Managing heat stress with your watering system

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With the approach of summer weather, it's time to begin planning for the heat waves we know are coming. Times of high heat are very stressful for broilers and layers. Hot weather can cost producers money from lost production, and in times of very high heat — 95 degrees F (35 degrees C) or more in the house — the heat can kill the birds. To cope with heat, you need a well thought out plan that, perhaps surprisingly, must include the watering system.

A variety of components go into combating heat stress in poultry. The way your poultry barn is constructed, the insulation used, the type of ventilation and fogging systems employed and how the watering system is used all have an impact on your flocks' survivability. In this article, we will concentrate on the watering system and how you should manage it during times of hot weather.

Chickens undergo physiological changes as the weather warms up. The ideal temperature range for chickens is 65 to 75 degrees F (18.3 to 23.8 degrees C). As temperatures exceed 75 degrees F (23.8 degrees C), chickens begin reducing the amount of feed they consume because the digestion process requires energy, which can elevate a chicken's internal temperature. The reduction in feed consumption can have a negative impact on weight gains and egg production. However, some farmers find it advantageous to withhold feed during the hottest part of the day and provide feed in the morning and evening when it is cooler.

Chickens cannot sweat so they must employ other methods to reduce their body temperature. Broilers must maintain a body temperature of about 106 degrees F

(41.1 degrees C). Some birds will simply stand quietly; others will crouch near walls, where it might be cooler. Chickens also will spread their wings, reducing the insulating effect of the wing feathers and allowing more air to penetrate to the skin.

Internally, the birds divert blood flow from internal organs to dilated blood vessels in the skin to facilitate heat loss. At about 77 degrees F (25 degrees C) the chickens begin to pant.

Panting has a cooling effect because the bird expels water from its lungs. This vapor contains heat from the bird's body. However, panting triggers other physiological responses. The first is the bird becomes thirsty because it is losing water as it hyperventilates. This can cause the bird's water consumption to increase. The second response: as the bird pants, it blows off more carbon dioxide. This results in the blood becoming more alkaline. The bird's kidneys respond by excreting excessive electrolytes.

At this point it is imperative the flock have unlimited access to water. Without sufficient water, birds will begin to exhibit signs of heat stress. Among those signs: the comb and wattles become shrunken and bluish; the tendons on the back of the legs stand out prominently; and the bird droppings are off color. Heat stress also can be life threatening.

Consider at this point adding electrolytes to the birds' drinking water to help re-establish the chemical balance inside the bird. The introduction of electrolytes can stimulate the birds to drink more.

Of course whenever interventions are introduced through the drinking system, they should be followed by a high-pressure flush to rid the drinking lines of any residue.

Ziggity normally recommends producers high-pressure flush — 1.5 to 3.0 Bars (20 to 40 psi) — at least once a week. During a heat wave, you should perform this procedure more often. The elevated temperatures can encourage the propagation of bacteria in the water lines. Frequent flushing discourages bacteria growth and biofilm formation. The addition of automated flushing equipment can simplify this process.

You also need to pay close attention to the source of your water. Most poultry barns obtain water from wells. If your well fails on a hot day, you can lose the whole flock. A good precaution is to have a backup well.

Watering works in tandem with ventilation to cool the poultry barn and the birds. For instance, foggers reduce the house temperature when humidity is low by injecting fine water particles into the warm air. As the water vaporizes, it absorbs heat from the air. Ventilation then pushes the water vapor and the heat from the house. This can lower the house temperature by as much as 10 degrees F (5.5 degrees C). Evaporative cooling pads may be even more effective at reducing house temperatures.

If foggers are employed, use them intermittently. If left in continuous use, they may raise the humidity in the house too much and cause the litter to become wet. Foggers and cooling pads are not particularly effective if the humidity is high.

You also need to do everything you can to maintain dry, friable litter — litter whose moisture content is about 25 percent. Litter wetter than this can elevate the temperature in the house as it releases ammonia. This makes it more difficult for the birds to cool themselves and adds the stress of ammonia to irritate the birds' respiratory systems.

The best way to manage the floors and pits is by ensuring the pressure in the watering system is sufficient to deliver all of the water the birds need to drink

without any spillage. At the same time, maintaining an air stream over the floors and pits helps them stay relatively dry by promoting evaporation.

High temperatures are a definite threat to your poultry flocks. There are a variety of strategies you can employ to combat the heat, and one of the most effective involves managing your watering system for the birds' welfare.

Ziggity Systems, Inc. is the only manufacturer 100 percent focused on poultry watering for improved performance. For more information, write Ziggity Systems, Inc. at 101 Industrial Parkway, P.O. Box 1169, Middlebury, Indiana 46540-1169 USA, call +1 574.825.5849, fax +1 574.825.7674, or visit its Web site at ***www.ziggity.com****.*

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