



# The University of Georgia Cooperative Extension Service

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"How can I use less fuel?", is the question being asked by many producer's right now. Over the past few months the price of fuel has nearly doubled, leading producers to take another look at ways of cutting heating costs.

The question shouldn't be "How can I use less fuel?" but, "How can I become more energy efficient?". Anybody can reduce their heating costs. Just turn off the brooders. This will no doubt lead to lower heating costs, but the resultant drop in performance will probably cost much more than will have saved on fuel. A number of studies have shown that the producers who refuse to skimp on fuel almost always produce the best birds.

One way producers can become more energy efficient is to reduce the accumulation of warm air near the ceiling. As air is heated it becomes lighter and begins to rise. The greater the heating the faster it will rise. In a broiler house the air coming off a brooder is over 150°F, and as a result it moves toward the ceiling at a speed of over 100 feet per minute. This means that air heated by a brooder is at the ceiling in less than 3 seconds. (You can see this air movement if you look closely at dust and cobwebs clinging to the chains supporting a brooder). The heat produced by the brooder accumulates near the ceiling eventually building up enough to put heat on the floor. In short, the house is being filled with heat from the ceiling to the floor.

If the ceiling is not properly insulated or if there are holes in the tri-ply the heat produced by the brooders is quickly lost through the ceiling. This makes it very difficult to build-up enough heat to keep young birds warm. The problem is enhanced if the house has an open ceiling with ridge vents. The heat rises from the brooders and then goes right out the ridge ventilators. In either case you are wasting fuel.

This problem is not without a solution. By using mixing fans this heat can be moved down from the ceiling to the birds. Producers who use mixing fans have reported warmer house temperatures and significant reductions in fuel usage.

In recent studies conducted by the Extension Engineering and Poultry Science Departments of The University of Georgia it was found that during brooding the air near the ceiling was 20 degrees

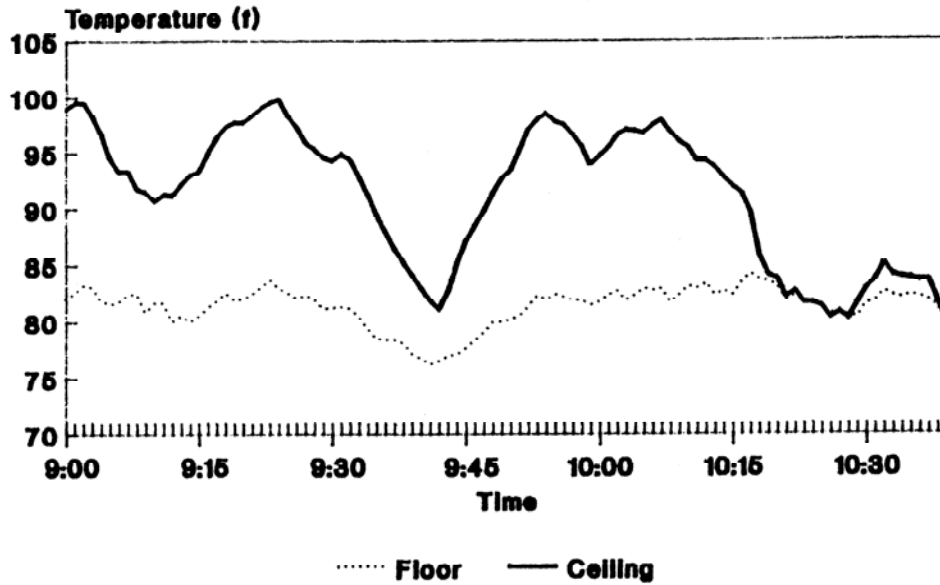
## PUTTING KNOWLEDGE TO WORK

warmer than air near the floor. The study showed regardless of the type of supplemental heaters used, there was a significant difference between floor and ceiling temperatures. The combination of making the houses tighter and the use of paddle fans to bring warm air down to the floor led to 20 percent reduction in fuel usage and at the same time kept the birds 10°F to 20°F warmer.

There are a variety of ways to bring the warm air down from the ceiling; the use of paddle fans is just one of them. Regardless of what you use to minimize the build-up of heat near the ceiling, there are some things to consider:

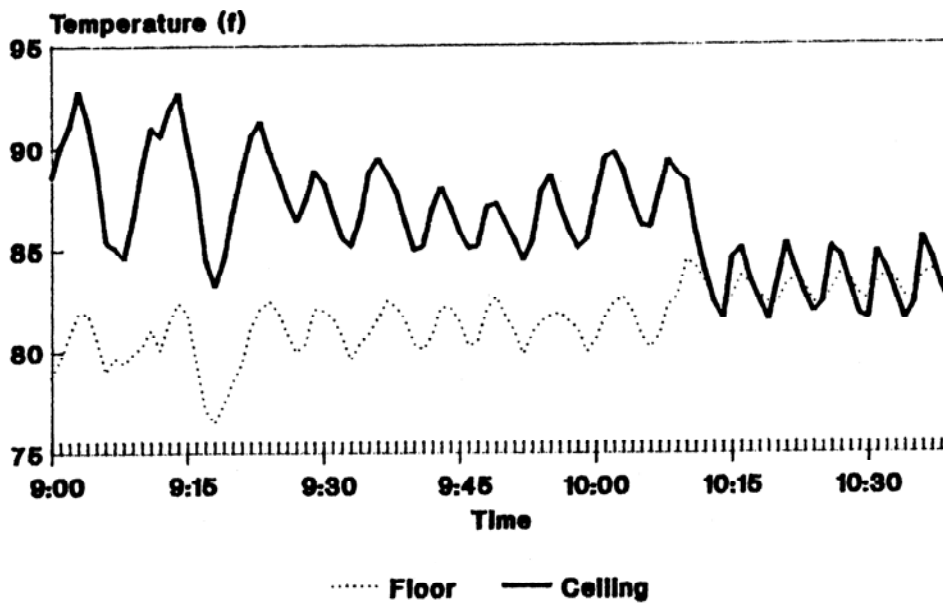
- 1) Be careful that the mixing fans do not create too much air movement over the birds. This can cause problems.
- 2) Mixing fans can be placed on an interval timer, but make sure the fans are on long enough to break-up the stratification. One minute out of ten will usually not do it.
- 3) It is better to have a number of small mixing fans rather than a couple of large mixing fans.

## Temperature Stratification (pancake brooders)



mixing fans turned on at 10:15

## Temperature Stratification (forced air heaters)



mixing fans turned on at 10:15