

Chick start: a practical approach to getting the basics right

Chick start is an area which has been discussed many times in various publications around the world. When speaking to broiler farmers across the globe, the most common response when discussing the subject of chick start is that it is not an area of concern. In many cases, however, the reality is somewhat different.

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Houses are often not prepared correctly and/or are not adequately checked when the chicks arrive, resulting in inadequate brooding conditions which have a negative effect on future performance levels.

The introduction of more accurate selection tools by the breeding companies has delivered very good rates of progress in broiler welfare and performance traits.

In the broiler house this is translated to improved liveability, average daily gain (ADG), yield and feed conversion (FCR).

On the practical farm level these improvements emphasise how important the commitment is to the key management inputs, particularly early on during brooding, for bird welfare and production.

Age (days)	Dry bulb temperature (°C) at RH%			
	40% RH	50% RH	60% RH	70% RH
1	36.0	33.2	30.8	29.2
3	33.7	31.2	28.9	27.3
6	32.5	29.9	27.7	26.0
9	31.3	28.6	26.7	25.0

Table 1. Relationship between dry bulb temperature and RH. Dry bulb temperatures at the ideal RH for age are shaded red.

The importance of the correct temperature

The cornerstone to a good chick start is the provision of the correct environmental conditions. Chicks cannot fully control their own body temperature until they are around 12-14 days of age, so it is essential that house temperature is properly controlled. Pay particular attention to floor temperature at chick placement and ensure that the house is correctly preheated prior to placement.

In order to achieve the correct environmental conditions at placement, houses must be preheated for a minimum of 24 hours before the chicks arrive. In many cases 36, or even 48, hours of preheating may be necessary.

The recommended environmental conditions at placement are:

- Air temperature: 30°C (measured at chick height in the area where feed and water are positioned).
 - Litter temperature: 28-30°C.
 - Relative humidity (RH): 60-70%.
- In order to ensure that environmental conditions are correct the relationship between RH and temperature must be understood.
- The temperature being felt by the bird (the effective temperature) will be influenced by variation in RH:
- Higher RH reduces evaporative heat loss, increasing the effective temperature.
 - Lower RH increases evaporative heat loss, decreasing the effective temperature.

If RH is outwith the target ranges given in Table 1, the temperature of the house at chick level should be adjusted immediately to account for this.

In the days after placement the temperature at chick level should be slowly decreased (Table 1).

Bird behaviour should be monitored closely during this period to ensure the birds remain comfortable.

Particular attention should be paid to the fluctuation between external day and night temperatures and how this can affect the house temperature.

Provision of feed and water

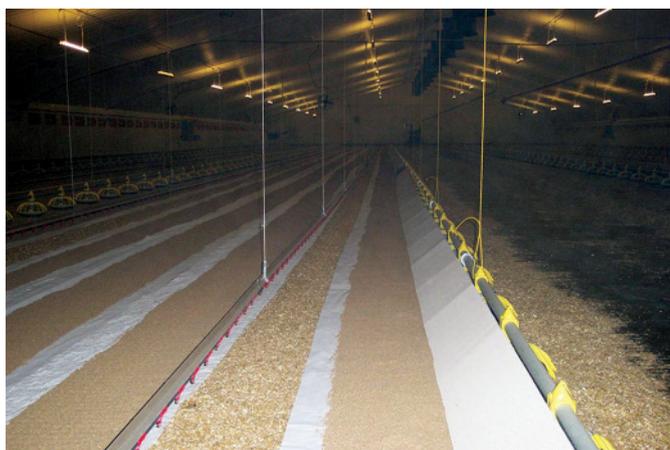
Paper should cover a minimum of 80% of the brooding area and should be provided in lines running parallel to the automated feeding and drinking systems. This layout assists in the chick's quick and smooth transition from the manual to automated system. Where spot brooding systems are being used the area directly under the heat source should be left free of paper.

When lowering the automated feeding system onto the litter, care should be taken to ensure the system is levelled correctly to allow chicks easy and unrestricted access to the feed.

Once in position the system can then be switched on and run until all the feeders are primed with feed. An initial amount of 25g of feed per

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Correct layout of paper for brooding.



In the correct conditions the chicks will be spread evenly across the brooding area, displaying feeding, drinking and resting behaviour.





