and allow them to settle for one to two hours with access to feed. Spread rava or fine mash/crumble feed on the newspaper for 1 or 2 days. Afterwards, they will learn to consume feed from the feeder. Maintain a brooder temperature of 90 to 95°F for the first week and then reduce to 65-75°F every week until it reaches the room temperature. Watch the behavior of chicks in order to find out whether temperature provided is correct or less or more. If the temperature is too high the chicks will move away from the heat source so we should reduce the heat by reducing the power of the bulb . In case of too low temperature the chicks will huddle (chicks coming together) near the heating source so we have to supplement more heating source . In case of chill weather or chill breeze, we can provide curtains towards the wind direction. The news paper can be remover after 2/3 days and allow the chick to wlak through the litter material, the brooder guard can be removed after 7 to 10 days depending upon the season. While removing the brooder guard, see that the corners of the sheds are rounded in order to avoid mortality due to huddling. Change the feeders and waterers according to age and requirement. 23 hours of lighting and. One hour darkness may be provided to train the chicks to cop up with dark environment and power failures. Medication programme: First and Second day

- Electrolytes and vitamins. 3rd to 7th day – Antibiotics. (Other medications as and when required).

The birds behavior against different temperature in brooder is a simple method to asses weather the temperature is correct or not.

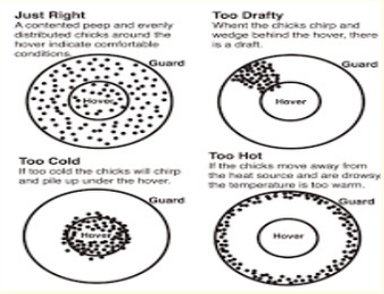

Figure a

Environmental factors to be considered in brooding

1	Temperature	95-85°F
2	Relative humidity (RH%)	60-70% (1-3 days), >50% (>3 days)
3	Light	5-10 Lux (40watt/400 sq.ft)
4	Ventilation	Regulate Fresh Air (oxygen), maintain Temperature, Remove carbon dioxide, Eliminate ammonia, other gases, moisture, dust and odours from the shed
5	Feed	Pre starter feed/ chick feed
6	Water	pH - 6.5 -6.9
7	Floor space	0.3sq.ft/ chick

Table 2