

Brooder management

Newly hatched birds, such as **chicken and turkey are virtually helpless** at the time of hatching and require the constant attention. Just after arrival of day old chicks to the farm it is necessary to brood the chicks. **After birth the birds can not regulate their body temperature** during the first few weeks of life unless they are housed in a warmed environment. There is a **thermoregulatory mechanism** in the body which regulates body temperature. New born mammals quickly can adopt in its environment due to its developed thermoregulatory mechanism. But, in birds it will take time to develop in relation with climate and seasons. In winter season it takes time up to **4-6 weeks and in summer it is up to 2 weeks**. This is why birds should be brood up to 4-6 weeks of age.

Brooding of chicks

Brooding is the process of providing heat and other management services to the baby chicks at an early age.

Types of brooding

1. Natural Brooding- By broody hen
2. Artificial Brooding- By artificial ways

Broiler chicks reproduced from parent stock. So, no question will arise for natural brooding. Here artificial brooding is practiced. Successful brooding will lead the chicks to become healthy and produce more meat. Unsuccessful brooding results less meat and profit. Although chicks become active and able to feed themselves within 24 hours of birth, they require supplementary heat for at least 4 weeks and sometimes preferably up to 6 weeks. Artificial heat supply related with environmental temperature.

The broiler growers use many types of brooders. Name of brooder depends on either energy source or material they use to brood the chicks. For producing heat poultry growers use gas, electricity, kerosene, coal, wood etc as availability, flock size and economic capacity of the poultry growers. The objective of brooding is to increase desired room temperature without hampering normal fresh air and humidity. One thing should keep in

mind for burning type brooder that the emitted fume does not obstruct the chicks in respiration. So one can innovate or use any type of brooding system to brood the chicks.

Types of brooder

1. Electric brooder- Hover, Heater, Battery type
2. Gas brooder
3. Kerosene brooder- Lamp or Stove type
4. Coal brooder
5. Hot water system
6. Infra-red Brooder etc.

Brooder house Equipment

Brooder- Chick guard, Hover, Electric bulb, Gas brooder, Stove, Lamp etc.

Feeder- Normal plastic or Metal feeder, Auto feeder

Drinker- Normal plastic or Auto drinker

Balance- Micro balance, Bird weighing balance

Refrigerator - No Frost

Thermometer & Hygrometer

Feed mixing machine

Bird catcher

Bird carrier cage

Water Tank etc.

Principles of Brooding

1. Cleaning, washing and disinfection of broiler house
2. Setting of brooder
3. Temperature
4. Ventilation
5. Humidity
6. Light
7. Litter
8. Floor space
9. Feeder and drinker space
10. Watering and feeding
11. Preventive measures

Brooding Requirements

Cleaning, washing and disinfection of Brooder house

Proper hygienic measures should be maintained in poultry farm. The house, floor and equipment should be **cleaned, rubbed, washed** with detergent powder / disinfectant solution. **Fumigation of brooder shed and equipment** should be done before arrival of chicks. Routine sanitation work should be practiced around the farm premises. **Flies and insects** should be controlled by spraying Phenol and Lysol to the surroundings of the broiler shed. The broiler attendants should be used **farm dress** and **shoe**. There should be a provision of '**Foot Bath**' at the entry gate of the broiler shed to prevent any probable contamination of diseases.

Setting of brooder

Suitable brooder should be set and trialed its temperature **one day before of arrival chicks**. Number of brooder depends on the total number of chicks. It is easy to handle **250 chicks** per brooder. Number of chicks can be increased in case of gas brooder.

