

TECHNICAL SERVICE



BULLETIN



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CONTROLLING THE EFFECT OF HEAT STRESS IN TURKEY PRODUCTION

The following Bulletin was written specifically with turkeys in mind, but producers will recognize that most comments pertain equally well to broilers, layers and pullets.

As temperatures rise during hot summer days turkeys start to pant and feed consumption is depressed. Rate of gain decreases, potentially resulting in significantly lower weights at market time. If temperatures continue to rise, eventually bird activity ceases. The birds sit with their wings extended and pant, trying to keep their body temperatures from rising.

If humidity is high so that evaporate cooling is reduced and there is no air movement to carry the heat away from their bodies, the panting will turn into a loud gurgle and mortality will set in. This often happens late in the afternoon or early evening after the flock has borne the burden of a long hot day and the daytime breeze has died down. Severe heat stroke and pile up losses occurred during the 1995 heat wave in the Midwest. There were flocks with mortality losses of 50% or more, although flocks on **DAWELYTE**[®] limited losses to less than one percent (see Bulletin 281).

Cooling through radiation heat loss doesn't work well in the summer since there are not cool surfaces to which the birds' heat can radiate. Instead they radiate heat to each other in the confined space of the building.

CONTROL STRATEGIES

1. Reduction of bird density in summer is helpful in reducing hot weather effects. Some operations routinely reduce turkey members by 10% for the flocks finishing in hot weather.
2. While salt levels in the feed may be increased to benefit water consumption, care must be taken to prevent excessively wet litter.
3. Vitamin C has been recommended to reduce heat stress effects. It has been used at up to 200 grams per ton, and is available from Dawe's Laboratories.
4. Electrolytes are excreted in the urine and feces during heat stress, and replacement is indicated. Few electrolyte mixtures are properly balanced with potassium: DAWELYTE is both well balanced and proven (bulletins, 193, 257, 260, 262, and 263).
5. Water and air are critical in combating heat stress in turkeys. Water cools by absorbing heat from the bird and from the air, as it is consumed evaporates. Air cools the bird both by removing heat from the air (convection) and from the bird's body (conduction).

AIR

Air exchange is vital: The turkey building should be oriented in a n east to west direction to capture the southerly wind in the summer, and it should be constructed to take advantage of even the slightest breeze. The best structures have insulated roofs and no walls to restrict air flow. The best structures have insulated roofs and not walls to restrict air flow. Curtains on both side walls are preferred that open wide the full length of the building, from just under the eave down to the top of the peck board. Large-opening end doors are important. Warm air rises and convects heat out the peak of open ridge ventilated buildings. The airflow slows, however, in ridge-ventilated buildings as the outside temperature rises and may stop completely during the peak heat hours of the day when airflow is needed most.

Fans are important in turkey growout to stir and move air throughout the building. Exhaust or pressurizing fans for cooling are not generally used in turkey production. The high volume of air and the number of fans needed to ventilate mechanically a turkey growout building is not considered economical or feasible. Horizontal stir fans are commonly used and complement the open curtain wall buildings. They may be hung in a row down the center, 50 feet apart or so, all blowing one way to move the center core of hot air down through the building and out the end walls. They are also hung along both side walls to create a race track effect in some operations. Air movement helps to wipe the heat away from the bodies of the birds.

WATER

Turkeys will increase their water consumption during warm temperature conditions. Consumption of cool water significantly reduces body temperature by absorbing heat from the bird. The cooler the water, the more effectively it will cool the birds. Drinking more water also increases the efficiency of evaporative cooling from the air sacs, lungs and mouth of the birds as they pant. Increased water consumption also results in an increase in urine voided into the litter, which removes heat from the bird. Water in the litter evaporates and cools the surface of the litter and the air just above it. The additional moisture on the litter surface is transferred to the breast and feathers