



The University of Georgia

College of Agricultural and Environmental Sciences
Cooperative Extension



Poultry Housing Tips

Temperature Sensor/Thermostat Placement in Broiler-Breeder Houses

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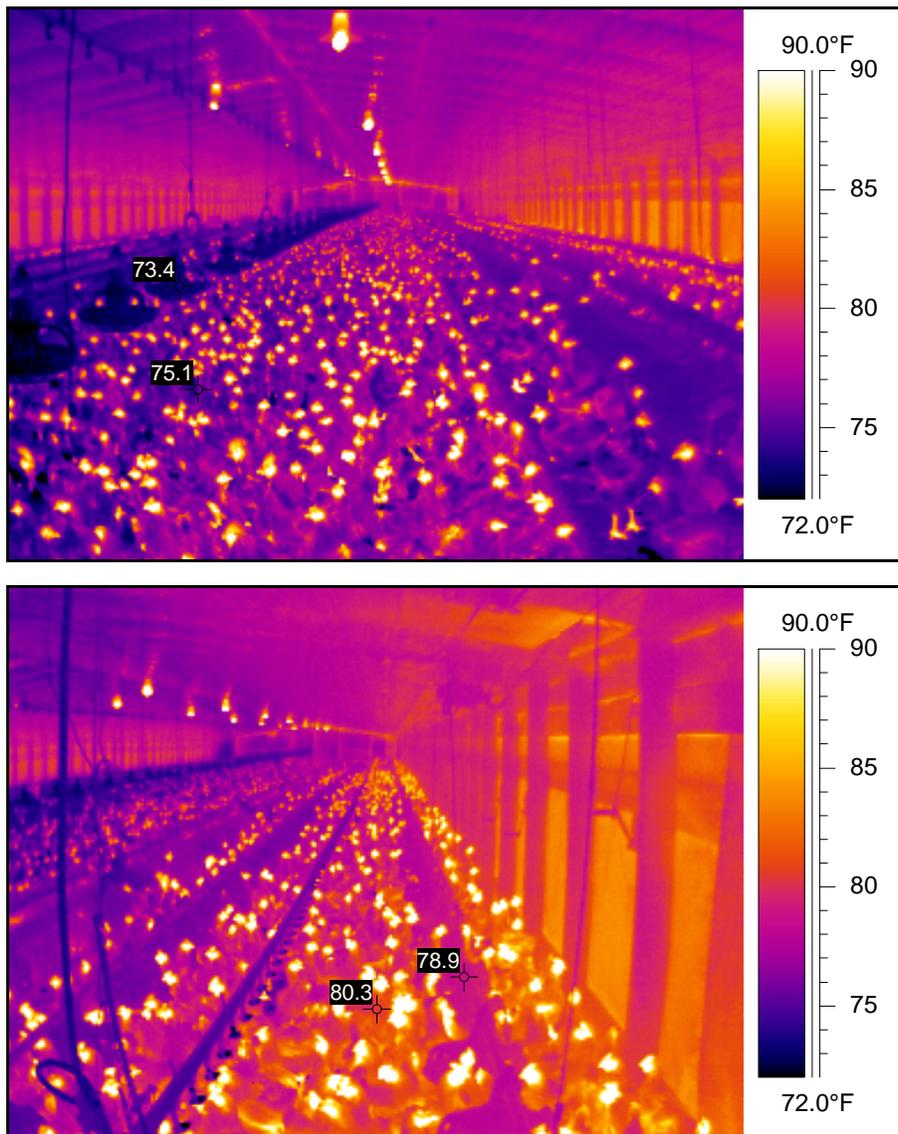


Figure 1. Thermal images of broiler-breeder house during mild weather (scratch area - top, slat area - bottom).

