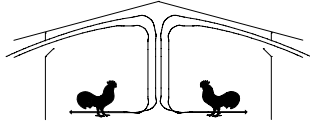




# The University of Georgia Cooperative Extension Service

College of Agricultural and Environmental Science/Athens, Georgia 30602-4356



## Poultry Housing Tips

### *A Loose Brooding Curtain Can be Costly*

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Figure 1. Smoke showing air leaking into brooding area.

One of the most common causes for fuel wastage, chilled chicks and damp litter near the brooding curtain during brooding is a loose fitting brooding curtain. Cold air entering the brooding end from the colder nonbrooding end around loose fitting brooding curtains tends to quickly drop to the floor creating a cool spot that can extend 40 or more feet into the brooding area. Since cold air can hold less moisture than warm air less moisture is removed from the litter in this area of the house leading to litter moisture problems. The problem typically goes unnoticed on most farms because of the fact that the cold air from the nonbrooding end tends to hang within a foot or so of the floor.

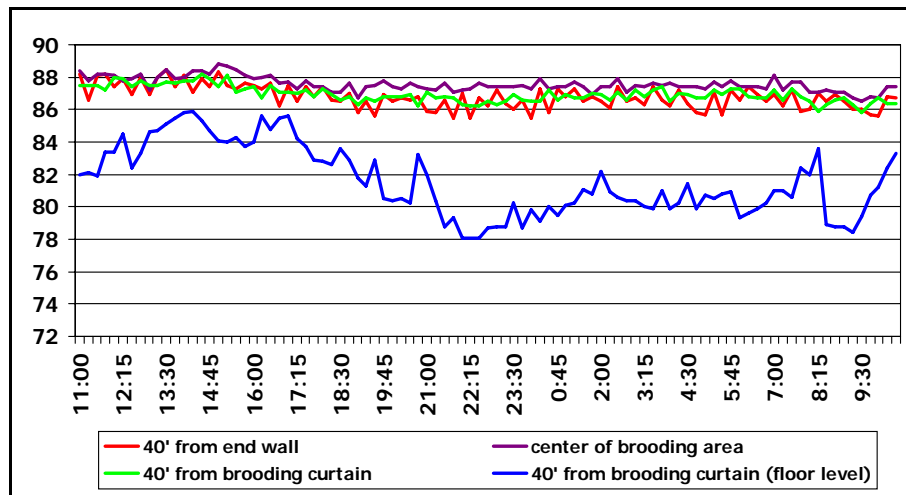


Figure 2. Air temperatures in brooding end.

### PUTTING KNOWLEDGE TO WORK

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Figure 2 is a good illustration of how a problem can go unnoticed. Temperature recorders were placed next to the house controller's three brooding end temperature sensors which were approximately 18" above the floor. A fourth temperature datalogger was placed on the feed line just below the controller sensor 30' from the brooding curtain. As can be seen in Figure 2 there was a dramatic difference between what the controller was measuring and what was actually happening at chick level.

Figures 3 and 4 were taken in another house with a loose brooding curtain when the chicks were only a few days old. The sensor controlling the forced air furnace was approximately 15' from the brooding curtain and positioned approximately 18 inches above the floor. As can be seen in Figure 4 though the floor is approximately 77°F the air temperature just 18 inches above the floor, as indicated by the temperature of the feed hopper, is 85°F. The controller basically "thinks" it is doing a good job of maintaining an air temperature of 85°F, which it is, two feet above the chicks head. Though the floor temperature looks reasonable in most of the house (Figure 3), the fact is that those chicks within 20 to 40 feet of the brooding curtain are being brooded five to ten degrees cooler than the controller or the producer thinks.

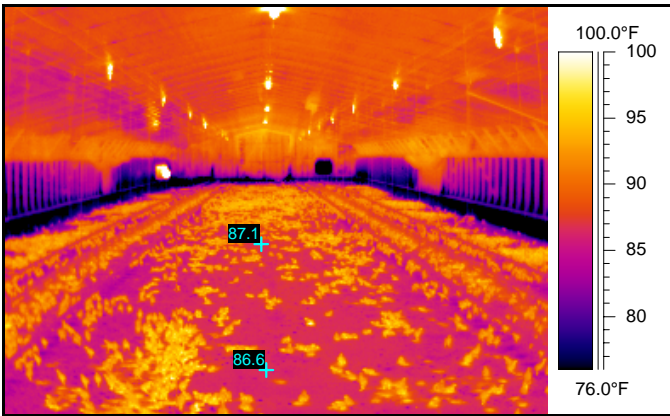


Figure 3. Thermal image taken from center of brooding area looking towards the tunnel end wall.

