Department of Poultry Science
College of Agricultural & Environmental Sciences
UNIVERSITY OF GEORGIA

Poultry Housing Tips

The Importance of Maintaining Uniform Bird Densities

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Managing by the "average" of anything can be a potentially dangerous concept when it comes to growing birds. For instance, when tunnel ventilating market-age broilers the average house temperature could be 80°F, which isn't necessarily a problem, but it hides the fact that it could be 70°F at the pad end and 90°F at the fan end of the house which definitely would be dangerous. During cold weather, an average daily relative humidity of 60% seems ideal, but in reality the RH could be 40% during the day and 80% night, which could lead to an increased likelihood of respiratory issues. Last but not least, though our birds may have been placed at a relatively low density, it does not necessarily mean that all the birds will have the same amount of space to eat, drink, and move around.

Figure 1. Birds near tunnel inlet end wall

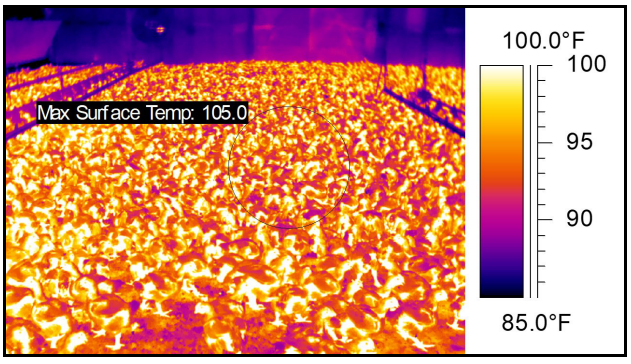

Figure 2. Thermal image of crowded birds near tunnel inlet end wall

Figure 3. Birds near tunnel fan end wall

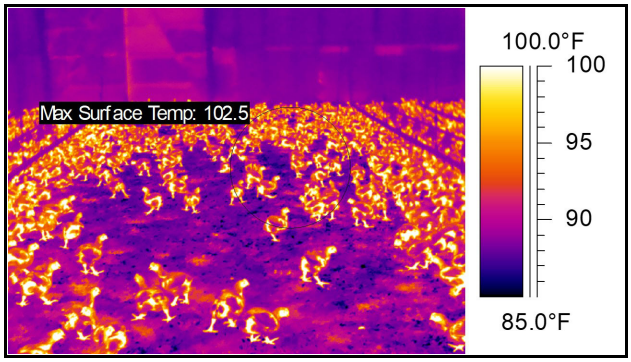

Figure 4. Thermal image of widely spaced birds near tunnel fan end wall

Maintaining a uniform density from one end of a house to the other is of paramount importance because it affects bird performance in a number of ways. Differences in bird density within a house will not only result in differences in feeder/drinker space availability, but also differences in the amount of effort required for a bird to make its way to feed and/or water.

If there is an excessive number of birds in one area of the house the litter moisture will be higher simply due to the fact that there is more wet manure being added to the litter in this area. Furthermore, the greater the bird density the lower the amount air movement there will be over the litter, resulting in reduced litter drying, increased ammonia production, and foot pad problems.

Overall air quality will also tend to vary in a house with variations in density. When a house is in inlet mode, fresh air will enter through air inlets uniformly along the length of the house. But if there are more birds in one area of a house than another, they will be receiving less fresh air on a per-bird basis than those birds in a lower density area of the house, resulting in stale air in the high bird density areas and very fresh air in the low-bird-density areas of a house.

Heating costs can be affected by differences in bird density. During cold weather we use the birds to heat our houses. If the birds are not evenly distributed our "heaters" are not uniformly distributed, which in turn results in differences in air temperatures along the length of the house. You can end up with fans coming on at one end of the house to cool the birds and heaters coming on at the other end trying to keep the birds from becoming chilled.

Last, but most importantly, poor bird distribution can prove very costly during hot weather. The higher the bird density the less space there is between the birds. This will cause the bird to feel warm, consume less feed, and gain less weight. In tunnel-ventilated houses the birds tend to be more dense on the pad end of the house than the fan end for a few reasons. First, most birds are traditionally brooded on the pad end of a house and must be moved to the fan end of a house. Getting young birds to move hundreds of feet is difficult, which naturally leads to more birds ending up on the pad/brooding end rather than the fan/nonbrooding end of a house. Second, birds tend to naturally migrate into wind which leads to birds moving toward the pad end of the house if migration fences are not installed and managed properly. Last but not least, high light intensities typically found by the tunnel fans as well as the noise caused by butterfly shutters slamming shut can cause birds to move away from the fans and towards the pad end of the house.

To help insure the birds are evenly distributed throughout a house after partial house brooding, it is important that the birds are actively migrated from the brooding end to the nonbrooding end and migration fences are installed within a few days of turning the birds out into full house. The longer the process is delayed, the more difficult it will become to move the birds from brooding end to the nonbrooding end of the house.

Having a minimum of two water meters (brooding/nonbrooding areas), ideally four in some of today's longer houses, is crucial in monitoring bird density distribution. If water usage is not the same on the two ends of a house, bird density is not uniform. A 20% difference in water usage equals a 20% difference in bird densities.

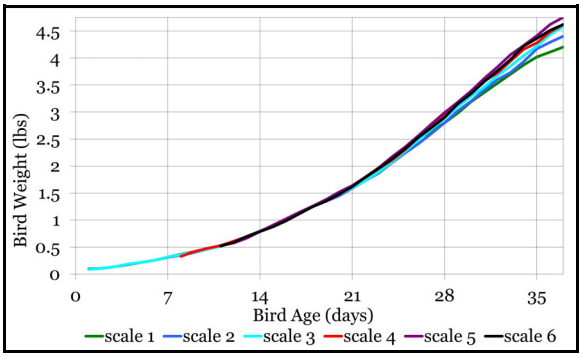

Figure 5. Tunnel-ventilated house with too many birds on the pad end of the house

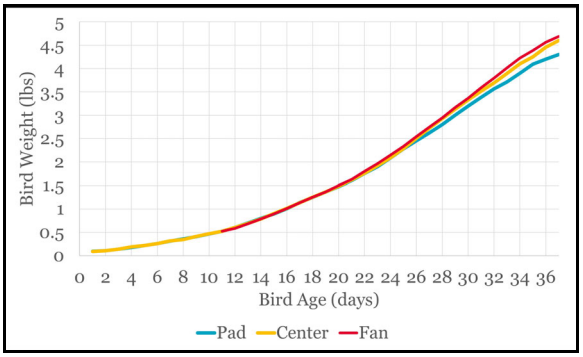

Figure 6. Tunnel-ventilated house with too many birds on pad end of the house

It is important to realize that differences in bird density between the pad and fan ends of a house will often not affect broiler weight gain until the last week or two of a flock. Early on in the flock a 20% difference in density may not affect overall bird performance because the birds are small and there is still plenty of space around the feeders and drinkers and if one area is a little crowded they can easily travel across the width of the house to find easier access to feed and water. More importantly, when the birds are younger, even if there are more birds on one end of a house there will often still be enough space between the birds to allow adequate air flow over the birds to keep them from overheating. But towards the end of the flock when free space is very limited, having 30%, 20%, or even 10% more birds on the pad end of a house will make it dramatically harder for the birds to access feed and water as well as to lose heat. This will result in the birds near the pads gaining far less weight towards the end of the flock than those on the fan end of the house (Figures 5 and 6).

Authors:
Michael Czarick - UGA Extension Engineer
Brian Fairchild - UGA Extension Poultry Scientist