Temperature

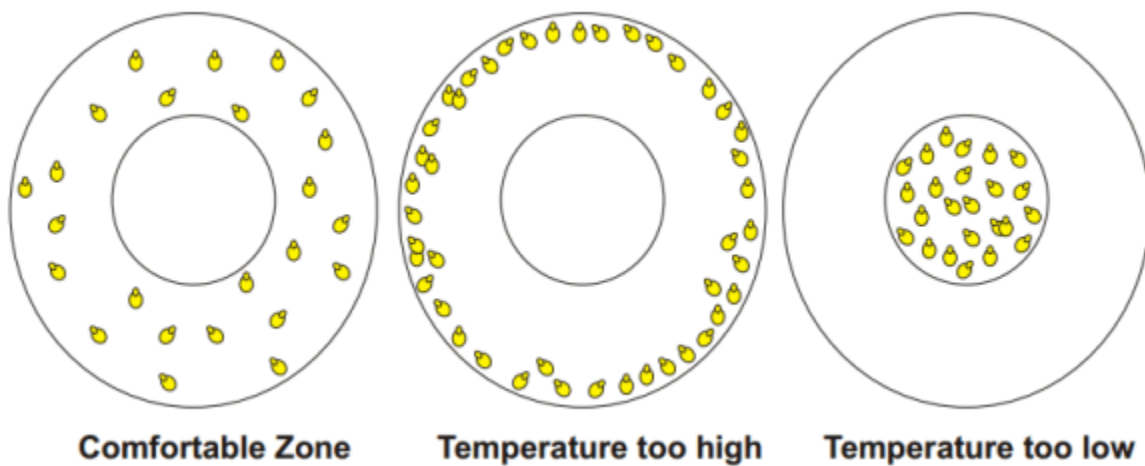
It is not possible to specify the exact brooding temperature for all the conditions. It depends largely upon environmental and general condition of the chicks. Under low environmental temperature, chicks appear to be comfortable at higher temperature and vice-versa. Brooding temperature starts at **95⁰F (35⁰C)**. The best results are obtained at **33⁰ C** at the chick level for first two or three days and reduced by **5⁰F or 3⁰C** in every successive week till **70⁰F or 21⁰ C** room temperature is attained. Birds appear to perform better when the room temperature is at lower side of the recommendation. A temperature of **21⁰ C** appears to be the ideal during growing period.

| <u>Age (wks)</u> | <u>Chick level temp. °F</u> |
|------------------|-----------------------------|
| 1 | 95 (35°C) |
| 2 | 90(32°C) |
| 3 | 85(30°C) |
| 4 | 80(27°C) |
| 5 | 75(24°C) |
| 6 | 70(21°C) |

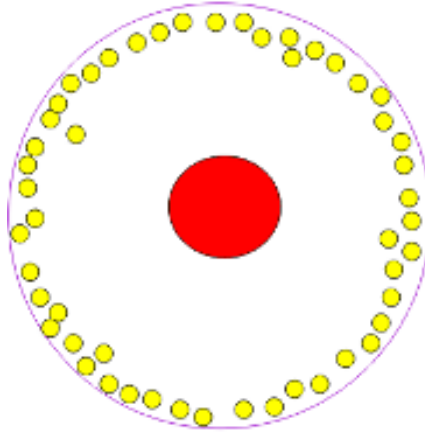
Effect of temperature

1. Too high or too low brooder temperature will cause the **poor growth** and subsequently poor performance of chicks.
2. At low temperature, chicks will try to **cluster** and try to **crawl under other chicks**. Some chicks **may die** in this situation due to **piling**.
3. At high temperature the chicks will try to go away from the source of heat and will result in poor feather growth. Some chicks may die from **heat prostration**.

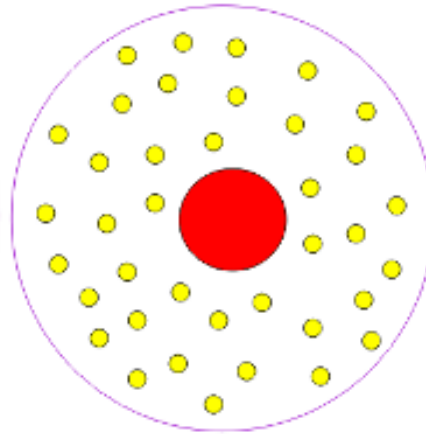
Pattern of chicks' distribution under the Hover