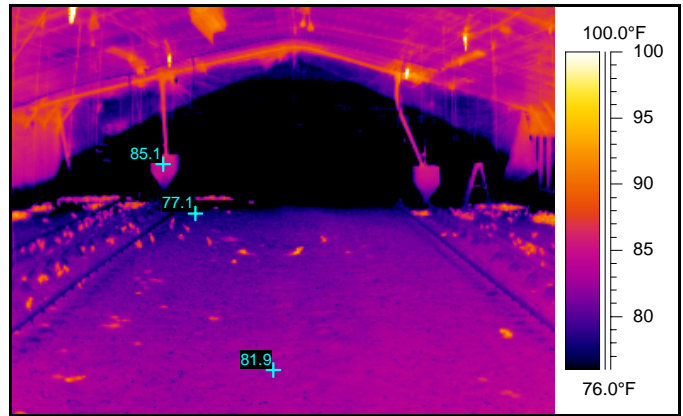


Figure 4. Thermal image taken from 40' from brooding curtain looking at brooding curtain.

Figures 5 and 6 were taken in yet another house with a loose brooding curtain. The situation is nearly identical to that seen in Figures 3 and 4. The floor temperature is in the mid seventies where the air temperature, again as indicated by the temperature of the feed hopper is in the mid eighties. The biggest difference between the two is the fact that the house was equipped with radiant brooders. The radiant heat produced by the brooder heated the floor in the center of the house which helped to reduce the problem in the center of the house. Though the curtain should have been made tighter, it could have been minimized had there been paired radiant brooders installed near the brooding curtain (Figures 8 and 9).

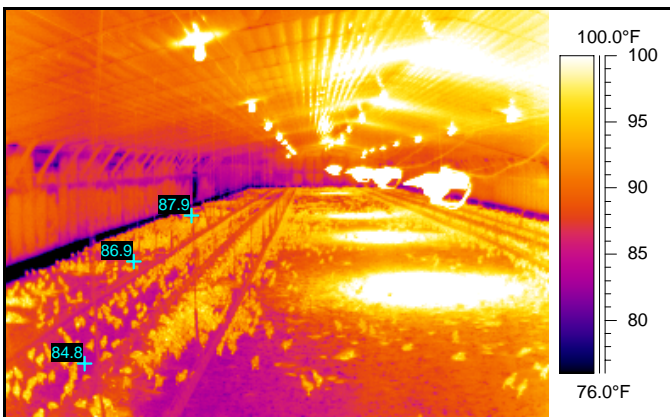


Figure 5. Thermal image taken 40' from brooding curtain looking at tunnel end wall.

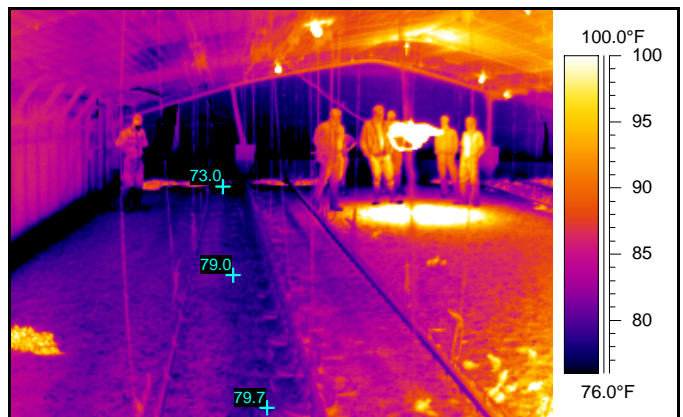


Figure 6. Thermal image taken 40' from brooding curtain looking at brooding curtain.

