DRIP COOLING OF LACTATING SOWS

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Summary

Twenty eight sows and gilts were used to evaluate the value of drip sprinkling to reduce heat stress in lactating sows. Respiration rates for sprinkled sows were significantly lower than those of controls. Daily feed intake was significantly higher for wetted sows versus the unwetted controls. No differences were observed between groups on number of pigs born alive, dead, number weaned or pig birth weight.

Introduction

Heat stress in lactating sows is a serious problem for many swine producers. When ambient temperature approaches or exceeds normal skin temperature of the sow, the animal's ability to withstand heat stress depends on her ability to maximize evaporative heat loss. In addition, in order to reduce heat production, the sow will decrease feed consumption. Reduction of feed intake normally leads to increased weight loss and may affect milk production and interval to rebreeding.

During exposure to heat stress there are increased energy demands for panting and other methods of heat loss. Lactation also places an extremely high energy demand on the sow.

Although swine are relatively poor sweaters, wetting the skin surface can greatly increase evaporative heat loss and consquently reduce heat stress. A reduction of heat stress and its effect on appetite should allow more energy for milk production and maintenance of body weight.

Procedure

During May, 1983, twenty eight gilts and second parity sows were alloted by parity to one of two treatments: 1) control or 2) drip wetted. The sows were wetted with a commercially available drip irrigation system sold for horticultural applications. A 1/2" polyethylene pipeline was installed over the top of the farrowing crates. Drippers were centered over the sows to wet their neck and shoulder area, as shown in Figure 1.

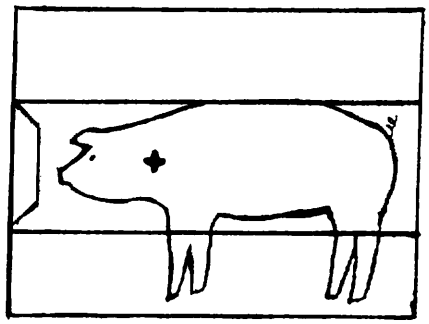

Fig. 1. Top view of sow lying in farrowing crate with dripper location shown by +.

The system was thermostatically controlled to operate when temperatures exceeded 85°F. Each nozzle or emmitter produced a steady drip of water at a flow rate of approximately .8 gallon/hr.

Sow feed intake, weight change, and respiration rate were measured weekly. Temperature of the farrowing house ranged from 81°F to 94°F and relative humidity averaged 68 percent.

Table 1. Effect of Wetting on Sow Performance

Item	Treatment	
	Drip	Control
Respiration Rate: (breaths per minute)		
Week 1[a]	26.3	63.1
Week 2[a]	29.4	61.7
Week 3[a]	29.9	66.1
Avg. Resp. rate of 3 weeks[a]	28.5	63.6
Litter Effect:		
No. born live	11.0	10.8
No. dead	0.6	1.4
No. weaned	10.6	10.1
Pig wean weight	123.92 lb	112.23 lb
Sow Effect:		
Weight loss during lactation[a]	8.36 lb	38.53 lb
Daily feed intake (weight/day) during entire lactation[a]	12.66 lb	10.55 lb
Days to return of estrus following weaning	5.0	5.0

[a]means separated by Duncan's Multiple Range test with $P<0.05$.
All significant differences are underlined.

Results

A summary of the results of the drip-cooling test are presented in Table 1. The following results are most significant:

1. Wetted sows had lower respiration rates ($P<0.05$) and appeared more comfortable than the controls. Respiration rate was correlated highly with weight loss and feed intake.

2. No differences were observed between groups on number of pigs born live or dead, number weaned, or birth weight. The difference of average pig weight at weaning was insignificant. However, the combined effect of slightly more pigs weaned from the drip-cooled sows and slightly greater mean weight at weaning produced a signficant difference in the total litter weight at weaning. Litters from the wetted sows were (11.69 lb) heavier than those from the control sows at weaning.

3. The drip-cooled sows lost more (30.17 lb) than the wetted sows for the entire lactation period.

4. Daily feed intake of the wetted sows increased ($P<0.05$) 2.11 lb over the control sows.

5. There was no difference in returning to estrus following weaning.

Although no measurements were taken, the wetted sows appeared to move less in the crates, played less with waterers and were quieter in general. There were no noticeable differences in health problems (scours, etc.) between the control and the wetted group.