If the chicks are exposed to cold temperatures, they will become noisy and begin huddling.

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chick should be spread evenly across the paper at placement.

This must be topped up regularly over the first three days to encourage feeding activity and appetite development. Supplementary feeding in this way will stimulate the chicks' instinctive pecking behaviour, by creating noise as the feed is distributed on the paper, and attracting the chicks to the fresh feed.

The automated drinking system should be lowered and levelled to a height which will allow unrestricted access by the chicks. Supplementary mini drinkers should be positioned between the main drinker line and the automated feeder.

If all the automated and supplementary feeding and drinking systems are positioned correctly the chicks should not have to move more than one metre to find feed and water.

Just prior to placement the automated drinking system should be turned on and flushed of any residual water.

Supplementary drinkers should also be topped up with water. Chicks must never be given cold water; the ideal water temperature is between 15°C and 21°C.

Other key management points

Local legislation for lighting must be followed but it is recommended to provide 23 hours of light with an intensity of 30-40 lux from 0-7 days of age. Light intensity must be measured at bird height in a number of different locations throughout the house to ensure uniformity of light distribution.

The correct light intensity spread uniformly across the brooding area will draw the chicks to the feed and water, and stimulate feeding and drinking behaviour.

Establishing a minimum ventila-

tion programme prior to the chicks' arrival is essential. The purpose of minimum ventilation is to provide good air quality without air movement at chick level.

Inadequate minimum ventilation and the resulting poor air quality can cause increased levels of moisture, NH₃, CO and CO₂:

- Ammonia <10ppm.
- Carbon monoxide <10ppm.
- Carbon dioxide <3000ppm.

Even relatively slow air speeds in this early period can chill the chicks and impact performance. With this in mind incoming air direction should be checked routinely to ensure that it is not falling directly onto the chicks.

Litter material should be spread evenly to a depth of 5-10cm. Uneven litter will hamper the chicks' movement around the brooding area and restrict their ability to access feed and water.

Prior to delivery of chicks, a final check should be made of feed and water availability and distribution within the house.

At placement, chicks must be placed quickly, gently, and evenly onto paper within the brooding area. Allow the chicks to settle for 1-2 hours to become accustomed to the house environment. After 1-2 hours check that all chicks are able to access feed and water and that the environmental conditions are correct.

Behaviour

The best indicator of whether or not brooding conditions are correct is bird behaviour and regular observations of chick behaviour should be made throughout the brooding period.

When chicks are kept in environmental conditions above or below their comfort zone, more energy must be used to maintain body temperature.

The energy from the feed will be



If chicks move to the house walls, become quiet and begin panting they are too warm.

used to maintain body temperature instead of growth and development, resulting in poorer feed conversion.

Vent temperature

Measuring chick vent temperature is another useful tool that can be used in conjunction with observations of bird behaviour to establish whether or not chicks are comfortable and the environmental conditions within the house are correct.

Measuring vent temperature is simple, quick and will provide accurate and reliable information on the chick's body temperature.

It should be measured on at least five chicks from three different locations in the house for the first 4-5 days of life. Chick vent temperature should be maintained between 39.4°C and 40.5°C for the first five days of brooding. If this is not achieved environmental conditions must be altered appropriately.

Crop fill assessment

Evaluating the success of your efforts in starting the chicks should be carried out by assessing crops for the presence of feed and water regularly during the first 48 hours.

An initial check of 30-40 chicks at three or four different locations must be carried out from two hours after placement, and adjustments made to the house set up and

environment if crop fill is below the levels shown in Table 2.

Time of crop fill after placement (hours)	Target crop fill (% of chicks with full crops)
2	75
4	80
8	>80
12	>85
24	>95
48	100

Table 2. Target crop fill during the first 48 hours after placement.

Summary

The objective at seven days is to achieve a body weight 4.5 times the day-old weight with a CV between 8 and 10% and a liveability of >99%. Good preparation and attention to detail in the key management areas of temperature, RH, feed and water will ensure that chicks get the best possible start.

Providing the correct environmental conditions will not only optimise subsequent flock performance and welfare but also the bird's health status and immune system development. Observing and responding quickly to any changes in chick behaviour is key. ■