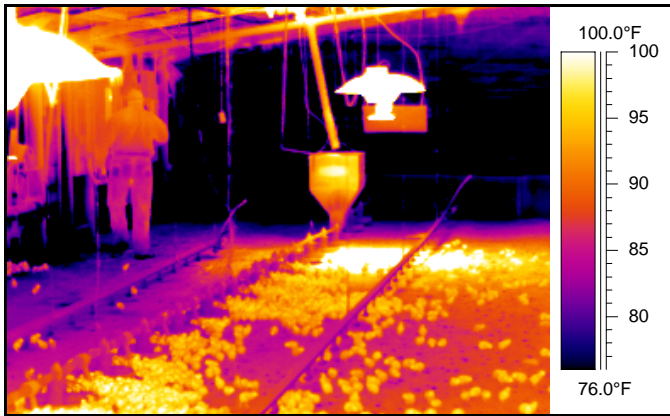


Figure 7. Loose brooding curtain in house with paired radiant brooders (left side).

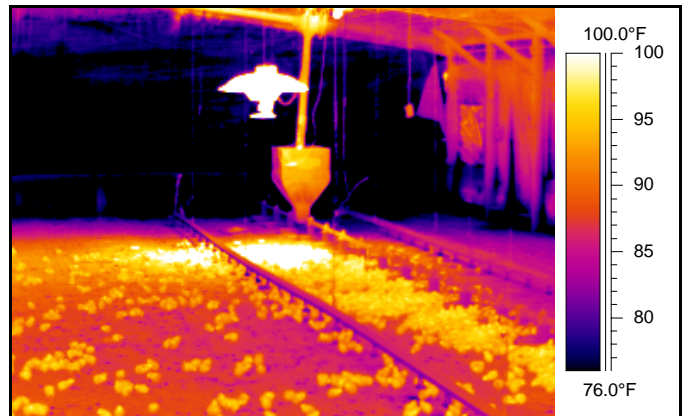


Figure 8. Loose brooding curtain in house with paired radiant brooders (right side).

Though it is true that if heating systems sensors/thermostats are placed within 12 inches of the floor that the conditions nearest the brooding curtain would have been improved the conditions noted in the above houses, it could also result in excessive fuel usage and possibly even overheating of the center of the brooding area. To demonstrate this point the sensor near the brooding curtain in Figure 4 was lowered to a height of 12 inches and a second thermal image was taken 30 minutes later (Figure 9). Though lowering the controller sensor dramatically improved floor temperatures the problem was that in order to get a floor temperature of 85°F, air temperature a few feet above the floor was nearly 100°F and as you might suspect the furnace in this area of the house was operating nearly constantly. Furthermore, the hot air near the brooding curtain drifted slowly towards the center of the brooding area leading to air temperatures five degrees warmer than desired.

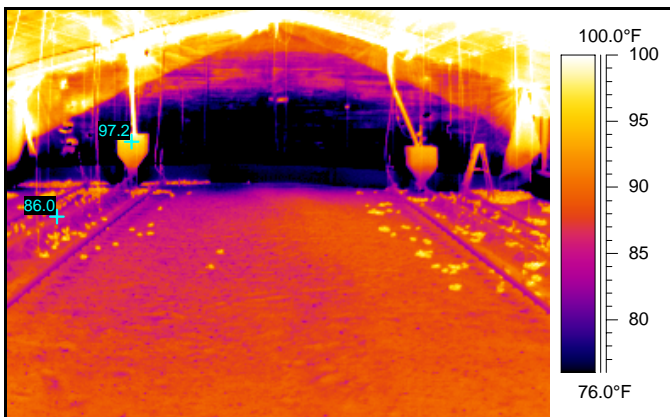


Figure 9. Thermal image of the same brooding curtain area shown in Figure 4 after the sensor was lowered to a height of 12".

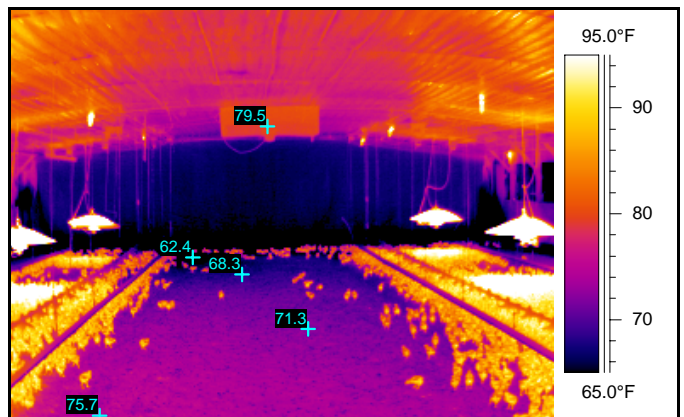


Figure 10. Effects of using plastic pipe instead of bird board.

