

Determining Effective Enrichments for Group Housed Sows



Swine Innovation Porc

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SUMMARY

Providing enrichment involves making changes to the environment that are intended to increase the range of normal behaviours and improve the biological functioning and well-being of animals. Enrichment in group housing systems has the potential to significantly improve animal welfare by reducing aggression and injuries, stimulating exercise and the expression of species specific behaviours. However, when one enrichment is used continuously, habituation results and the enrichment can become less effective.

Initial behavioural results indicate that regardless of the enrichment treatment provided, sows spent similar amounts of time in enriched areas of the pen. Sows spent more time contacting and near the enrichment when materials were rotated than constant. Sows in the ROTATE treatment spent the most time within 1 metre of the enrichments on day 10 when straw was provided.

INTRODUCTION

Although pigs are highly motivated to root and explore their environment, the modern production environment provides few outlets for these behaviours. Straw has been demonstrated to be one of the most effective forms of enrichment for pigs; however, straw provision is often not a viable option for producers operating bedding-free systems with liquid manure management. In Canada, the provision of enrichment is now required as part of the Code of Practice for the Care and Handling of Pigs, however, there is a distinct lack of effective environmental enrichment options for sows in slatted concrete pens.

The current project proposes to go beyond a simple examination of different objects and their use by sows. Methods were explored for maintaining novelty and increasing the value of enrichments by manipulating the way that enrichments are presented. The effectiveness of regular rotation of enrichments to maintain novelty were studied, as well as the delivery of new enrichments with an associated auditory stimulus, which is hypothesized to increase the value of enrichment. The use of enrichments by dominant and subordinate individuals will also be examined to determine differences based on social status within the group.

“When enrichment is rotated sows spent more time near and interacting with the enrichments.”

MATERIALS AND METHODS

Sow housing

Eight groups of 28 ±2 multiparous sows and gilts were housed in a T-shaped free-access gestation pen at 5 to 6 weeks gestation (sows were mixed for a week or more before commencing the trial). Sows were allowed to freely enter or exit the feeding stalls during the study. Each treatment lasted 12 days, with four treatments rotated over a period of eight weeks (ending at 14 weeks gestation).

Treatments included:

1. Constant provision of a single enrichment- wood on chain 4 per pen (CONST),
2. Rotation of three enrichments- rope, straw, wood on chain, (ROTATE),
3. Rotation of three enrichments with an associative stimulus i.e. bell rung immediately before adding each enrichment (STIM),
4. No enrichment, acting as a Control group (CONTROL).



Sows at the Prairie Swine Centre interacting with the block of wood enrichment.

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Each treatment lasted 12 days, with the four treatments provided to each group in randomized order over a period of eight weeks. For ROTATE and STIM treatments new enrichments were provided 3x per week, including 1) cotton ropes 2) straw (300 g per sow), and 3) wooden block on chain. The same order of presentation in ROTATE and STIM treatments was kept throughout the study. Object durability was monitored throughout the study, and materials were replaced as needed.

RESULTS AND DISCUSSION

An initial analysis of the first two replicates showed that approximately 2% of sows use the enrichment at any one time, and the percentage of sows near enrichments was greatest in the Rotate and Stimulus treatments (Table 1). This suggests that these treatments were effective at increasing sow interest.

Enrichment use varied according to day of treatment with more sows remaining near enrichments on day 10 when straw was provided to Stimulus and Rotation groups (Figure 1). Straw was included in the Stimulus and Rotation treatments as a positive control, and had a clear effect on sows' interaction with enrichment.

There was no difference in the postures of sows among various treatments as seen in Table 2. However, standing behavior tended to be greater in the Rotate and Stimulus treatments compared to Constant and Control ($P=0.071$), suggesting that sows were more active when given the Rotate and Stimulus. The wood on chain enrichment showed greater durability than rope enrichment.

