

The brooding period is important to getting chicks off to a good start and influences flock performance. Depending on the market weight, the brooding period represents as much as 1/3 of the grow-out period. The chick is still developing and will grow rapidly during this period. The objective is to minimize stress on the chick so that the majority of the energy is directed towards growth and development. Below are five common issues seen during the brooding period that can have negative influence on broiler performance.

Bedding Material

The floors in broiler houses are covered with bedding material. The main purpose of bedding material is to absorb moisture. Broilers retain approximately 20% of the water they consume and the other 80% is excreted or expired into the house environment. In addition to moisture absorption, bedding insulates the birds from the cool house floor which is either packed dirt or concrete, provides a cushion for the birds as they walk around the house, and helps dilute manure as birds scratch around in the material. Common materials used as bedding include but are not limited to: pine shavings, peanut hulls and rice hulls. A minimum of 3 inches (7.6 cm) in thickness is required from wall to wall in the house and will vary with the bedding material that is used. Another way to look at this is to compare the litter base to a sponge. A thicker sponge will absorb more water. Improper amounts of litter will result in litter quality deteriorating more rapidly even under proper ventilation rates. Poor litter quality can increase ammonia production, microbial loads, foot pad dermatitis, coccidiosis, and dermatitis.

Feed and Water

Feed and water are two of the basic needs of broilers during the grow-out period. It is important that chicks find feed and water in the first 48 hours. Extra feeders are placed to increase feeding space and are then removed at the end of the brooding period. In order to reduce feed wastage, the feeder system is often operated manually as long as the supplemental feeders are being used. Automatic operation of the feeder systems may overfill supplemental feeders when trays are used. Chicks will tend to scratch the feed out of overfilled trays, wasting it on the floor.



Figure 1. Broiler house brooding example

The drinker systems used in the majority of broiler houses today have a pin that the bird pushes to get water. The drinker height and water pressure are adjusted according to the bird age and size. As the birds get bigger, the drinker system will need to be raised and the water pressure will need to be increased. Poultry farmers should manage the drinker height and water pressure according the drinker manufacturer guidelines.

Learning for Life

Lighting

Lighting programs can vary greatly throughout the broiler industry. Typically, the lighting program for chicks at placement is 23 hours of light at 3.0 ftc (30 Lux) or higher for the first three days. Bird activity is directly correlated with light intensity, which means they are more active as the light intensity increases. Light intensity during brooding should not vary more than 20% from the brightest point in the house to the darkest point and this is more critical during the brooding period than the rest of the grow-out. During the first three days, efforts should be made to encourage chick activity so they can search out and learn where food, water and heat sources are located. The increased activity enhances the probability that the chicks will consume feed and water thus helping the digestive system to upregulate the processes needed to digest the carbohydrates in the feed. Prior to this the nutrients the chick/embryo has been consuming is lipid based so it will be of benefit to the bird for this system to mature quickly after placement on the farm. A typical lighting program is located the table below.

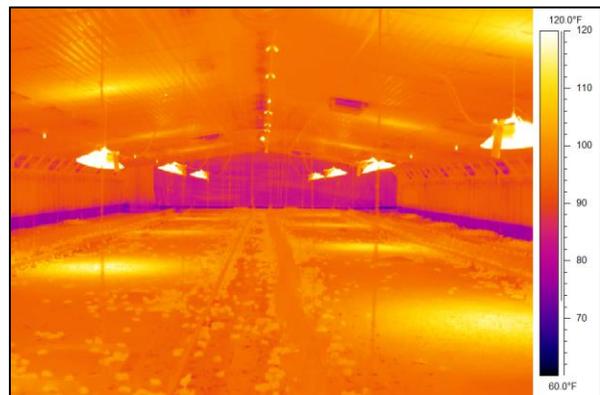
Table 1. A common lighting program for birds marketed at 42 days of age

Age (Day)	Light:Dark (Hours)	Light intensity (ftc/lux)
0	23:1	3.0/30 or greater
4	20:4	3.0/30 or greater
7	20:4	0.5/5
10	18:6	0.5/5
35	22:2	0.5/5

The hours of darkness will increase as the birds get older. The hours of dark will depend on the market age of the birds. Birds that are marketed at 49, 56 or 63 days of age will usually have more hours of dark. Other examples can be found on the primary breeder websites. Light intensity is decreased to half a foot candle or five lux to reduce bird activity which in turn helps with feed efficiency and weight gain

Temperature

Chicks cannot regulate their body temperature at hatch and are dependent on the house and floor temperature. If the house and floor temperature is warm then the chicks will be warm, if these temperatures are too cool then the chicks will be cool. Radiant brooders work well for heating broiler houses as the majority of the heat is directed to the floor. The brooders should be installed and operated at a height recommended by the manufacturer, but in general, radiant brooders are operated six feet or higher depending on the model. Temperature profiles will vary from breed to breed and from company to company, but they usually start out around 93°F.



Radiant brooders direct the majority of the heat produced to the floor where it is needed. Chicks will find their comfort zone.

Ventilation

The purpose of minimum ventilation during the brooding period is to control moisture and air quality. Whether the house is using fresh shavings or used litter, the house has to be ventilated from Day 1. The goal is to keep the relative humidity (RH) between 40-60%. If the RH gets above 70%, litter quality will deteriorate rapidly resulting in increased ammonia production and incidence of footpad dermatitis.

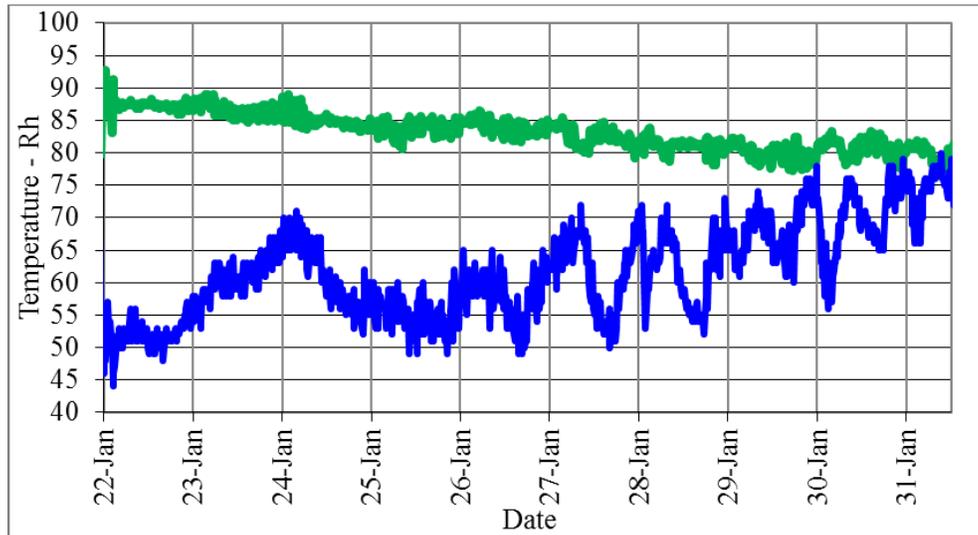


Figure 1. RH trending up due to insufficient ventilation rate

Mistakes during the brooding period are difficult to compensate for later on in the flock, so it is best to provide an optimum environment from the beginning. It is more efficient to provide the correct environmental conditions from the beginning rather than trying to correct a problem from poor management later on during the flock. The energy and labor costs will be less and the environment for bird performance (weight gain, feed conversion, livability) is optimized.