

## 5 Cold Weather Tips for Broiler Houses

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*In our continuing interest in improving gut health, we are pleased to present this informative paper on tips for winter broiler house management. Healthier environment, healthier birds!*

### Key Points:

- Monitor humidity
- Stop air leaks
- Stir the air

Cold weather will be here soon and the focus won't be on getting rid of heat but trying to conserve it. Growers and company representatives are always trying to find new ways to conserve energy in cold weather. There will always be new cutting edge technologies to fill our temptations, but for now let's focus on getting our existing equipment in good working order. Below are some simple tips to help get broiler houses ready for cold weather that won't break the bank.

### 1. Maintain Relative Humidity

Run heating and ventilation systems in such a manner to keep in-house relative humidity at or lower than 70% in cold weather. Once chicks are placed, wet litter is nearly impossible to dry without running the heating and ventilation systems excessively and running up the fuel bill. Start chicks off in cold weather with at least 4-6 inches of dry bedding across the entire floor. Preheat litter according to company requirements using radiant heating systems and stir fans. Purchase an inexpensive relative humidity (RH) meter, like the one in this picture, and monitor in-house conditions early in the morning. Minimum ventilation cycles have been running at their lowest settings throughout the night causing the RH and litter conditions to be at their worst. If in-house RH is above 70% it is extremely important to take the necessary steps to get it back down to within the 50-70% range. One of the next four steps might help you remedy the situation.



### 2. Stop Air Leaks

It is not uncommon to find as much as 50% of the yearly heating fuel consumption of the farm to be used in the two cold weather flocks.

Since cold air falls and warm air rises, cold air coming in through a crack or around a curtain will drop straight to the floor. Cold air does not remove moisture from litter, but instead wets the litter, increases in-house humidity levels, increases ammonia production, and fouls the bird environment. Cold air leaking on the temperature sensors can also cause heating systems to operate excessively. Most growers know that heating zone #1 (front end of house) runs more often and longer than the rest of the zones in the brooding chamber during cold weather flocks. This is primarily caused by air leaks around tunnel inlet curtains, end wall doors, fan shutters, and the main door on the brood end of the house.

Conduct a house tightness test on every house before placing chicks in cold weather. To conduct a house tightness test, close up all possible air leaks in the house, turn on one cfm of fan power for each square foot of floor space. Turn on two 36" (or one 48") exhaust fans if the building is 20,000 square feet. With 1 cfm/ft<sup>2</sup> of fan power on, measure the static pressure reading on the electronic controller (or with a portable gauge). The building should be able to achieve a 0.13" or higher to be considered adequately tight. The higher the pressure reading, the tighter the house. The necessary steps must be taken to get the house to or above the appropriate level of tightness. Stopping air leaks in cold weather will save big bucks in heating fuel and improve bird performance.

### 3. Manage Perimeter Inlets

Check your air inlet openings and static pressure. A modern house relies on the proper inlet opening and the proper static pressure to throw air to the center of the house. In winter, a static pressure of about 0.10" (40' wide houses) with inlets opened to about 1 to 1½ inches for ceiling inlets and 1½ to 2 inches for side wall mounted





inlets to get proper air travel and mixing. These measurements are for the typical metal inlet door seen in the picture. Incoming air will be well below target brooding

temperatures so the air needs to mix and heat sufficiently before it reaches the birds. Perimeter inlet openings less than specified tend to throw air directly on the birds and litter thus causing problems. Managing perimeter inlets requires adjustment of doors, cables, pulleys, and vent machines to get the right opening at the right pressure each time the minimum ventilation cycle runs. There are many different styles of doors being used today so consult your company representative for help adjusting the perimeter inlets to get proper air throw and mixing.

#### 4. Stir the Air

Consider using stir fans to complement the heating and ventilation system during cold weather flocks. Stir fans mix in-house air to eliminate temperature stratifications when heating systems operate for long periods of time and ventilation systems are on for short periods of time. Stir fans can be used to help preheat the litter before placing chicks, throughout brooding, and well into turning chickens out into full house. The more we can stir the air without causing drafts on the birds the better able the air is to pick up litter moisture. Cold air leaks are not allowed to settle near the floor and chicks, but are mixed with warmer air by using stir fans. Stir fans can lower heating costs by as much as 15% if used properly.

#### 5. Adjust Minimum Ventilation Run-times

Take a hard look at minimum ventilation run-times. Many companies don't allow cycles less than 30 seconds out of every 5 minutes to be used. Getting a good start is a must, but maintaining the gradual increase in fan run-time is essential and can be more difficult to figure. There have been many tables and charts developed (see Auburn University's Cardinal Rules for Wintertime Broiler House

Ventilation Newsletter, January 2002 and the Minimum Ventilation "Fan Run-time Calculator" on [www.poultryhouse.com](http://www.poultryhouse.com)) to help growers and company representatives adjust fan run-times. The more water taken into the house the more air required to keep the house and litter dry. The goal is to keep the ventilation well ahead of the water intake but not so much that we are burning excessive fuel. Check in-house RH every morning and adjust minimum ventilation run-times accordingly. If the litter in the house ever gets wet it can be costly to heat and ventilate enough to dry the litter out. Don't get behind on ventilation run-times.

Monitoring RH, stopping air leaks, managing perimeter inlets, stirring the air, and adjusting minimum ventilation run-times properly are five significant steps in the right direction this winter that don't cost a lot to implement. Good luck.



#### About the Author

Our guest author this quarter is Jess Campbell, Extension Poultry Housing Specialist at Auburn University. Jess received a BS degree in Poultry Science as well as a doctorate in Educational Leadership from Auburn, and has worked for the University for over 12 years. Jess maintains

the highly educational website, [www.poultryhouse.com](http://www.poultryhouse.com). His father raises broilers in North Alabama. Thank you Jess for sharing this information with our Tech Report audience!

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