

MANAGEMENT OF POULTRY DURING WINTER

In India, the winter season follows the rainy season and can be marked with cold weather. Winter season in India lasts between November to February. Northern India experiences the most severe cold season, where environment temperatures can drop below 15°C with nighttime temperatures as low as 5°C. Southern India usually experiences milder winter weather and low temperatures are not a major concern. Winter season brings unique challenges for brooding chicks. Cooler environmental temperatures can affect nutrition programs because of the bird's higher energy requirement to maintain body temperature. The effects of decreasing photoperiod and light intensity during the winter can affect sexual maturity, resulting in delays in egg production. Poor air quality can occur as farmers close curtains to maintain house temperature. Cool air slows down the drying of manure, leading to increased ammonia levels within the shed and can increase the fly menace. Poor air quality and cooler temperatures can increase the disease threat during the winter season.

Table 1. Weather Conditions in Different Regions of India during Winter

December Month Average	North India (New Delhi)	Central India (Mumbai)	South India (Hyderabad)
Maximum temperature °C	23°C	32°C	28°C
Minimum temperature °C	9°C	19°C	15°C
Average humidity %	62%	58%	57%
Average hours of sunshine per day	7 hours	8 hours	8.5 hours
Management attention	High priority	Medium priority	Low priority

Source: <https://www.currentresults.com/Weather/India/temperature-december.php>

The following intervention strategies should be considered during winter season:

Brooding and Growing Management:

1. Chick brooding requires special attention during winter. Brooding shed arrangements should be ready before 48 hours of chick placement. This is important because it will take a longer time to preheat the chick's environment during the winter season. Ensure the shed and equipment is heated to 35°C environmental temperature. Relative humidity should be maintained between 40–60%.
2. Be aware of low nighttime temperatures during the winter season. Cold stress usually occurs during the night and early morning. Maintaining proper chick brooding temperatures throughout the night can be challenging in the winter season. This is especially difficult for farmers using charcoal heaters or other sources of heat without thermostatic control. Thermostatic control of brooding shed temperatures is highly recommended to avoid cold stress during the night time. Low nighttime temperatures can chill chicks, which can impair their growth and organ development. Cold stressed chicks are more susceptible to infectious diseases. Use a thermometer that is capable of recording nighttime temperatures in the brooding shed.



Figure 1. Brooding management.

3. Frequently observe the activity of chicks and adjust temperatures to the comfort of the chicks. Chicks should be distributed evenly inside the cage. Under cold stress the chicks are huddled in groups, not eating and drinking and with less activity. For more information on W-80 brooding management, refer to the "[Growing Management of Commercial Pullets](#)" technical update at www.hyline.com.

4. An infant ear thermometer can be used to measure the vent temperature of chicks. This gives a good indication of the comfort of the chicks and correlates well with the chick's core body temperature. The normal vent temperature in chicks should be 39.4–40.5°C.

5. During the brooding period, place starter crumble feed on the cage paper for first 3 days to encourage feed consumption. Cage paper blocks cold drafts of air. For infrared beak treated (IRBT) chicks, place starter crumble on the cage paper for first 7 days. Checking chicks for the presence of feed in the crop helps understand feed consumption. The presence of feed in the crop is a good indication of a proper chick start (see Figure 3).

6. During peak winter where environment temperature drops below 10°C, the drinking water temperature drops close to freezing. Drinking water temperature has a direct effect on the bird's feed and water consumption and slows body weight gains in growing chicks. Poor water consumption can also increase mortality related to dehydration and gout. The ideal water temperature to maintain good feed intake is 18–21°C.

7. The shortest daylength of the year falls on December 21st. The shortest daylength in India ranges from 10–11 hours, with North India having the shortest among all regions (see Table 1). The ideal hours of light during the rearing period for the W-80 is 11–12 hours. Rearing lighting hours need to be maintained at recommended levels for pullets in order to achieve ideal body weight gain and sexual maturity. This will be done by following the Hy-Line International / Srinivasa Farms Lighting Program Generator. This is an Excel tool which creates lighting programs appropriate for the farm location and shed style (open or EC shed). These customized lighting programs can be provided to commercial customers with their chick placements. For further information, see <https://www.hyline.com/ViewFile?id=d14081e1-8af8-49f1-a752-71720d4b5680> or contact Srinivasa Farms' technical service team or Hy-Line India's technical service team.

8. Provide adequate ventilation in brooding house for 24 hours in the winter. Do not close the brooding area too tightly while maintaining brooding temperatures during the winter. Always provide a continuous supply of fresh air to the birds by maintaining some opening of the curtains. The minimum ventilation rate during the winter must be sufficient to remove moisture and prevent the build-up of noxious gases in the brooding area. Ammonia greater than 25 ppm is harmful to chicks and can promote respiratory disease outbreaks. Coal heaters are commonly used in India as a heat source in brooding sheds and they produce large amounts of carbon dioxide (CO₂), carbon monoxide (CO), and other undesirable gases inside the house. It is recommended to have a minimum opening (one foot) at the top level of the curtains to provide minimum ventilation even during nighttime. During the middle of the day, the side curtains can be adjusted according to temperature and chick comfort.

