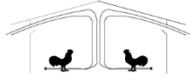




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Poultry Housing Tips

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Environmental Controllers

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The broiler industry has come a long way in the past four decades. Today we can grow a bird to 4.7 lbs in 42 days, whereas, 34 years ago it would have taken 100 days just to get to a weight of 3.5 lbs. Part of the reason for this dramatic increase in growth rates is improvements in poultry nutrition. For instance, if we took a flock of birds from the 1950's and fed them a 1990's diet their growth rate would be 20 percent higher than birds fed a 1950's diet. The main reason, however, for the change in rate of weight gain is improved bird genetics. If you were to feed a modern bird a 1950's diet it would reach a weight of 3.9 lbs in 42 days, an increase in growth rate of 350% (Havenstein et.al, 1992).

The downside of this "modern" bird is that it isn't as hardy as birds grown years ago. Farmers who raised birds in the fifties often tell stories about having to break up ice in waterers so the birds could drink. Most producers would probably agree if it got that cold in their houses now, they would have a slight mortality problem. Growers didn't have to worry about birds growing too fast or dying if they didn't have a house full of circulation fans running 24 hours a day during the summer. Birds today have become finely tuned machines. If everything is just right, (i.e., feed, water, air temperature, and quality) production will be great. But, if anything goes wrong, (for instance house temperature runs 10 degrees lower than it should), production efficiency is likely to suffer.

Another challenge facing broiler growers in the nineties is the size of bird grown. The change in the market where most birds were sold whole to one where further processing is becoming the norm has resulted in the need for much larger birds. The five to six pound birds grown today are often on the farm for up to 60 days. During the winter ascites can become a serious problem while during the summer months heat stress can lead to significant bird mortality.

Ventilation/heating systems in poultry houses have become more and more complicated over the years to keep up with the demands of the modern bird. We have gone from a house with side wall curtains (manually adjusted), coal stoves, and a couple of small circulation fans to ones with gas furnaces, thermostatically controlled side wall curtains, side wall inlets, evaporative cooling pads/fogging nozzles, tunnel ventilation fans, and side wall exhaust fans. This equipment has enabled the producer to provide the precise, optimum environment throughout a bird's life, no matter what is happening outside.

All this new equipment has created a new problem--control. Keeping just the proper air temperature/quality in a "modern" house can be a full time job with over 10 fan thermostats, six furnace thermostats, two fogging system thermostats, a curtain machine thermostat and four fan timers to adjust. A producer has to make sure that exhaust fans aren't coming on when the heaters are on, that all the fan timers are set to come on at the same time, that the curtain machine doesn't drop the curtains when he is trying to tunnel-ventilate, and of course he has to keep all these things from happening as he makes daily adjustments to all the thermostats in the house. Even if the grower gets everything adjusted just right, he still may be unable to maintain the right conditions due to the fact that most thermostats in houses today have questionable accuracy (at best +/- 3°).

One solution to this dilemma is solid-state environmental controllers. Environmental controllers allow the producer to set a dial to the desired house temperature and another one to the amount of minimum ventilation he wants. The high accuracy, quick reacting temperature sensor insures that fans, heaters and curtain machines are activated if the house temperature varies the slightest from the set point.

Another useful feature of environmental controllers is the coordination of all the ventilation equipment. This ensures that furnaces won't be trying to warm the house at the same time fans are trying to cool it, that the fogging system won't come on if not enough exhaust/circulation fans are operating, or exhaust fans and/or furnaces will not operate if the curtain machine has brought the side wall curtains down.

One of the most beneficial aspects of environmental controllers is that they make house management easier. The controller enables the producer to use his mind rather than his back. If he sees the birds are a little too cool, with the turn of a single dial he can increase house temperature a couple of degrees. If the air is getting a little stuffy, the turn of another dial increases the run time of his minimum ventilation fans. If he wants to run three 36" fans for minimum ventilation instead of two, all he has to do is flip a switch. The ease of making changes to the heating/ventilation system helps to insure that required changes in house temperature or air quality will not be put off due to the time required to make the changes. After all, how enthusiastic is anybody going to be about decreasing house temperature a degree or two and adjust fan timers every day if they know it's going to take them at least a half an hour to do so and that by the time they have finished adjusting everything they will probably turn around to see an exhaust fan coming on with the furnaces running.

Fan/heater controllers are not appropriate for all houses. Those which don't have a lot of things to control are not the best candidates for controllers. It makes little economic sense to install a fan/heater controller in a curtain-sided house with four exhaust fans and few furnaces because there are not many devices to control. But, as more and more heating/ventilation equipment is added, the usefulness of a controller increases.

How many houses today need a solid-state fan/heater controller? Probably less than 20 percent do. But as our birds become less tolerant of less than ideal conditions and our houses become more and more complicated, the demand for these controllers will increase.

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