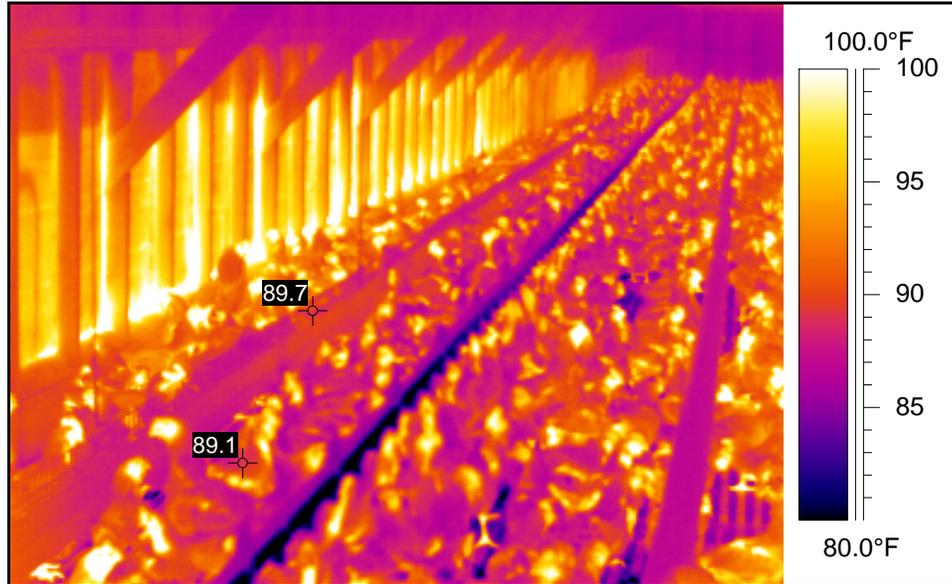
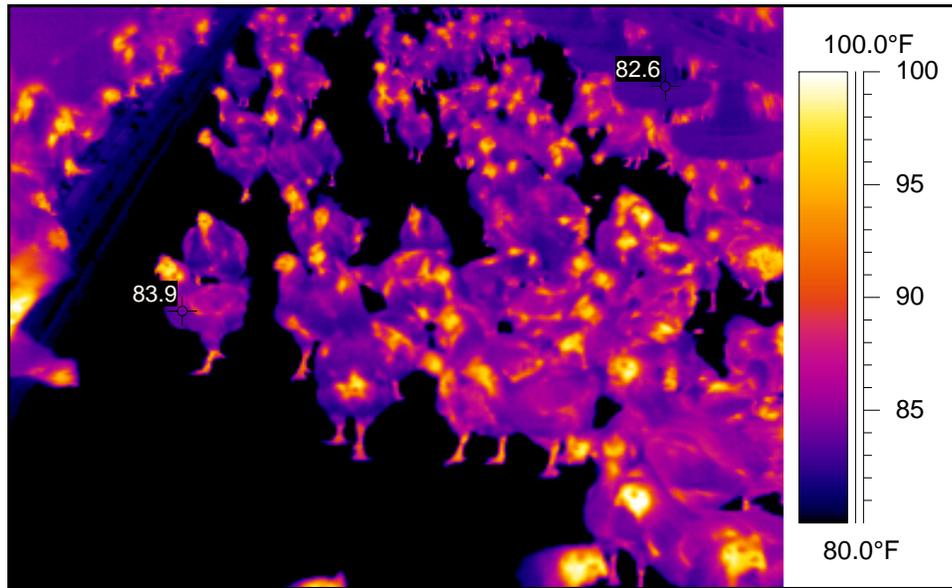


Figure 2. Thermal images of broiler-breeder house during hot weather (scratch area - top, slat area - bottom).

When placing fan temperature sensors/thermostats in broiler-breeder houses it is important to realize that the environment on the slats can be very different than that in the scratch area, especially during hot weather (Figures 1 and 2). In tunnel ventilation mode, air speeds on the slats are typically half those in the scratch area, which leads to not only a reduced wind-chill effect for those birds on the slats, but lowered air exchange rates as well (Figure 3). Relatively low air exchange rates, coupled with heat being produced by the birds and side wall curtains, can result in air temperatures on the slats being four to eight degrees higher than those in the scratch area (Figure 4). If tunnel fan temperature sensors/thermostats are placed in the scratch area the birds on the slats may not receive the cooling they require because tunnel fan operation will be based on a relatively cool location not the hottest, namely the slats. In a way, placing fan thermostat/sensors in the scratch area is not that different than placing them in front of the evaporative cooling pads. Though the birds in front of the pads may be comfortable, those at the fan end of the house could get very hot because there would be no thermostats/sensors to sense the conditions near the fans.

To insure that the hens on the slats receive adequate cooling, all or a portion of a house's temperature sensors/thermostats should be located in the vicinity of the outside feed line on the southern side of the house. Locating temperature sensors/thermostats on the slats will not likely cause problems during the cooler times of the year because there tends to be

less of a temperature difference between the slat and scratch areas of the house. In houses with environmental controllers, a producer can place half the temperature sensors in the scratch area and half on the slats on the southern side of the house. During hot weather, the tunnel fans could be operated based on the slat air temperatures on the tunnel fan end of the house (the hottest location in the house). During more mild times of the year, a producer could opt to operate the fans off an average of slat and scratch area temperature sensors.

