

Poultry Housing Tips

Importance of Air Movement Vs. Bird Age

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It is common knowledge that the older a bird gets the more problems hot weather can cause. There are a number of reasons for this. First, older birds produce significantly more heat than younger birds. For instance, 24,000 one-pound broilers will produce the same amount of heat as that produced by four conventional brooders operating constantly. But, 24,000 seven pound broilers produce the same amount of heat as 30 conventional brooders. More heat, more problems. Next, older birds are better feathered and therefore better insulated than smaller birds making it more difficult for the birds to rid themselves of the heat they



Figure 1. The Effect of Air Movement on Bird Weights

are producing. As birds get older there is less space between individual birds. Less space means more heat is trapped between the birds significantly increasing the temperature of the air at floor level. Finally, older birds have less surface area per pound of weight than younger birds and therefore cannot lose heat to surrounding air as easily as small birds. All of these factors add together to make heat stress related problems much more severe as the birds age.

Though most growers realize that hot weather affects older birds much more than younger birds, what they may not realize is how the effect hot weather changes over time. The effect of hot weather on broiler performance increases dramatically from week to week, and thus the benefits of air moving over the birds also increases dramatically from week to week.

The increase in importance of air movement, and therefore cooling as birds age can be seen in the results of a study conducted at the USDA Southern Regional Poultry Research Lab located in Starkville, Mississippi.

The study was quite simple. Grow birds to three weeks of age at standard industry temperatures. At three weeks of age split the birds into two groups. Raise one group of birds at an air temperature of 85°F with no air movement, and the other group of birds at the same air temperature but with air moving over them at 400 ft/min. Finally, monitor the weight and feed conversion of each group of birds on a weekly basis.

As you might expect, there was a large difference in weight between the birds grown with and without air movement. In fact, air blowing over the birds

at 400 ft/min increased weight gain by well over a pound (Figure 1). The reason for the difference in weight is quite apparent when Figure 1 is examined more closely. The birds with no air moving over them were growing slower and slower each week. In fact, it would not be hard to make the argument that the birds would have probably stopped putting on weight altogether had they been kept to eight weeks of age. In contrast, the birds with 400 ft/min air blowing over them continued to gain weight at a rapid pace as they got older. Quite simply, the birds with air blowing over them were significantly cooler so they continued to eat and put on weight.

Of special interest is how the difference in weight increased as the birds aged. When the birds were four weeks old there was only 0.16 lbs difference in weight between the two groups of birds (Figure 2). By week five the weight difference more than doubled to 0.40 lbs. Week six, the weight almost doubled again to 0.7 lbs. And finally, the weight difference almost doubled again to 1.2 lbs during week seven. So every week the benefit of moving air over birds when they are hot approximately doubles.

Yes, it is important to keep younger birds cool. But, as can be seen by the above graphs, when the birds get older it is crucial to keep as much air moving over the birds when they are hot as possible. This is the time when the greatest problems occur and therefore the greatest benefits can be gained. During those last couple of weeks make sure your shutters are clean, belts are not worn and are tight. If you have evaporative cooling pads make sure that the pads are not clogged with dust and your tunnel curtains are opened fully.

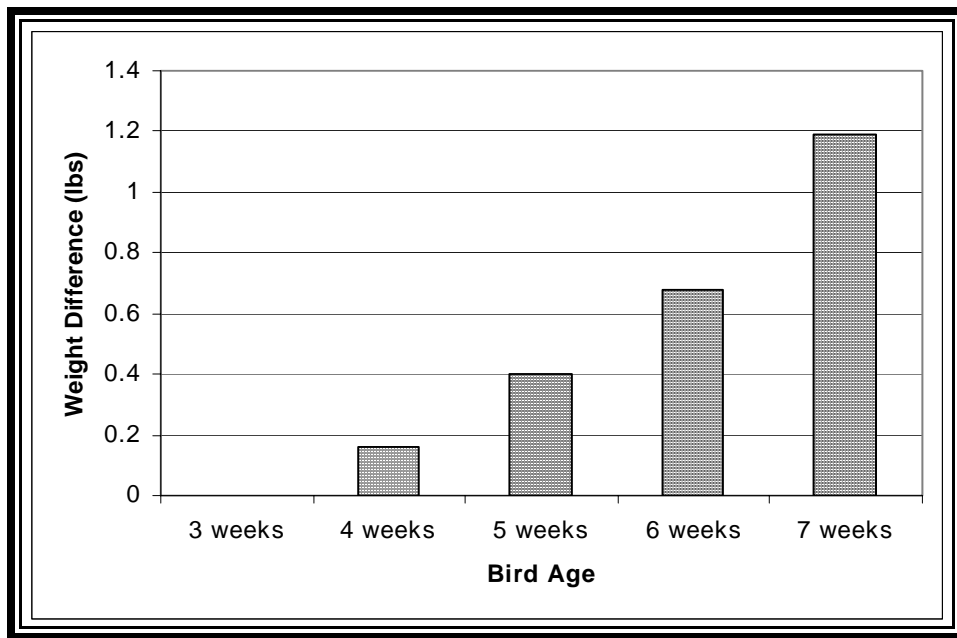


Figure 2. Weight Difference - 400 ft/min vs Still Air

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