CONCLUSION

It was concluded that when enrichment was rotated (Rotation and Stimulus treatments) sows spent more time near enrichments and were more active than when Constant enrichment or Control treatments were provided. Based on this initial analysis the sound stimulus appeared to have no significant effect. Although the straw enrichment produced the greatest response, sows also made use of rope and wood on chain enrichments, and no adverse effects were found for sows or manure management indicating their suitability as enrichment materials for group-housed sows.

Table 1. Mean percentage of sows near or in contact with the enriched area of the pen.

Behavior	Treatments				SEM ±	P-Value
	Rotation	Stimulus	Constant	SEM ±		
Contacting enrichment (%)	2.21	1.86	0.73	0.292	0.118	
<1M from enrichment (%)	4.23 a	2.61 ab	0.65 b	0.301	0.043	
>1M from enrichment (%)	10.58	9.97	12.09	0.262	0.06	

Table 2. Effects of enrichment treatment on the postures of sows. Mean percentage of sows in each posture.

Postures	Treatments				SEM ±	P-Value
	Rotation	Stimulus	Constant	Control		
Laying	2.53	2.35	2.38	2.51	0.131	0.701
Sitting	1.85	1.09	1.02	1.49	0.159	0.118
Standing	1.37	1.23	0.8	0.9	0.153	0.071

ACKNOWLEDGEMENTS

Project funding provided by Swine Innovation Porc. The authors would also like to acknowledge the strategic program funding provided by Sask Pork, Alberta Pork, Ontario Pork, the Manitoba Pork Council and the Saskatchewan Agriculture Development Fund. In addition, we also wish to acknowledge the support of the production and research technicians at Prairie Swine Centre that make it possible to conduct this research.

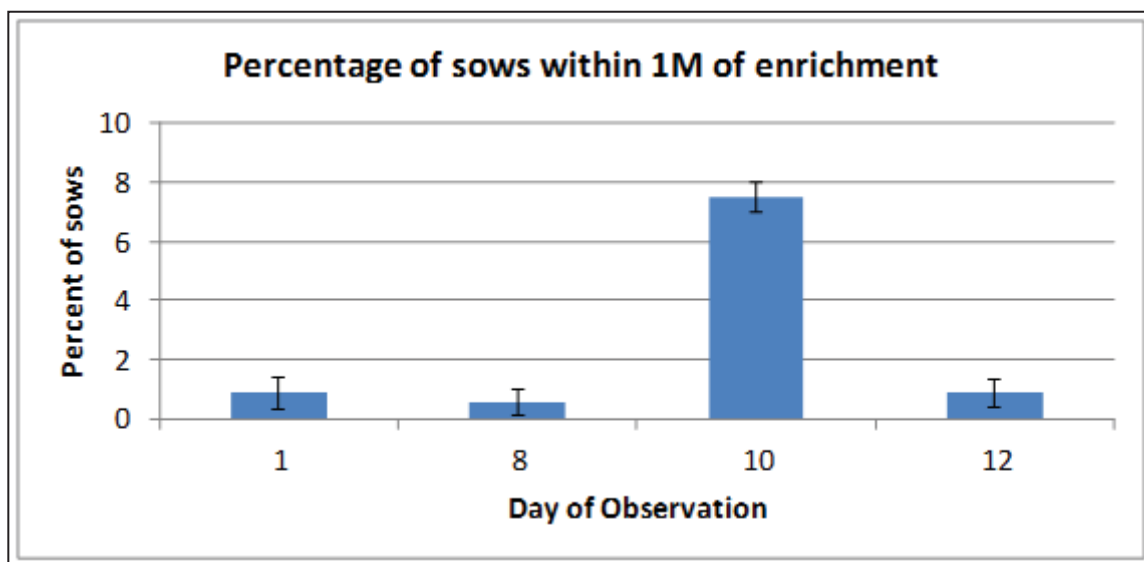


Figure 1. Mean percentage of sows within 1M of enrichment on each day of observation.