

Optimal management of the brooding environment

Optimal management of the brooding environment is essential to achieve the full egg laying potential of a flock. It is during this period that vital systems such as the gastrointestinal tract and immune system develop which will form the foundation of the bird's productive life.

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This article highlights key factors for growers using floor brooding systems to achieve optimal growth and development of pullets during the first five weeks of life.

Feed

- Place chick paper on the floor to provide better access to feed.
- Scatter feed onto chick paper for the first seven days.
- Provide small amounts of feed several times a day to stimulate intake over the first three days.
- Use booster/starter feed rations aligned with Hy-Line's recommended nutrient levels with particular emphasis on meeting digestible amino acid specifications.

Allow chicks access to feed and water upon arrival.



Dehydration: transportation condition and water intake.

- Provide good quality crumbles (ideally not mash or pellets) with a uniform particle size of 1-3mm and minimum levels of fine material (<1mm). This will support consistent feed intake by the chicks and efficient intake of nutrients.

Light

- Bright light (with light intensity of 30-50 lux/3-5 fc) will help chicks find feed and water and adapt to the brooding environment. Provide uniform lighting; avoid shadows and dark patches, especially over feeders and drinkers.

Correct light distribution observed prior to chick placement.



GENERAL PROBLEMS IN BROODING



Omphalitis (bacterial infection): chick quality and sanitation.

- Use an intermittent lighting program of four hours light and two hours dark from 0-7 days to synchronise eating and drinking behaviour and improve uniformity, livability, and first week body weight. The intermittent lighting program can be used until 14 days for flocks sourced from young breeders or which have undergone long journey transportation.



Intermittent lighting program.

- If an intermittent lighting program is not possible, set 22 total light hours in the first three days, not 24 hours. Providing 24 hours of light is not necessary; this will create more stress to the chicks and can result in on-uniform flocks where weaker chicks stay inactive while stronger chicks continue to grow.

Air, temperature, humidity

- Transit from source to farm: the truck should be environmentally controlled and provide a uniform temperature of 26-29°C/79-84°F (measured inside the boxes) with a uniform air flow. Make frequent



Vent pasting: extreme temperature fluctuations and feed quality.

checks of the truck environment during long-haul trips.

- Pre-heat the brooding area prior to chick delivery: Start to pre-heat at least 24 hours prior to chick arrival in warm climates and at least 48 hours prior to chick arrival in cool climates.
- Air circulation is required in the brooding environment; however, chicks do not produce a significant amount of CO₂, so there is little need for ventilation beyond the occasional exhaust fan or adjustment of side curtains to bring in fresh air and remove excess humidity.
- Humidity recommendations:
 - If humidity is lower than 40%, spread water in the empty area of the house to improve it.
 - For every 5% of humidity above 60%, decrease brooding temperature by 1°C/2°F.
 - For every 5% of humidity below 40%, increase brooding temperature by 1°C/2°F.
- Flocks from young breeders or those which have undergone a long journey may require a higher temperature (+1-2°C/2-4°F).
- Check the adequacy of the brooding temperature by placing the underside of the bird's feet against your cheek (they should feel warm), or by measuring vent temperature, which should be between 39.4-40.5°C (103-105°F).
- Brood chicks from younger breeder source flocks in the warmest section of the house and where temperature is maintained most consistently.

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Days	Hy-Line W-80/Brown	Hy-Line W-36
1-3	35-36°C/95-97°F (40-60% relative humidity)	33-35°C / 95-97°F (40-60% relative humidity)
4-7	33-35°C/91-95°F	31-33°C/88-91°F
8-14	31-33°C/88-91°F	29-31°C/84-88°F
15-21	29-31°C/84-88°F	27-29°C/81-84°F

Table 1. Recommended temperatures for best humidity levels.



Chick's cloacal temperature at comfort zone is between 39.4-40.5°C (103-105°F).

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● The best indication of chick comfort is observing distribution of chicks in the brooding environment. Chicks which are huddled may be too cold; chicks which have moved away from the heat source may be too warm. Chicks evenly dispersed around the brooding facility indicates chicks are comfortable.

Water

● Make sure water is available and accessible to all chicks at all times. Chicks will not eat if not adequately hydrated.

● Small chicks will access water more easily if the water pressure of nipple drinkers is reduced for the first three days after placement.

