



Pig pens to left were used to test effectiveness of overhead sprinklers for heat stress relief in tests at Davis.

SPRINKLING PIGS

*improves rate of gain
and feed conversion
in heat stress tests*

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Spray applications of only 0.09 gallons of water per hour per pig resulted in significant increases in rate of gain and improved feed conversion under the conditions of this test for heat stress relief.

WATER APPLIED as fog or spray, or available in wallows, has proven to be an effective and worthwhile means of relieving heat stress in pigs—even in the Sacramento area where summer nights are generally fairly cool. Spraying, or sprinkling pigs periodically and allowing them to dry out between wettings has advantages over the other two methods mentioned because wallows tend to become unsanitary, and because fogging cools a large quantity of air—of which only a small part contributes to improving animal heat loss. Tests reported here were designed to answer two questions: (1) above what temperature should sprayers be used, and (2) how frequently should sprayers be used during this time? The testing was done cooperatively by the departments of Agricultural Engineering and Animal Science and the U. S. Department of Agriculture at Davis in the summer of 1969.

The test was conducted from July 2 to September 10 (70 days) using five 8½-ft by 6-ft pens with slatted floors (see photo). One pen was left vacant between each test pen. With a double

feeder in each pen the floor space amounted to 7 sq ft per pig. Seven pigs were placed in each pen (four Durocs and three Yorkshire-Duroc crossbreds). A spray nozzle, delivering 0.63 gallons of water per minute was mounted about 6 ft above the floor and directed down, over the center of each of four pens. No shade was provided as the pens were located under the roof of the open-sided (facing west) barn.

Two of the pens were sprinkled for one minute when the temperature was above 70° F, one each 30 minutes and the other each hour. The other two pens were sprinkled for one minute when the temperature was above 85° F, one every 30 minutes and the other every hour. One minute of sprinkler operation was sufficient to wet all pigs to the point where water was starting to run off them.

The pigs were fed as much as they wanted of a pelleted ration consisting of natural feeds (chiefly barley) supplemented with adequate zinc and vitamins A and D. Weight gains and feed consumption were recorded at 14-day intervals, but the results shown in the table are for the entire 70-day period.

Air temperatures during the test period were near the long-term average for the area, with a mean maximum of 96.5° F, the mean minimum 55.5° and the mean 75° F. Temperatures averaged 14.9 hours per day above 70° and 7.4 hours above 85° F.

Pigs in all sprinkled treatments significantly outgained those in control pens. Sprinkling at 30-minute intervals did not give any better results than at 60 minutes. Operating sprinklers during the period when the temperature was above 70° did seem to offer advantage, particularly with the 60-minute interval. Spray application of only 0.09 gallons of water per hour per pig resulted in a significant increase in rate of gain and improvement in feed conversion under the conditions of this test. Even more beneficial results might be expected under conditions of greater heat stress.

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EFFECTS OF SPRINKLER OPERATION ON RATE OF GAIN, FEED CONSUMPTION, AND FINAL WEIGHT FOR PIGS IN HEAT STRESS TRIALS AT DAVIS, JULY 2-SEPTEMBER 10, 1969

	Control Pen	Sprinkler operation one minute at 30- or 60-minute intervals at temperatures above 85° or 70° F.			
		85°/30	85°/60	70°/30	70°/60
Av. init. wt., lb	97.1	101.4	102.1	99.8	95.1
Av. final wt., lb	187.8	205.8	211.1	212.2	214.7
Gain, lb	90.7 ^a	104.4 ^b	109.0 ^b	112.4 ^{b,c}	119.6 ^c
ADG, lb	1.30	1.49	1.56	1.61	1.71
Lb feed/lb gain	4.34	4.59	4.49	4.45	3.84

^{a, b, c} Differences are significant (P < 0.05) if comparable means do not have common superscript.