Tips for pork producers to beat the heat this summer

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Summer appears to have finally arrived here in the upper Midwest, and with it, the challenges of managing livestock to minimize heat stress. Pigs, in particular, can be a real challenge, since they do not have functional sweat glands like many other livestock species to assist them in efficiently removing body heat.

Although most pigs today are raised in modern facilities that provide some control over the thermal environment, we are still limited in most facilities with our ability to cool pigs during extreme heat, and therefore all possible options should be considered.

Pigs naturally remove body heat during periods of heat stress through a combination of accelerated respiration, decreased feed intake, increased water consumption, and adjustments in physical activity and movement. Respiration, the pigs' primary mode of heat dissipation, is increased by increasing the respiratory rate, thus allowing increased heat loss through evaporation from the lungs.

Pigs and Heat Stress

Pigs breathing at rates greater than 50 respirations per minute while resting would indicate that heat stress is occurring, and is the most effective way to determine if pigs are overheated.

Voluntary feed intake is also reduced during periods of heat stress. The digestion process involves an increase in heat production, and thus, reducing feed intake results in less internal body heat being produced – however, reduced feed intake also results in reduced animal performance and production.

Water consumption is increased as much as 6 times over normal during periods of high heat, allowing the animal to account for increased water loss due to respiration and increased urinary excretion.

Similar to feed intake, animal movement is decreased during hot weather in order to minimize heat production due to muscular contractions. Pigs will spread themselves out and lie apart, maximizing contact with concrete or metal flooring or areas with moisture in order to optimize heat transfer from the body. Presence of bedding material, such as straw, however, minimizes the ability to remove body heat, further increasing heat stress.

As noted in Table 1, the thermoneutral range (range of temperatures where animal is most comfortable) is affected not only by flooring type but also body weight, with larger animals not tolerating higher temperatures as well.

How can pork producers minimize the negative impact of hot weather on their animals?

Preparation and maintenance of cooling systems: Prior to extreme summer temps, cooling systems need to be checked to ensure proper function. Ensure thermostats, fans, air inlets, drip coolers, sprinklers, cool cells, and any other related equipment are operating correctly and are set for summer usage. Use of sprinklers along with fans can reduce the effective temperature in barns as long as the

sprinklers are set correctly – sprinklers that produce a very fine mist will increase humidity levels in the barn, reducing the effectiveness of minimizing heat transfer via evaporation and respiration, and therefore should be avoided. Similarly, cool cells will be much more effective at lower humidity levels, and therefore ventilation systems should be adjusted to ensure excess moisture is removed from buildings.

Adjust the feeding program: Since pigs will reduce their voluntary feed intake during periods of high temperatures, increase the nutritional density of the diet for growing pigs and lactating sows. Increasing the caloric density by including increased fat levels in the diet also reduces the amount of heat liberated by the pig when digesting the feed, thus additionally reducing the heat load. However, if other nutrient levels are not also increased accordingly, animal performance will still suffer due to deficiencies in the levels of some nutrients.

Modify procedures during load-out and transportation of pigs: Perhaps the most stressful time for pigs in periods of heat is during transportation. Fast pigs that are going to market 12 – 18 hours prior (remove feed, but not water) – this will decrease gut fill in the pigs during loading and transport, minimizing the heat of digestion while also reducing transport sickness. Provide extra space in transportation trailers by loading less pigs – air movement is the main method of cooling pigs during transportation, so allowing extra space for air movement around pigs is key along with keeping transportation vehicles/trailers in constant motion along with opening up all vents and slats. Also, try to avoid moving pigs during the heat of the day, and allow more time for loading of pigs. Pigs are much more apt to become fatigued during hot weather, and therefore additional time and patience is required to effectively load pigs while minimizing stress, both on the pig as well as the handler.

Table 1. Thermoneutral range of pigs as affected by body weight and flooring type

Pig wt	Straw (°F)	Solid concrete (°F)	Perforated metal (°F)	Slatted concrete (°F)
5 kg (11lb)	81 - 86	82 - 88	84 - 90	86 - 90
10kg (22lb)	68 - 75	72 - 79	75 - 82	77 – 82
20 kg (44 lb)	59 - 73	61 - 75	66 - 79	66 - 77
30 kg (66 lb)	55 - 73	57 - 75	64 - 75	63 – 77
90 kg (198 lb)	52 - 72	54 - 73	63 - 77	59 - 75