9. Allowable levels of gases at the bird level in the shed are: ammonia (NH₃) <25 ppm; carbon dioxide (CO₂) <5000 ppm; carbon monoxide (CO) <50 ppm.

10. Bird transfers from brooding to rearing sheds and rearing laying sheds should be completed no later than 7 weeks and 16 weeks, respectively. Timely transfers give the birds enough space to continue proper growth and development and enough time to adjust to the new environment. During the peak winter season, schedule transfers to occur during mid-day when the temperature is more comfortable for the birds.



Figure 2. Monitoring chick temperature using an infant ear thermometer.




CROP FILL – ARE THE CHICKS EATING?			
Hours after chick placement	Chicks with feed in crop		
6	75%		
12	85%		
24	100%		

Figure 3. Desired crop fill percentages.

Layer Management:

1. Feed intake is generally higher in winter months as a result of increased demand for energy to maintain body temperature. Protein and amino acids should be balanced based on the actual flock feed consumption. Overconsumption of energy, protein and amino acids beyond the recommended level can lead to deposition of extra fat which predisposes bird to fatty liver / hemorrhagic syndrome (FLHS), as well as increases egg weight. Energy requirements tend to be slightly higher during winter, so it is important not to decrease the energy levels at the same proportion of the feed intake increase. See the W-80 flock book provided by Srinivasa Farms for the nutritional recommendations of the W-80.
2. Increased feed intakes during winter could lead to increased egg weights. Overconsumption of energy, methionine + cystine, other digestible amino acids, linoleic acid, and total fat can directly increase egg size. Egg weights should be monitored every week during winter and appropriate adjustments to the diet made to control egg weight.
3. Stone grit management may help in controlling feed intake and maintains eggshell quality if egg weights increase. Vitamin D supplementation during winter may be needed due to poor brightness of sunlight. Follow the W-80 recommended levels of vitamin D3 (3,300,000 IU per ton of feed – Rearing and laying phases).
4. Decreasing the feed particle size of less than 700 microns and including fibrous ingredients to the feed formulation is the best way to control feed intake.
5. In addition to shorter daylength, foggy conditions with lower light intensity are common in winter. Average hours of sunshine are less during winter months (November to February). North India records the lowest hours of sunshine compared to other regions (see Table 1). Increased use of curtains during the winter to protect birds from cold stress blocks sunlight and further reduces the light intensity inside the shed. With lower brightness inside the shed, it is good practice to use the house lights to maintain recommended light intensity (30 lux) inside the layer shed.
6. Keep light intensity optimum by cleaning dirty bulbs and replacing faulty bulbs. This work should be done before the arrival of winter.
7. Adult laying birds are also susceptible to cold stress. In open-sided laying houses, it is recommended to use side curtains to protect birds from direct exposure to cold stress. The side curtains are managed in such a way to protect birds from cold stress as well as to provide minimum ventilation to remove excess ammonia buildup. Curtains should be allowed minimum opening (one feet) at the top level of the shed even during nighttime, and during the middle of the day, partial opening at the side can be practiced based on bird comfort (see Figure 4).
8. Decreasing day length during the winter may delay pullets from coming into egg production. Timely shifting of the flock to the laying shed and on-time light stimulation at the correct body weight (1100g with 85% uniformity) prevents a delayed start of egg production. A timely transition from the developer or pre-lay diets to the peaking diet ensures that egg production begins properly, avoiding egg production delays.
9. Cold air slows down the drying of manure and removal of moisture from the shed. This can cause excess ammonia gas build-up in laying sheds in the winter. High ammonia is also caused by nipple leakage and lack of ventilation due to closed side curtains. This problem will be more pronounced in farms where the height of the manure is close to bird level. Remove manure and replace faulty nipples prior onset of winter to avoid conditions of high ammonia.



Figure 4. Lowering the curtain at the top creates better ventilation.

10. Cold weather and reduced air quality favors multiplication of pathogens, especially respiratory pathogens. Incidences of avian influenza, Newcastle disease, Gumboro (IBD), fowl pox, colibacillosis (E. coli), infectious coryza, gangrenous dermatitis, salmonellosis, and coccidiosis are more common in winter. Following good winter management with good biosecurity and timely vaccinations to control disease outbreaks.
11. Vaccinations should be carried out in the daytime during peak winter (December and January) when the temperature is ideal. In case of water vaccination, water holding time before vaccination should be increased from 30 minutes to 1 hour since water consumption is normally lower during winter. Water volume used for water vaccination should be matched with actual water consumption.

Management Chart:

Management Practices	North India Farms	Central India Farms	South India Farms
Brooding management	High attention	Medium attention	Medium attention
Water management	High attention	Medium attention	Low attention
Feed management	High attention	Medium attention	Medium attention
Lighting program	High attention	Medium attention	Low attention
Ventilation	High attention	Medium attention	Low attention
Manure management	High attention	Medium attention	Medium attention
Disease control	High attention	High attention	High attention
Bird transfer	High attention	Medium attention	Medium attention