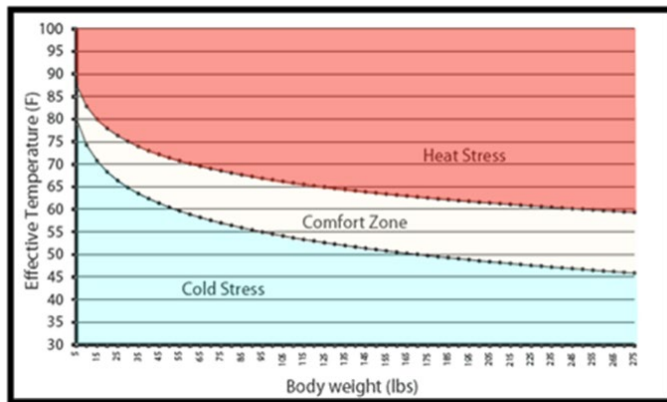


The day-to-day management of the pigs and the barn is the single-greatest factor in differentiating highly productive farms from others. If pigs from the same sow farm went to three different farms and were fed the same diets, each farm would still have different performance outcomes. This is due to differences in the environment and the stockmanship at each individual farm. With all other factors being equal, pigs are a product of their environment. Their health, growth and efficiency are dependent on the person taking care of them and the environment within the barn. Careful observation and a timely response can be the difference between a group of pigs meeting performance expectations or falling short.

Optimal Environment

In order to maintain growth and feed efficiency, it is important to ensure that pigs remain within their thermoneutral zone. Once a pig falls outside of that zone, they will become stressed, and setbacks in performance could be observed.



When pigs are kept at temperatures below their comfort zone, they will consume more feed to maintain their body temperature, resulting in decreased feed efficiency. Conversely, pigs housed at temperatures above their comfort zone will decrease their feed intake, and their daily gains will slow down as a result. In today's production systems, pigs are at a greater risk of heat stress than cold stress. Therefore, it is important to ensure that all fans, sprinklers, cool cells and other cooling equipment are maintained so they function properly during the hot summer months.

In conjunction with temperature, it is important that your barn is properly ventilated to provide pigs with an optimal environment. Even if the thermostat reading falls within the pig's comfort zone, it may not actually reflect the environment that they are experiencing.

Ventilation

The critical components of ventilation include:

- o Staying within the desired room temperatures
- o Considerations for health-challenged pigs (who require a 2–5-degree-warmer barn)
- o Humidity control (optimally, below 65%)
- o Warm and dry mats

The general recommendation is to maintain 2 cubic feet per minute (CFM)/pig at placement; however, in the case of health-challenged pigs, it may be necessary to remove air at a higher exhaustion rate to achieve less than 65% humidity.

- o Brooders should produce temperatures around 95°F directly beneath them. Pigs should remain warm, dry and comfortable.
- o To accomplish this, use properly functioning brooders and provide ample mat space (0.4 ft²/pig).
- o An illustration of warm and dry pigs with ample mat space is pictured at right.
- o If mats become wet or caked with feed or manure, flip the mats over to reestablish a dry, black surface that will effectively absorb heat.
- o Mat temperatures may need to extend beyond 95°F to achieve pig comfort.
- o Brooders should be in place and functional for 14 to 21 days, depending on pig comfort and the severity of the disease.
- o Brooders should be in place within intensive-care pens throughout the grueling period.



Effective temperature is a concept similar to wind chill and the heat index. For example, 60°F is a favorable temperature for a 125-lb. pig. However, 60°F combined with a high air speed (e.g., 100 ft/min) would be considered cold, and consequently, the pig would be diverting energy away from growth to maintain its body temperature. The chart below describes the effects of wind speed on temperature.

Air speed (ft/min)	Temperature adjustment
0	0
30	-7
90	-13
300	-18

The temperature within the barn needs to be adequately adjusted to account for the additional heat produced by the growing pig. For every 60–80 lbs. of gain, the pig will produce an additional 200 btu/hour of heat. Therefore, CFMs need to be properly adjusted to account for the increased heat production. Using the chart below, a 1,000-head barn averaging 100 lbs. in August would require 75,000 CFM. Conversely, if that same 1,000-head barn in August housed pigs weighing 250 lbs., the required CFM would be 120,000.

Recommended ventilation rates, CFM per pig			
Pig weight, lbs.	Minimum	Mild weather	Hot weather
12–30 lbs.	1.5–2	10	25
30–75 lbs.	3	15	45
75–150 lbs.	7	24	75
150–280 lbs.	10	35	120

Humidity is also an important indicator of proper ventilation. Simply put, humidity is the amount of water vapor in the air. During the winter months, humidity is lower due to cooler air having a lower water-holding capacity. Increasing ventilation rates when the outside temperature drops below the set point is recommended to decrease the humidity within the barn. However, during warmer months, when the outside temperature exceeds the set point, increasing the ventilation rates will not decrease the humidity within the barn. This is due to warm air having a higher water-holding capacity than cooler air. A general guideline is to maintain relative humidity levels between 50-65%. This level of humidity will decrease condensation and wet floors within the barn.

Ventilation is also a key player in keeping gases such as ammonia, hydrogen sulfide and carbon dioxide below the permitted concentrations. At high enough levels, these gases can be detrimental to animal and worker health and productivity. Outlined below are guidelines for the gases typically monitored in swine barns. It is important to note that readings should be taken at the pig level to most accurately reflect what the pig is experiencing.

Ammonia: 10 ppm

Carbon dioxide: 3,000 ppm

Hydrogen sulfide: 5 ppm

Pigs are very adaptable, and as their environment changes, they acclimate by diverting energy away from growth to other biological functions. This makes identifying possible environmental stressors more difficult since the pig may seem to be eating and growing at a normal rate. However, careful evaluation of the pigs and their surrounding environment will help identify potential health and growth problems before they arise.

Dust

The accumulation of dust can create a less-than-ideal environment and could also be a concern for workers. The use of fat or oils (1%) in swine diets can reduce the level of dust in the barns. Cleaning barns in between groups can also reduce dust accumulation. Many farms are using electrostatic particle ionization units, which work by emitting large amounts of negatively charged ions (some 10 million billion negative ions per second) into the air. These ions impart a negative charge to dust particles floating in the air, driving them to positively-charged barn surfaces, where they stick — just like metal filings adhering to a magnet. Now, dust may be collecting on the surface, but at least it is not free-floating in the air, affecting pigs' respiratory systems. Excessive dust accumulation on fan blades, louvers and inlets can greatly decrease the ventilation for a room.

Disinfectants

There is no single disinfectant that will work on every farm. It is important to select a disinfectant that has a label claim against the pathogen that you are trying to kill. Disinfectants are more effective on clean surfaces. It is important to apply the disinfectant according to the label directions. Allow the contact time recommended on the label (usually 10 minutes) to elapse. Dipping objects in disinfectant is not as effective as scrubbing or wiping an object with a disinfectant. Commonly used disinfectants include a phenolic disinfectant (One-Stroke Environ); a quaternary ammonia compound (Roccal-D Plus); a chlorine compound, sodium hypochlorite (household bleach); an oxidizing agent (Virkon S); and a quaternary ammonium/glutaraldehyde combination product (Synergize).