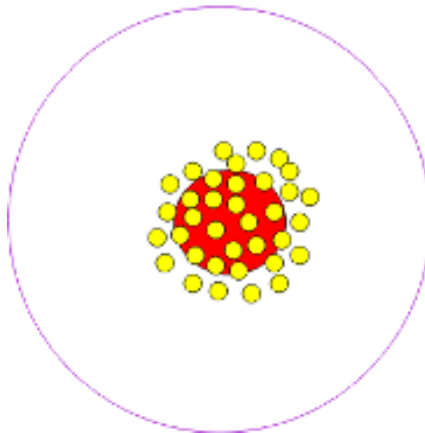
TEMPERATURE TOO HIGH
Chicks make no noise
Chicks pant, head and wings droop



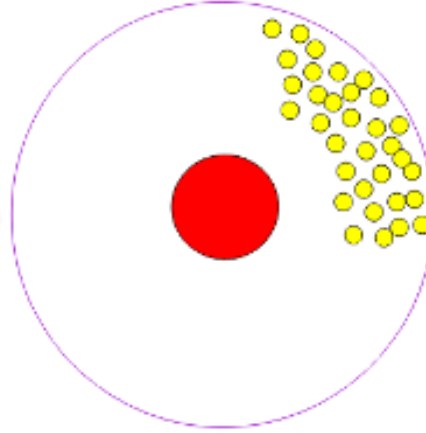
TEMPERATURE CORRECT
Chicks evenly spread
Noise level signify contentment



TEMPERATURE TOO LOW
Chicks crowd to brooder
Chicks noisy, distress calling



DRAFT
This distribution requires
investigation. Influenced by
draft, uneven light distribution,
external noises





Ventilation

The aim of ventilation is to supply of fresh air and removal of heat and toxic gas. Fresh air is important for good health and well being of chicks. Three to five air changes per hour are sufficient. Poor ventilation results in accumulation of carbon monoxide, ammonia and wet litter. Concentration of [carbon monoxide more than 0.01 percent](#) becomes poisonous to chicks. Obnoxious odor of [ammonia irritates the eyes of chicks](#) and retards the body growth. [Wet litter due to poor ventilation](#) is often predisposing factor for [outbreak of coccidiosis](#). The extent of ventilation is governed by the condition of litter. There should be enough ventilation to keep the litter dry. So there should be provision of [exhaust fan](#) or cross ventilation.

Humidity

Though the range of humidity requirement for floor brooded chicks has been shown to be quite high (30% to 75% R. H.) even then too high or too low humidity in brooder house should be avoided. High humidity creates the problem of wet litter, which encourages the development of coccidiosis and low humidity may cause dusty litter resulting is respiratory trouble and poor growth of feathers. To prevent dampness and dustiness a range of [50-60](#) % relative humidity is proper in floor type brooder house.

Stocking density

Density is the amount of space allowed /bird in the house. Since construction cost of housing is increasing day by day, farmers attempt to place broiler chicks at relatively high density. [Two types of brooder space should be considered in this context-space under the hovers and floor space in brooding house](#). Space requirement under the hover depends upon type of hover being used and source of heat employed. With electric hovers [10 sq. inch or 65.5 sq. cm. per chick](#) is the minimum requirement and in other kinds of hovers using kerosene or coal less heated area under hover [7 sq. inch or 45 sq. cm](#) is sufficient.

Floor space is not usually a serious problem up to 2 to 3 week of age, but considerable problem is noticed after this age when the chicks still need heat and they are grown in size. From the standpoint of mortality in relation to number of chicks per brood, it is observed that 350 chicks per brood have advantage over the large flock. Broiler chicks should be allowed

700 sq. cm. (0.75 sq ft / bird or 14 bird / sqm) spaces per chick till the age of their marketing (28 days) at temperate condition, but 1sq ft/bird in tropical condition.

Feeder and drinkers

The feed for the new chicks should be placed on flat containers such as paper plates or the box top in which chicks arrive. The boxes can be cut down to make shallow containers. Feed should be in the flat containers frequently to encourage the birds to eat. Metal feeders should be used after the first few days. The lips of feeders and drinkers should be only 5 cm in height from the level of the litter so that the chicks can readily reach to feed and water. In case of trough feeder 2.5 - 5.0 cm/bird should be provided up to the age of 6 weeks. Feeder space should be enough so that at least two-third of all the birds can eat at one time. Drinker space will be half of the feeder space. Two 5 liter drinkers are needed for 100 chicks.

