

Temperature Effects on Broilers—A Quick Reference Guide

By Jim Donald, Extension Ag Engineer and Professor,
Biosystems Engineering Dept., Auburn University (334-844-4181, jdonald@acesag.auburn.edu)

Temperature conditions	What you see	What's happening
Slightly Cool (below optimum)	<ul style="list-style-type: none"> ■ Birds tend to huddle together, and spend more time sitting down. ■ Feed consumption goes up. ■ As temperature drops, more and more birds will “fluff up” their feathers to increase their insulating value, so the birds appear larger. 	The birds are doing what they can to conserve body heat, and at the same time eating more to gain more heat energy from their feed. Since more of the feed energy has to go into keeping themselves warm and less into weight gain, performance is hurt.
Slightly Warm (just above optimum)	<ul style="list-style-type: none"> ■ Birds tend to stay apart more, except they will migrate to cooler and/or higher airflow areas. ■ Birds hold feathers closer to the body to reduce their insulating value, and droop or lift their wings to get more air cooling. ■ They try to cool their wattles in cups or drinker troughs, and tend to lay flat on the litter if it is cooler than they are. ■ They increase water intake, and eat less during the hot part of the day. ■ Some of the birds begin panting as temperature rises above optimum, and more and more start panting if temperature continues to rise. 	Birds are doing what they can to increase the rate of heat loss from their bodies. Their circulation changes to pump more blood through legs, wings, comb, and wattles, carrying internal body heat to be dissipated from the extremities. Panting cools by evaporating moisture from the respiratory passages; it takes a lot of energy and is a clear sign a bird's internal core temperature is rising too high. As temperatures rise, birds begin to eat less to avoid the resulting heat load from their feed energy. Performance is hurt both by the drop in feed intake and the birds' over-temperature defense mechanisms.
Hot	<ul style="list-style-type: none"> ■ Panting becomes more intense, and many, most or all birds are panting. ■ Normally pink skin areas turn a dark red as more of the blood circulation is shifted to extremities and the surface of the body to dissipate heat. ■ Feed consumption drops even more, or stops entirely. 	Intense panting and the darkened skin are signs of heat stress, which means birds are unable to get rid of internal heat build-up and their internal core temperatures are rising too high. If high temperature conditions continue, performance is seriously hurt and mortalities increase.

Top temperature points to keep in mind –

1. Top returns come from keeping temperatures *consistently* within the birds' optimum performance comfort zone, and maintaining temperature *uniformity* throughout the house.
2. During tunnel ventilation, *wind-chill* means the temperature the birds feel is not the same as the thermometer reading. The wind-chill effect is more pronounced for younger birds.
3. House management and maintenance are *essential* for keeping birds in their top-performance comfort zone. One example: In hot weather, failing to clean fans and shutters can have the same effect on the birds as turning off two tunnel fans.

(This guide is based in part on Stan Savage, “On-farm dynamics of temperature, metabolism and physiology,” *Broiler Industry*, October 1993.)