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Evaporative cooling systems for swine

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Abstract

During heat stress swine must rely an evaporation as a mechanism for heat loss. Providing water via sprinklers, showers, and foggers is a practical method of reducing heat stress. It is imperative in any evaporative system that animals are permitted to dry, because the evaporation of water is fundamental to evaporative cooling. Ideally, hogs should be wetted and then given time to dry, followed by successive wetting and drying. Studies are under way to investigate various systems of wetting hogs to take maximum advantage of evaporative cooling.; Swine Day, Manhattan, KS, November 9, 1978

Keywords

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Evaporative Cooling Systems for Swine

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Progress Report

During heat stress swine must rely on evaporation as a mechanism for heat loss. Providing water via sprinklers, showers, and foggers is a practical method of reducing heat stress. It is imperative in any evaporative system that animals are permitted to dry, because the evaporation of water is fundamental to evaporative cooling. Ideally, hogs should be wetted and then given time to dry, followed by successive wetting and drying. Studies are under way to investigate various systems of wetting hogs to take maximum advantage of evaporative cooling.

We compared constant fogging with intermittent wetting by sprinklers and showers during a 42-day test involving 48 growing pigs weighing approximately 150 lb. Foggers, sprinklers, and showers had flow rates of 1.7, 2.5, and 7.2 gal per hour, respectively. All systems operated when dry bulb temperature exceeded 80 F. Pigs with no wetting served as controls. Mean daily maximum terperature was 91 F and mean daily minimum temperature was 68 F for the test period. Relative humidity averaged 40% measured at 4 p.m. daily. Results are shown in the following table.

	Control	Fogger	Shower	Sprinkler
Average daily gain (lb)	1.44^{a}	1.56^{ab}	1.49^{a}	1.74^{b}
Daily intake (lb)	5.88	5.85	6.65	7.08
Feed/gain	4.05	3.94	4.48	4.06

Lines with different subscripts are significantly different ($P<.05$).

This initial trial indicates that foggers and sprinklers increase average daily gain compared to that of controls and that sprinklers (1 min sprinkle, 29 min dry) tend to be superior ($P<.08$) to constant foggers. Further studies will be conducted during summer 1979 to evaluate evaporative cooling systems for swine.