

Getting the breeder chick off to a good start

Good performance of a breeder flock starts with good growing conditions as of a very early stage. Proper management of the chicks, particularly during their first week of life, will be the basis for achieving good results of a healthy and uniform flock.

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There are seven critical early chick management practices that are very important for early chick development and uniformity. If these management practices are achieved appropriately early chick development, growth and uniformity will be optimised, and so will subsequent breeder performance.

A good measure of successful chick start is crop fill. The objective is to have the chicks with a full crop as soon as possible after placement. An achievable target of more than 95% of chicks with a full crop at 24 hours should be used as a guide. This ensures good early uniform bodyweight is achieved and uniformity maintained. Achieving this goal is possible if full attention is given to the seven determining factors, discussed below.

Water

Clean, fresh and readily available water is critical for chicks. Inadequate water consumption causes dehydration and may lead to poor uniformity of growth and increased mortality.

Use of supplemental drinkers (e.g. water fonts, mini-drinkers) is recommended during the brooding period, even when using nipple drinkers. A minimum of one 4l (1-gal) drinker/100 chicks should be supplied for the first 3-7 days. Supplementary drinkers should be filled with fresh water frequently, be well spaced between feeder trays, and low enough for the chicks to drink from upon arrival. Drinkers should be positioned so that chicks do not have to travel more than one metre for access to water in the first 24 hours. Chicks should not be presented with cold water as it can significantly contribute to chilling. All water should be presented to chicks at ambient house temperature; for supplementary drinkers this is best



achieved by adding the water approx. six hours prior to chick arrival. Supplementary drinkers should be cleaned out frequently to prevent the build-up of bacteria.

Nipple drinkers should be placed and maintained at eye level of the chick during the first 24–48 hours. Water pressure can be increased during the first three days to produce a 'droplet' of water on the nipple pin to attract the chicks. Thereafter, and normally around day three or four, the nipple drinker should be at a 45° angle, in relation to the chick's head.

When using bell-type drinkers, the water level should be near the top of the drinker for the first 24–72 hours. Thereafter, water level should be reduced to 19 mm (0.75 in). Until seven days of age, the height of the lip of the drinker should be set even with the chick's back. Afterwards, drinkers should be gradually raised until the bottom of the drinker is even with the chick's back. Water pressure should be low and there needs to be an uninterrupted flow of water.

The permanent watering systems should be in position from chick placement and a gradual transfer on to these systems should start from day one and finish around day 21.

It is recommended that water quality is routinely tested for microbial load and mineral content prior to placing chicks.

Feed

Until birds are 5-7 days old, starter feed should be distributed into feed trays. One feeder tray/100 chicks should be provided; overfilling the trays should be avoided as this will increase feed wastage. The starter feed should be of a physically acceptable quality; a course mash or preferably a sieved crumb should be used. The addition of paper, which can cover up to 100% of the litter in the brooding area and should not cover less than 25% of the brooding area, onto which feed can be directly placed can be beneficial and has the advantage of preventing chicks eating the litter material, which results in poor starts. Frequent feeding in small volumes helps to stimulate feeding.

Resting mechanical or manual feeders on top of the litter from day one, ensuring chicks have easy access to feeders, means that under normal conditions chicks will learn to eat from permanent feeders by the time feed trays are removed around 5-7 days of age.

Figure 1 - Chick distribution under spot brooders

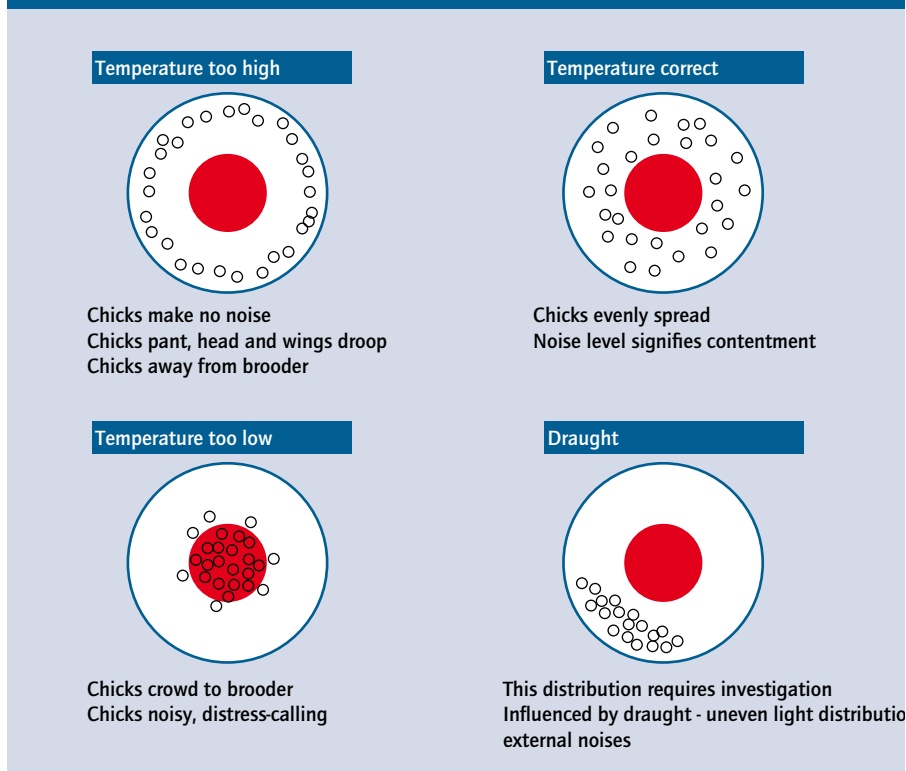
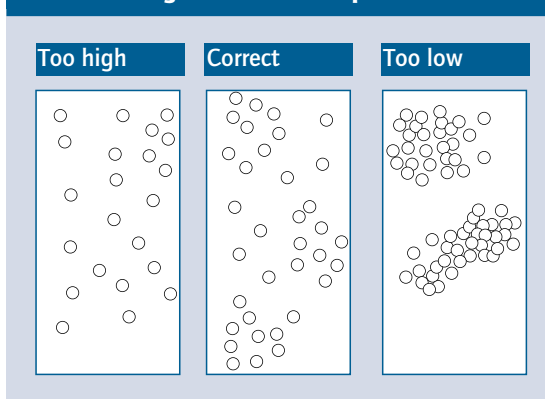