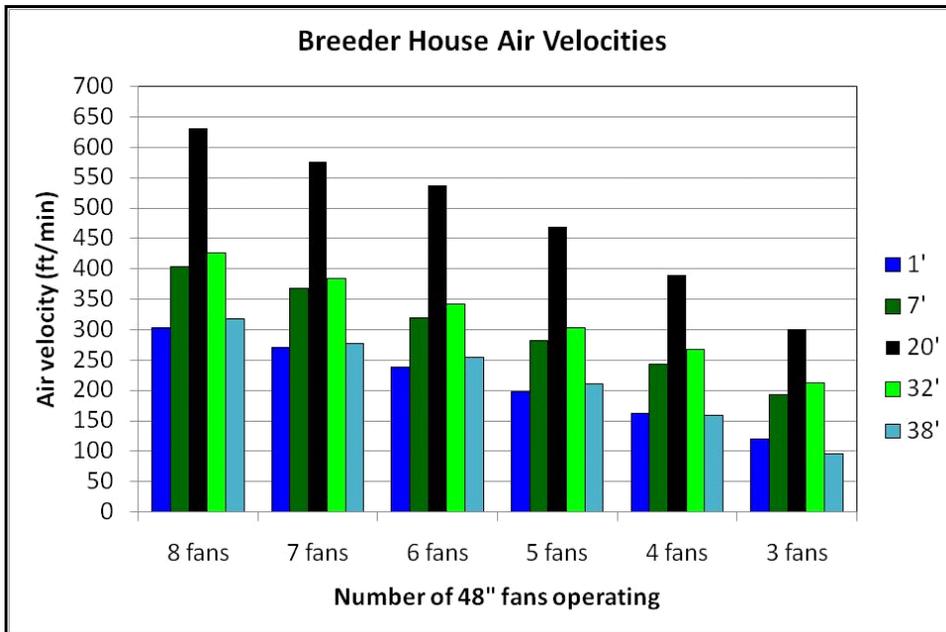


Figure 3. Air velocity profile in a 40' wide broiler-breeder house (18" above slats/ground).

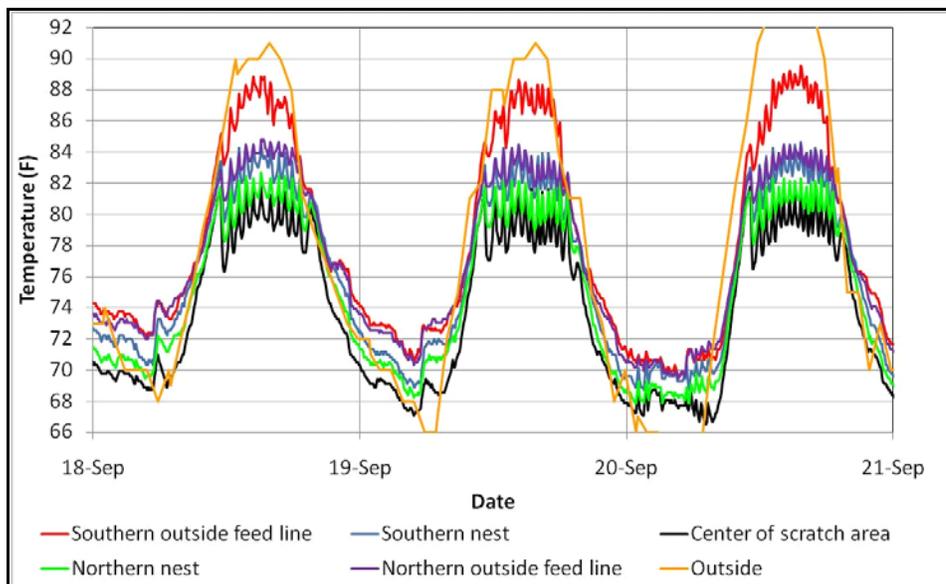


Figure 4. Breeder house air temperatures (100' from tunnel fans).

Though placing fan thermostats/sensors on the slats will tend to have the greatest effect on how fans operate during the day when the greatest temperature differences tend to occur between the scratch and slat areas, it will also prove beneficial in early morning. During feeding a significant amount of heat is generated by the birds, especially on the slats where the majority of the birds are located. If there are thermostat/sensors on the slats, the fans will respond to the surge in heat, helping to quickly cool the birds. Placing thermostat/sensors on the slats will also tend to cause fans to operate a little later into the evening insuring that all the birds are adequately cooled, not just those in the scratch area, so all the birds will be willing to eat the next morning. Though it is true placing fan sensor/thermostats on the slats will tend to cause lower air temperatures in the scratch

area, producers generally do not have to worry about the males in the scratch area becoming “chilled” during the summertime because temperatures are rarely low enough in most areas of the U.S. to cause problems. In the end it is important to keep in mind our primary concern during hot weather is not whether our birds in the scratch area are “too cool”, but rather are our hens on the slats being sufficiently cooled.



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