A 'hanging drop' on nipple drinkers also encourages chicks to consume more water.

● Walk the house multiple times a day and trigger every nipple to stimulate drinking activity.

● Provide a minimum of one nipple/cup per 12 chicks.

● Provide supplemental minidrinks (one for every 50 chicks) from placement and clean out daily with a chlorinated sponge to avoid build-up of biofilm.

● Add vitamins and electrolytes to the drinking water from placement and use antibiotics if indicated for bacterial challenges.

Space

● Provide an adequate number of feeders and drinkers appropriate to the stocking density of the flock to avoid competition between chicks and prevent a loss in uniformity of body weight. It is difficult to regain uniformity if a flock is challenged.

● Be prepared to add additional supplementary drinkers and feeders if feed intake is suboptimal in the first few days.

● Partial house brooding, or brooder rings, can provide a more ideal environment for brooding chicks in the first weeks, but space needs to be added as the flock grows.

Sanitation

● A pullet house should be given a minimum of 2-4 weeks downtime between flocks for an adequate service period.

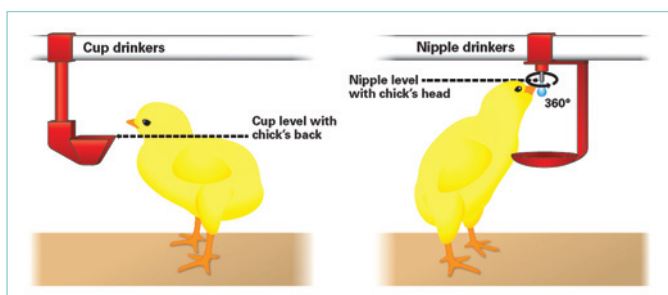
● Clean, disinfect, and fumigate the brooding house with hot water, detergents, and chemicals specifically for poultry houses. All equipment, including the feeding and water line systems, should be sanitised. Flush water lines adequately after sanitation to remove all chemical residue.

● Confirm the effectiveness of the cleaning and disinfection with environmental swabs for bacterial enumeration. With proper downtime, action can be taken to re-clean or sanitise as needed.

● Fresh litter material should be provided for each flock. Ideally, heat-treated material such as kiln-dried wood shavings or rice hulls can be sourced locally.

Husbandry

● One key performance indicator of brooding success is to check chick crop fill percentage within eight



EVENLY DISTRIBUTED CHICKS



Spot Brooding:
Air: 34-36°C / 93-97°F;
floor: 32°C / 90°F.

Whole House Brooding:
Air: 33-35°C / 91-95°F;
floor: 30-32°C / 86-90°F.

Are chicks comfortable? See and feel for yourself, evaluate chicks' distribution and take action immediately.



Too hot



Too cold



Draught

hours of placement. This gives an indication of the degree of water and feed consumption at placement.

● Spend the first days frequently visiting the chicks after placement. Observe and walk through the brooding area, remaining aware of the chicks' behaviour and needs. Use all your senses: sight, smell, hearing,

and touch to ensure the birds have the proper environment in which to thrive. Constant attention is needed to ensure optimal feed, lighting, air, heat, water, and space is provided.

● Take time to collect and assess brooding and flock data, in order to take action and quickly correct any identified problems. ■

Age (days)	Stock density (birds/m ²)		Feeders		Water	
	Female	Male	Birds/feeder	Type	Birds/drinker	Type
0-3	42	42	65	Baby chick feeder (BCF)	65	Baby drinker (BD) + Nipple
4-7	33	33	60	BCF	60	BD + Nipple
8-10	28	28	54	BCF	55	Nipple
11-14	24	20	48	BCF/Auto	50	Nipple
15-17	21	18	42	Automatic	25	Nipple
18-21	17	15	36	Automatic	18	Nipple
22-24	14	12	30	Automatic	16	Nipple
26-28	11	10	24	Automatic	14	Nipple
>28	8	7	15	Automatic	12	Nipple

Table 2. Provide an adequate number of feeders and drinkers appropriate to the stocking density of the flock.

Table 3. Brooding temperatures that are too low or too high will decrease the percentage of chicks with crop fill.

Hours after chick placement	Chicks with feed in crop	Crop Fill: Are the chicks eating?	
6	75%		
12	85%		
24	100%		