Neither Photoperiod in the Farrowing Room nor Time of Weaning Affect Nursery Performance

J. Shea, L. Eastwood and A.D. Beaulieu

Laura Eastwood

Denise Beaulieu

SUMMARY

Weaning, which requires adapting to a new feed source and environment, may result in anorexia and reduced growth in the initial 24 to 48 hours in the nursery. This study was designed to determine if altering the photoperiod in the farrowing room and/or if weaning at the end of the light or the dark cycle would affect performance in the nursery. Pigs were given either a 16 h light:8 h dark (16L:8D) or a 8L:16D photoperiod while in the farrowing room, and weaned either at the end of the dark or the light cycle.

Neither photoperiod in the farrowing room, nor time of weaning affected growth rate in the nursery and nursery exit weights were similar among treatments.

Pigs weaned at the end of the light period had more feeder visits in the first 24 hours post-weaning, however this did not result in higher feed intake post-weaning. Neither photoperiod nor time of weaning had an effect on the percentage of pigs (34) identified as "eaters" during the initial 24 hour in the nursery. Overall, photoperiod manipulation in the farrowing room did not benefit post-weaning growth rates

Interestingly, pigs exhibiting evidence of phase 1 consumption immediately post-weaning were the lighter pigs and they had higher ADG immediately post-weaning than those identified as non-eaters.

INTRODUCTION

Successful pork production is highly dependent on sow productivity. The number of pigs born alive per sow per year is the parameter commonly cited, however improvements are not realized if pre-weaning mortality increases or growth rate is not maintained post-weaning. A piglet experiences social, nutritional and immunological stressors at weaning. They are separated from the sow, moved to a new environment, mixed with non-littermates and expected to begin consumption of a novel diet.

Hours of light, or photoperiod, can affect performance through behavioural or endocrine (melatonin) mechanisms. The following study focused on the behavioural aspects of the photoperiod. In a previous experiment at PSCI we observed a marked diurnal pattern in nursery feeding behaviour post-weaning. Despite continuous lighting, feeder approaches declined markedly 8 hours post weaning, remained low for 8 hours, then increased again to the previous level. Thus, there was an 8 hour period when the feeder was under utilized. We hypothesized that the time of weaning and the photoperiod would alter this behavior, and all pigs would take advantage of the availability of feed duirng the first 24 hours post-weaning.

The objective of this experiment was to determine if weaning at the end of a dark or light cycle would affect subsequent performance in the nursery and if this effect depended on photoperiod in the farrowing room.

"Neither photoperiod in the farrowing room, nor time of weaning affected growth rate in the nursery."

MATERIALS AND METHODS

Treatments consisted of 2 photoperiods in the farrowing room (16L:8D or 8L:16D) and time of weaning (end of the light or dark cycle) arranged as a 2 x 2 factorial. Each farrowing room was one photoperiod/time of weaning treatment. The experiment used 12 farrowing rooms, for a total of 157 sows and their litters (~1755 piglets).

Lighting, including that coming from heat lamps was standardized across farrowing rooms. Windows were covered to block external light. Light emissions were quantified at sow level, and averaged approximately 12 lux with the lights off and 43 lux with lights on. Sows were weighed on day 1 following farrowing and at weaning. Pigs were weighed at 3 days of age, one week prior to weaning and at weaning (day 26 ± 2). All pigs were weaned into nurseries maintained on a 16L:8D lighting regime at the beginning of a dark cycle.

At weaning, pigs were divided among treatments and sorted so that all pens within a treatment had equal body weight in the nursery. For the first 24 hours, the phase 1 diet was spiked with pellets containing ferric oxide (red dye which can be visualized in the feces). Anal swabs were taken 48 hours into the nursery period to see which pigs ate in the first 24 hours. Pigs and feeders were weighed on day 0, 7, 14 and nursery exit (8 weeks of age). Four pens were selected and still photos were taken every 5 minutes for the first 24 hours to monitor behaviour and feeder visits (Figure 1).

RESULTS AND DISCUSSION

Growth rate in the nursery, and nursery exit weights were unaffected by treatment (Table 1). During the first week in the nursery, we observed a photoperiod by time of weaning interaction for feed intake (Figure 2). The lowest feed intakes were seen with pigs who were on the 16L:8D photoperiod and weaned at the end of the dark cycle. This effect, however, was not extended beyond the first week in the nursery.

Pigs weaned at the end of the light cycle averaged more feeder approaches in the first 24 hours post-weaning than those weaned at the end of a dark cycle, regardless of photoperiod. This however, did not affect feed intake. There was no evidence that treatment affected aggression.

The lighter weight piglets at weaning were more inclined to eat during the initial 24 to 36 hours in the nursery, had increased growth rates during week one in the nursery and nursery exit weights were similar (Table 2).

CONCLUSION

Photoperiod manipulation in the farrowing room did not benefit post-weaning growth rates. Piglets weaned at the end of the light period had more feeder visits in the first 24 hours post-weaning. This however, did not translate into greater feed intake post-weaning.

ACKNOWLEDGEMENTS

We are grateful for support for this project from the Saskatchewan Agriculture Development Fund. Program funding for Prairie Swine Centre, Inc. from Sask Pork, the Manitoba Pork Council, Alberta Pork, and Ontario Pork is gratefully acknowledged.