The following are a few of the steps that can be taken to minimize brooding curtain leakage.

- 1) Use bird boards that are two feet tall. Using shorter bird boards doesn't give the brooding curtain enough area to seal upon and leads to increased leakage (Figures 10, 11 and 12).
- 2) Make sure that the bird boards are positioned a foot or so towards the nonbrooding end of the house (Figure 13). This will cause the brooding curtain to rest firmly against the bird board minimizing the likelihood of air leakage from the nonbrooding end.
- 3) Install a heavy conduit/gas pipe in the hem in the bottom of the brooding curtain. A cable can be run through the conduit/gas pipe then attached to each side for additional support.
- 4) Patch all holes in brooding curtains.

- 5) Though it will not eliminate air leakage from the nonbrooding end, a 1/15 hp circulation fan positioned approximately 50 to 70 feet from a brooding curtain, blowing towards a brooding curtain can help warm the area next to the brooding curtain.

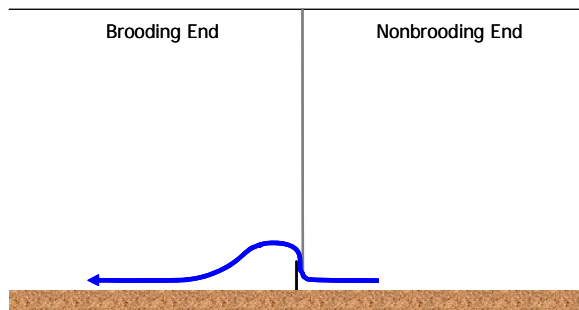


Figure 11. Leakage around short bird board.

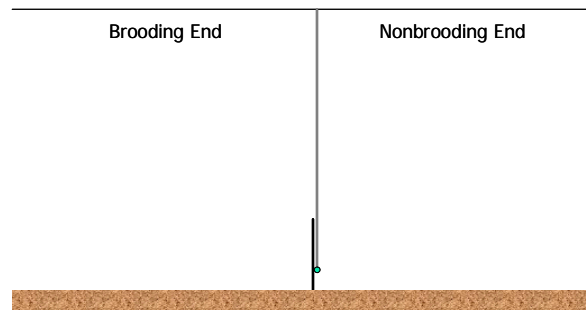


Figure 12. Two foot tall bird board.

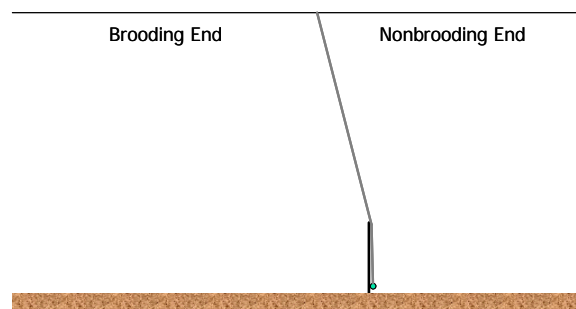


Figure 13. Bird board shifted towards nonbrooding end.

- 6) Make sure the nonbrooding end of your house is tight. The looser the nonbrooding end of a house is, the easier it is for the wind to push air into the nonbrooding end, which then tends to move into the nonbrooding end. To minimize air leakage make sure inlets on the nonbrooding end are closed, plastic is placed over the shutters of exhaust fans that are not being used, end wall doors are tight, and side wall curtains seal tightly against the side wall.
- 7) Though many producers may want to use a 48" fan on the nonbrooding end for minimum ventilation and leave their brooding curtain loose this may not be the best option for cold weather. Producers may find that they will have more uniform conditions, and less condensation problems on the nonbrooding end if they tighten their brooding curtains and use one 36" fan on the brooding end and one on the nonbrooding end for minimum ventilation. During warmer times of the year, or a couple days prior to turning the birds into full house, brooding curtains can be loosed and a 48" fan used for minimum ventilation to help pull heat down the length of the nonbrooding end.

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