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BROILER TIP . . .

KEEPING BROILERS COOL DURING HOT WEATHER

As hot weather approaches it is important to remember the benefits of removing heat from the house and the birds, especially during the last two weeks of grow-out. If bird body temperature rises feed consumption will decrease, water consumption will increase, electrolytes will be depleted and growth and livability will be reduced. All of these results can detrimental to broiler performance and grower's profits during hot weather. Broiler houses are designed to aid birds in heat loss by two main ways: convective heat loss to the air and evaporative heat loss through respiration. As long as air temperature is cooler than the bird body temperature, heat can be lost to the air. As the temperature of air in a broiler house increases the amount of heat lost by convective heat loss decreases. As birds breathe, moisture in the lungs is evaporated. The energy in the form of heat is used to evaporate this moisture resulting in heat loss from the bird. However, as relative humidity (RH) increases, the amount of moisture that can be evaporated during respiration decreases as does the amount of heat removed. Therefore, in conditions where temperature and RH are high, and because birds do not have sweat glands, their body temperature will begin to rise.

As mentioned previously, broiler houses are designed to keep body temperature from increasing. This is done by maximizing heat loss to the air. Reducing the temperature of the incoming air and moving it across the birds at high velocity are the main ways broiler houses maximize heat removal from the birds. Evaporative cooling systems reduce the temperature of the air entering the house. This increases the difference in temperature between the air and the birds body temperature, increasing the amount of heat that can be removed from the bird. By moving the air across the birds at high velocity, heat is removed from between the birds and a wind chill effect is created. This means that even though air at a temperature of 85 F is moved across birds, the birds sense a cooler temperature than it is. For example, by moving 85 F air at 500 ft/min across birds, the birds sense the temperature is approximately 72 F rather than 85 F. This will help keep bird body temperature from rising and as a result, performance can be maximized. In times of high temperatures air speed is the most important factor and effort should be made to ensure that maximum air speed is achieved. There are several management decisions that can affect how

birds are cooled during times of hot weather. For more information, additional reading is listed in parenthesis.

Static Pressure

Static pressure should be checked on a regular basis. Tunnel ventilation is basically, negative pressure ventilation, and static pressure is the difference between inside and outside atmospheric pressure which is expressed in inches of water column. Ideally, static pressure should be measured close to the fans. Monitoring for changes in static pressure over time can be a good check of fan performance and status of the cool cell pads. For example, it is not good if a house static pressure is checked and it is a 0.10 but one year later has a lower pressure. This means that either the house has more air leaks than it did a year ago or that the fans are not moving as much air as they did previously. As static pressure increases, the fans work harder to move air. If static pressure increases, cool cell pads should be checked and cleaned if needed. Dust, dirt, mineral and feather build up on cool cell pads will increase the effort needed to pull air through the pads. Be sure to clean fan shutters and screens and to check all fan belts, pulleys and bearings to ensure that the fans are operating efficiently. If the fans check out, but a drop in static pressure has been observed, be sure to examine the house for air leaks. Air leaks will not only affect air speed, but can result in temperature variations throughout the house. *(UGA Poultry Housing Tip November 2004)*

Run Fans at Night

During hot weather conditions it is often necessary to tunnel ventilate the house during the night. Many people make the mistake of turning off fans as outside air temperature drops. Even though temperatures are dropping outside, heat continues to be generated by the birds. Birds that are exposed to high temperatures during the day have been shown to benefit from high air speeds at night. By running fans at night, the body temperature of birds can be reduced and will allow them to handle the heat better the next day. Signs that the fans need to be run at night include, but are not limited to, bird panting late in the evening and increased rectal temperatures. *(UGA Poultry Housing Tip July 2003)*

Keep Bird Density Uniform

It is important to keep bird density uniform throughout the house. Most of the heat that needs to be removed from the house is generated by the birds themselves. As a result, if birds migrate toward the intake end of the house, they can actually be hotter even though the air temperature is cooler. As bird density increases it is harder to pull air between the birds and as a result air temperature at bird level may increase. Timely and proper placement of migration fences should be used throughout the year, but definitely during periods of hot weather.

Water meters can be used to monitor water consumption in the front and back of the house. Water consumption by the birds can be used to determine if the birds are distributed evenly between the front and back of the house. If the birds are uniformly distributed but increased water consumption is observed in one end of the house, it indicates a problem and should be investigated. Uneven house desniteis can result in as much as half a pound difference in body weight between birds at the back and birds near the cool pads. Condemnations will also be higher in houses that have bird uniformity problems. *(UGA Poultry Housing Tip July 2002, March 1994).*

Provide Electrolytes

During periods of heat stress, birds will deplete electrolytes faster than usual. Potassium is usually depleted the most but sodium and chlorides levels can also rapidly fall. Providing birds electrolytes in the drinking water will replenish those that have been lost and encourage the birds

to drink. Increasing drinking during hot weather will prevent birds that are panting from becoming dehydrated.

Be Conscious of When to Walk Birds

When a person decides to walk birds they should consider the outside temperature and the effect walking may have. When a person walks through the house to pick up mortality and to check on the birds, bird activity increases. This can result in a temperature increase that should be avoided during the hottest parts of the day. If it is necessary to enter the house during a hot period, try entering the rear of the house and walk towards the cool pads. This will allow birds to move in the direction of the wind and might lower the temperature impact of the walk through.

While air speed is the most important factor, the effectiveness of good air speed can be increased with good management decisions. More information on these subjects can be found online at www.poultryventilation.com .

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Consult with your poultry company representative before making management changes.

"Your local County Extension Agent is a source of more information on this subject"