

AREAS OF CONCERN:

During growth, pigs produce various amounts of heat, gas and moisture which must be removed for a comfortable environment. To maximize performance, these components need to be removed without chilling the pig or adding excessive costs. Regardless of the size of the pig or stage of production, unpredictable seasonal weather changes can be a challenge to keep pigs warm, dry and draft-free.



SIGNS OF IMPROPER VENTILATION:

- 1 High gas odor
- 2 Water dripping from ceiling could indicate high humidity or improper insulation
- 3 Pigs huddling together – 3 or more pigs lying on top of each other
- 4 Wet floors with inconsistent manure pattern
- 5 Streaky tears from eyes
- 6 Excess dust
- 7 Little to no resistance or excessive resistance when opening door to room

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RECOMMENDED TEMPERATURE FOR SWINE BARN

Solid Sided Nursery without Brooders and Zone Heating

Average Pig Weight, Lbs. (kg)	Temperature Set Point, °F (°C)	
	Cold Weather	Hot Weather
12 (5.4)	88	86
15 (6.8)	85	85
20 (9.1)	82	81
25 (11.3)	79	77
50 (22.7)	73	71
75 (34.0)	67	66
100 (45.4)	63	62
200+ (90.7+)	58	58

Temperatures based on barn fully stocked with pigs.

Curtain Sided Wean-to-Finish Barn using Brooders and Zone Heating

Average Pig Weight, Lbs. (kg)	Temperature Set Point, °F (°C)	
	Cold Weather	Hot Weather
12 (5.4)	78	76
15 (6.8)	77	75
20 (9.1)	75	73
25 (11.3)	74	72
50 (22.7)	73	71
75 (34.0)	67	66
100 (45.4)	63	62
200+ (90.7+)	58	58

Temperatures based on barn full stocked with pigs with brooder providing a heat zone with a mat temperature at 95-90° F (35-32° C) for approximately 21 days post placement.

SEASONAL VENTILATION RATES FOR SWINE BARN

Pig Weights, lbs. (kg)	Ventilation Rates, CFM/hd		
	Cold Weather/Minimum	Mild Weather	Hot Weather
12 (5.4)	1.0	10	25
25 (11.3)	1.8	15	35
50 (22.7)	2.9	20	50
75 (34.0)	7	24	75
100 (45.4)	10	35	120
200+ (90.7+)	13	40	140

*Minimum ventilation may need to be adjusted if excess moisture and gas build up in the barn.

	Cold Weather/CFM/hd	Hot Weather/CFM/hd
Sow and Litter	20	500
Gestating Sow	12	150
Boars and Breeding Sows	14	300

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MANAGING SWINE BARNs FOR EFFICIENT VENTILATION

A solid knowledge of basic barn ventilation concepts, along with proper maintenance, is needed to ensure pig health and growth rates are maximized. While these may seem like daunting tasks to some, following these guidelines should help keep utility costs in check while providing healthy environments for pigs to thrive. Most often, the pig's body language can indicate when problems arise. One of the most common problems occurs when the barn labor adjusts the temperature and air speed for their comfort, not for the pigs'. Minimum ventilation rates should be calculated based on the number of pigs in the barn and the size of the stage one fan. A simple calculation for 2,400 newly weaned pigs is as follows: $2,400 \text{ hd} \times 1 \text{ CFM/pig} = 2,400 \text{ CFMs needed}$. If stage one minimum ventilation is programmed for using one 24-inch variable speed fan, then the controller would need to be set at 40% of maximum CFM output ($(2,400 \text{ CFM needed} \div 6,000 \text{ CFM max fan output}) \times 100$). Heaters should have proper offsets and differentials to prevent drastic high and low-temperature swings in the barn and waste propane. Lastly, temperature probes should be positioned 52 inches above the pig laying area and routinely checked for accuracy.

Ventilation must be properly maintained for the benefit of the pig and to encourage animal growth and production. The following are examples of troubleshooting areas to examine if the environment is not correct:



Make sure fans and louvers are clean. Dirty fan blades reduce CFM and energy efficiency.



Check for damaged fan cones. Damaged cones may reduce the fan CFM by 10-20%.



Check for leaks in inlets for uncontrolled air that may cause drafts.



Make sure soffits are clear of debris to prevent air restriction into the attic.



Record daily high/low temperatures to track barn environment.



Check and service heaters regularly and clean the dust out of the heating unit.



Make sure temperature probes are located where pigs cannot damage them and they can give an accurate assessment of the temperature at the pig level.



Check for leaks in inlets for uncontrolled air that may cause drafts. Insulation between curtain and bird netting.



Seal pit access openings and check that doors and windows fit tightly.



Tightly seal all fans that are not needed in cold temperature.

EXAMPLE OF CFM OUTPUT BY FAN SIZE:

Fan Size, ins	Maximum CFM Output
8	450
10	1,100
12	1,500
18	3,500
24	6,000
36	10,000
~50	20,000

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