PERFORMANCE AND CARCASS QUALITY OF GROWING-FINISHING PIGS SUBMITTED TO REDUCED NOCTURNAL TEMPERATURE

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Reduced temperature set point would yield a net return of 80¢ per pig during summer time.

Background

During summer months, elevated barn temperature reduces pig growth rate by decreasing feed intake. This negative impact on pig performance lengthens the growth period and reduces the productivity level of a swine barn. On the Canadian Prairies, summer days can be very hot but nights are generally cool. Based on previous experiment results, it was suggested that a reduced temperature setpoint during the summer could sustain pig performance by perhaps modifying pig eating behavior and stimulating the average daily feed intake.

The trials

Two trials, a pilot study and a large scale experiment, were conducted over two summers to evaluate the impact of a reduced nocturnal temperature strategy on the performance and carcass quality of growing-finishing pigs over summer months. Typical rooms had a temperature setpoint that is generally used in commercial barns while the temperature setpoint for reduced nocturnal temperature (RNT) rooms was lowered by 6°C.

The results

In Saskatchewan, a reduced temperature setpoint resulted in a lower nocturnal room temperature (1.6°C cooler at night over eight weeks). No influence on room daytime temperature could be measured. The average daily temperature fluctuation in RNT rooms was increased by 2.1°C. The temperature pattern in typical and RNT rooms for three days of experiment is presented on Fig. 1. The lower nocturnal temperature also resulted in a higher relative humidity (+3 per cent) and lower carbon dioxide and ammonia concentrations.

During trial 1, pig average daily gain (ADG) in the RNT room was increased by 5.2 per cent as showed in Table I. For trial 2, feed intake was 3.2 per cent higher in RNT rooms which increased ADG by 2.1 per cent in average over eight weeks as presented in table II. The ADG increase averaged 3.6 per cent during the last four weeks of trial 2. However, pig performance was not statistically increased by the RNT ($P>0.05$). No statistical difference was found in terms of feed conversion and back fat thickness ($P>0.05$).

The benefits

The results suggest that even without statistical significance, the reduced temperature setpoint strategy would provide a net return of 0.80 CAN$/pig sold for pigs raised over the summer period in Saskatchewan. Both trials showed that healthy growing-finishing pigs are not negatively affected by a large daily temperature fluctuation (up to 13°C) as long as this fluctuation is progressively achieved through the day-night outside temperature fluctuation. Based on this research, it is also suggested that summer temperature setpoints for growing-finishing pigs should not be increased to reduce daily temperature fluctuations.

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Table I Pig performance and carcass quality for the pilot study (July 11th to September 4th, 1997)

Sex	ADG* (kg/day)		TFI* (kg)		FC* (kg/kg)		Carcass lean (RT Ultra sound, %)	
	Typical	RNT	Typical	RNT	Typical	RNT	Typical	RNT
Male	0.905	0.953	10330	10753	2.950	2.981	40.1	39.2
Female	0.855	0.898	9059	9714	2.834	2.771	40.7	40.5
Average	0.880	0.926	9695	10234	2.892	2.876	40.4	39.9

***ADG: average daily gain, TFI: total feed intake, FC: feed conversion, RT Ultra sound: real time ultra sound.**

Table II Pig performance and carcass quality from the large scale experiment (July 24th to September 17th, 1998)

Sex	ADG (kg/day)		ADFI* (kg/day)		FC (kg/kg)		BF Thickness* (mm)	
	Typical	RNT	Typical	RNT	Typical	RNT	Typical	RNT
Male	0.874	0.900	2.301	2.366	2.692	2.682	11.4	11.7
Female	0.833	0.844	2.136	2.212	2.628	2.668	10.5	11.2
Average	0.854	0.872	2.219	2.289	2.660	2.675	11.0a	11.5a

***ADFI: average daily feed intake, BF thickness: back fat thickness.**
†Males were statistically different than females (P<0.05)
Averages followed by the same letter on a same row are not statistically different (P>0.05).

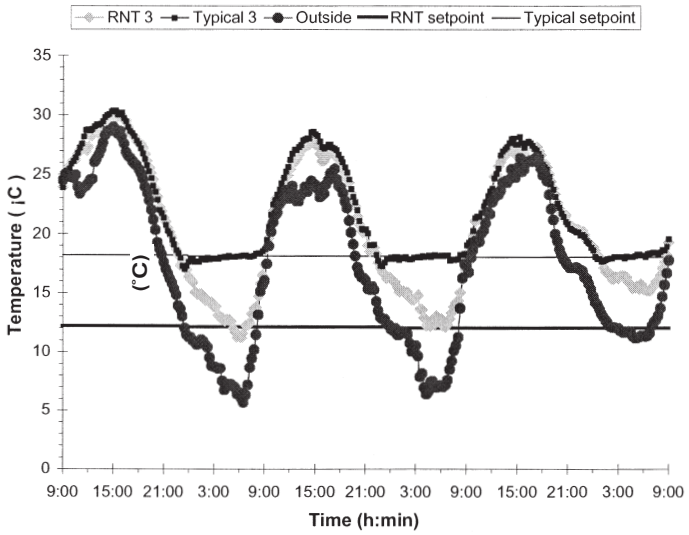

Figure 1. Temperature pattern in typical and RNT rooms from September 4th to 7th, 1998.