Season 3, Episode 11: **Ventilation Related to Heat Stress**

Dr. Brett Ramirez, Iowa State University, and **Matt Romoser**, Iowa State University, discuss the importance of ventilation and the role it plays in minimizing heat stress.

Background

Under heat stress conditions pigs will modify their behavior to dissipate heat. When pigs are not able to dissipate enough body heat their internal temperature increases, resulting in heat stress. They will reduce activity, lay down and separate themselves from pen mates. While laying down, pigs will expose as much surface area as possible to the cooler concrete floor. Panting is a mechanism pigs utilize to dissipate heat, since they are not able to sweat. Increased water consumption may also be an early indicator of heat stress.

Thermoneutral

Thermoneutral zone is the temperature range in which an animal does not need to actively work to maintain a comfortable body temperature. Keep in mind, the thermoneutral zone of a nursery piglet is different compared to a gestating sow or market weight hog. Newly weaned piglets require a warm environment and therefore heat stress is not as common during this stage of production. It is important to reduce drafts and anything that could chill the piglets. Growing pigs and gestating sows require good airflow as well as a slight draft. During later stages of production, it is critical to maintain a temperature gradient between the pig's skin and the environment. This temperature gradient helps pull heat from the skin and maintain pig comfort.

Ventilation

Proper ventilation is the primary means of controlling heat stress. When environmental temperatures reach 80°F, increasing air speed alone will not be enough to minimize heat stress, other equipment such as stir fans must be utilized. When temperatures reach the mid to upper 80°F, evaporative cooling methods should be applied, such as wetting of the skin with misters or using evaporative cooling pads like those on many sow farms. Growing pigs in tunnel ventilated barns require airspeeds of 300-400 feet per minute. Sprinklers should come on 18-20 degrees above the set point and remain on for one to two minutes, then off for 15 minutes. This allows time for water to evaporate and pull heat off the skin. Wall and tunnel fans should be cleaned, take down anything used to seal the fan during winter, make sure emergency drop curtains are working and controllers are properly programmed. The significance of general maintenance and ensuring all equipment is functioning properly cannot be overstated.

Be proactive

Being proactive instead of reactive can help reduce the impact of heat stress events. Make sure all equipment is clean, fine-tuned and functioning properly. Ensure water is adequately flowing to all drinkers, at a rate of 16-32 ounces per minute in the nursery through finishing phases. Cleaning of water lines can also help with flow rate. Feed should be accessible, especially during the cooler periods of the day. Read your pigs and listen to what their behavior is telling you about their level of comfort.

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