Figure 1. Still photos used to monitor piglet behaviour during a light or dark period.

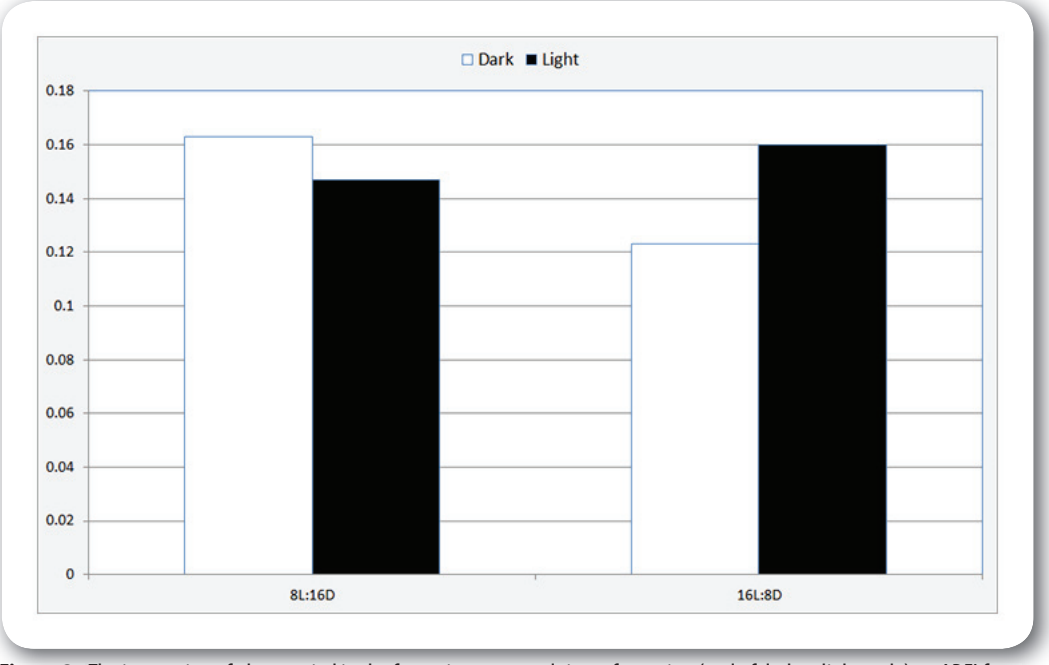

Figure 2. The interaction of photoperiod in the farrowing room and time of weaning (end of dark or light cycle) on ADFI from weaning to day 7 (SEM=0.001, P =0.06).

Table 1. Effects of photoperiod in the farrowing room, and the timing of weaning relative to photoperiod on the post-weaning growth performance of piglets weaned at 26 days of age

Item	Farrowing photoperiod (P)		Time of weaning (T)			
	8L/16D	16L/8D	End of dark phase	End of light phase	SEM	P value
n, piglets	887	868	837	918		
Age at weaning, d	24.9	25.6	25.6	24.9		
Age at nursery exit, d	54.2	54.9	54.4	54.7		
Piglet body-weight, kg						
Weaning,	7.42	7.65	7.36	7.71	0.056	NS
Nursery, d7	8.58	8.67	8.46	8.78	0.063	PxT
Nursery, d14	10.96	10.85	10.78	11.04	0.136	NS
Nursery exit, d56	22.04	19.79	19.31	22.53	1.734	NS
Average daily gain in the nursery, kg						
Weaning to d7	0.17	0.15	0.16	0.16	0.004	NS
Day 7 to 14	0.34	0.31	0.33	0.32	0.016	NS
Day 14 to 56 (exit)	0.74	0.59	0.57	0.77	0.116	NS
Weaning to exit	0.50	0.41	0.41	0.50	0.060	NS
Average daily feed intake in the nursery, kg						
Weaning to d7	0.16	0.14	0.15	0.14	0.001	P, T, PxT[1]
Day 7 to 14	0.35	0.37	0.34	0.37	0.002	NS
Day 14 to 56 (exit)	0.71	0.77	0.72	0.76	0.010	NS
Weaning to exit	0.51	0.54	0.52	0.53	0.015	NS

[1]PxT, P = 0.06.

Table 2. Performance of piglets categorized as eaters or non-eaters[1]

	Post-weaning			
	Eater	Non-eater	SEM	P value
Body weight, kg				
Birth	1.52	1.53	0.015	0.92
Weaning	7.28	7.62	0.070	<0.01
Day 7, post-weaning	8.58	8.62	0.070	0.69
Nursery exit, d56 post-weaning	19.64	21.02	1.950	0.56
Average daily gain, kg				
Weaning to d7	0.187	0.141	0.004	<0.01
Weaning to nursery exit	0.419	0.456	0.067	0.67
Average daily feed intake, kg				
Weaning to d7	0.154	0.149	0.001	<0.01
Weaning to nursery exit	0.502	0.519	0.002	<0.01

[1]Phase 1 diet contained ferric oxide pellets for 24 h post-weaning. Piglets categorized as an eater or non-eater based on anal swabs taken at 48h post-weaning.