Auto drinkers: Bell drinker

Nipple drinker

Litter

Organic materials like rice husk, sawdust, chopping straw, dry leaves, wood shavings, dried cane fiber and corncobs etc can be used as litter materials for brooding purpose. Inorganic materials such as calcium oxide powder, ash, sand etc are used with organic litter. Litter materials should be inexpensive and nontoxic. It should have strong moisture and urine absorbing capacity from the poultry droppings. At first 2 days of brooding newspaper is used on litter. Calcium oxide powder inhibits the growth of parasite and microorganism. Fresh and shallow litter is used in the brooder house. It should be 4-5 cm in depth.

Light

It is very common practice of using light in the brooder house. No extra light is required when it is brooding by electric bulb. Broilers are grown on a continuous light program. Many scientists recommended 1 or 2 hour dark in a 24 hours cycle to accustom the chicks to darkness in case of power failure. Recent studies shown that intermittent lighting improve the FCR and performance of bird. Light enters to the eye of the bird and sends a message to the brain

through optical nerve which stimulates pituitary gland to release hormone. It stimulates broiler chicks to eat more to gain muscle. At night dim light can be used.

Watering and feeding

It is not wise to start eating with grain. To remove thirsty and dehydration of bird first eating should be [glucose water including vitamin-C](#). It is advisable to give more time to the chick to drink water. [After 2 hours of supplying water crushed feed grain should be supplied](#) on open tray, flat container or paper or mat for first 2 days. [After 2 days chicks feeders should be used](#)

Vaccination

To prevent diseases [every bird should be vaccinated](#). There should be a vaccination program for the broiler flock. In this case date of vaccination should be followed as per [instructions of the manufacturers](#). Vaccination should be started at day old. In our country grower keeps broiler for 1 month. [They use vaccine against Newcastle Disease \(ND\), Infectious Bronchitis\(IB\) and Gumboro or Infectious Bursal Disease \(IBD\)](#).

| Age | Name of Disease | Route of vaccination |
|--------|--|----------------------|
| 03 day | Infectious Bronchitis + Newcastle Disease (IB+ND) | one drop/eye |
| 09 day | Gumboro (IBD) | one drop/eye |
| 17 day | Gumboro (IBD) | one drop/eye |
| 22 day | Newcastle Disease (ND) | one drop/eye |

Medication

It is better to keep antibiotic drug away from chicks. Some antibiotic drug like [Ampicillin, Enrofloxacin etc](#) are used against bacterial diseases. Besides [vitamin-B complex, vitamin-AD₃E and Ca and Vit-D](#) are used against deficiency diseases. Besides [electrolytes and Vitamin-C](#) also use to save the birds from heat stress.

Brooder House Schedule Up to of 4 Weeks of age

1. Ready the brooder to receive chicks
2. Follow vaccination calendar (Newcastle, Chronic Respiratory Disease, Gumboro)
3. Check weight of day old chick
4. Keep the healthy chicks in the brooder.
5. At first supply glucose water to the chicks
6. After 2 hrs, supply feed particles on paper or flat plates for first 2 d ays
7. When the chicks have learned to drink, place drinkers to avoid wet litter.
8. Clean, wash, and refill the drinkers every day with fresh, clean water.
9. When all chicks have learned eating, feed may be provided in shallow feeding trough
10. Keep antibiotics away by maintaining bio-security at early age.
11. Start temperature with 35⁰ to 32.5⁰ C. The brooder temperature should be reduced by 2.5⁰ C at the end of every week till room temperature or 21⁰ C is reached.
12. Check temperature every 2 or 3 hours interval.
13. Check quality of litter
14. Check feed register that you have required amount of feed up to marketing age.
15. Light should be used at day and night for attraction of the chicks to eat and drink.
16. Brooder guard may be moved few centimeters apart every day so that growing birds may get more space.
17. Keep brooder house well ventilated. Strong ammonia odor in brooder house is indicative of poor ventilation.
18. Check live weight at every week
19. Remove the dead chicks as soon as they appear.
20. Keep necessary performance records.