Figure 2 - Typical behaviour of chicks in whole house brooding at different temperatures



Stocking density

Decisions regarding stocking density should take local welfare legislation, climate, type of housing and equipment used into account. Practically speaking, stocking density is a balance between economics and biological performance. Rearing chicks in overcrowded conditions does not deliver optimal biological or economical results. Initial stocking density can be up to 50 chicks per m² (depending on the brooding system used) until approx. four days of age after this space can be progressively increased and access to the whole house can be given by 14 days.

Litter

Before chicks arrive, the floor should be covered to an even depth of 5-10 cm (2-4 in) with clean, dry litter material. Where floor feeding is practised a maximum litter depth of five cm (two in) should be used. Wood shavings from dried soft woods are the preferred litter material due to their ability to absorb moisture. Litter material should be checked for contamination of pesticides, moulds or fungi (*Aspergillus*). Pesticides can cause liver and kidney damage and can accumulate in muscles and fat. Fungi release spores into the air causing disease, stunting and mortality when inhaled by chicks.

Ventilation

Ventilation practices during brooding must bring in enough fresh air and exhaust excess moisture and harmful gases without chilling the chicks. This constitutes "minimum" ventilation - no matter what the outside temperature is, it is essential to ventilate the house for a minimum amount of time when chicks are present. As a rule of thumb, the required minimum ventilation airflow rate for starting chicks is 1m³/kg/hr or 0.10-0.20 CFM/chick. This depends on outside temperature and internal air quality condition. Air speed at chick level should be low and kept below 0.15 m/sec to ensure a good environment and start. ■

Temperature and humidity

The thermoregulatory system of a newly hatched chick is not fully developed until approx. two weeks of age. The young chick is therefore highly dependent upon external heat sources to maintain normal body temperature.

Correct litter temperature is critical for a successful start. At one day of age, chicks require an environmental temperature of around 32°C (89.6°F). Floor temperature should be above 30°C (86°F) as chicks are easily chilled through their feet. Thermometers should be placed at chick height throughout the house to monitor brooding temperatures.

Both brooders and hot air furnaces (space heaters) can be used effectively to keep chicks warm during the brooding period. With spot brooding, houses should be preheated at least 24 hours before the chicks arrive. The use of brooders results in a more uniform heating of the litter and brooder guards can be effectively used to control early chick movement. As chicks age (from day three onwards) the brooding circle can be increased in size and eventually removed at around day 14. Reasonable variation in house temperature at this time allows chicks to regulate their body temperature by moving closer to or further away from the brooder.

When using space heaters, it is more difficult to warm the floor to the appropriate temperature. When using this type of heating system,

houses should be preheated 48 hours prior to chick arrival. Care is required when using brooder surrounds to ensure their height does not restrict air flows and temperature when using whole house heating systems. Chick behaviour should be observed closely during the first 24 hours after placement. After one to two hours, it will become obvious if the temperature at bird level is correct (*Figures 1 and 2*). If behaviour indicates that temperature is incorrect then temperature settings need to be checked and adjusted accordingly.

Relative humidity (RH) is important to the health of the chick and its ability to thermo-regulate. During the first three days, the RH should be around 70%. If RH is <50%, chicks will begin to dehydrate and performance can be negatively affected.

Lighting

It is critical to provide correct and uniform light intensity throughout the house to ensure chicks can feed and drink easily. During the first three days of life, 23 hours of light a day with a minimum intensity of 20 lux (2.0 ft candles) should be provided. Initial light intensity of up to 100 lux will promote chick activity in the brooding area.

After three days the daily light period should be reduced until a constant rearing day length of 8-12 hours is achieved at day 10. Light intensity should be kept between 10-20 lux.