

Making Cents of Enrichment



K.M. Engele
Prairie Swine Centre

Jennifer Brown, PhD,
Research Scientist -
Prairie Swine Centre

What would you think if I told you installing enrichment would improve the financial position of your operation? Enrichment seems to be one of those things that can be easily overlooked. The National Farm Animal Care Council's 2014 update to the Canadian Code of Practice for the Care and Handling of Pigs states that all pigs must have "multiple forms of enrichment that aim to improve the welfare of the animals through the enhancement of their physical and social environments." While implementing enrichment on-farm is simple in nature, the proper selection, installation and maintenance of enrichments can have a positive impact to the bottom line of your operation. The lack of enrichment is known to result in more problematic behaviours such as tail-biting and belly-nosing and there is a need for practical and cost-effective solutions that producers can implement.

Why is it important?

Overall, the purpose of enrichment is to improve the living conditions of pigs, by encouraging the expression of a wider range of normal pig behaviours. From a practical viewpoint, it is providing objects or materials for proper investigation and manipulation in order to keep pigs occupied to prevent future harmful behaviours. As defined by the Code, enrichment is a way of changing the environment of pigs to their benefit.

Benefits of Enrichment?

Why worry about enrichment? The overall goal of enrichment is not to make more work for producers. Rather the goal is to improve the environment of the pig, in a manner where producers also receive numerous benefits. Goals of incorporating enrichment include:

- Reduce the frequency of abnormal behaviour (tail biting, biting, aggression)
- Increase the pigs' ability to deal with challenges in a much more normal way
- Broaden the range of behaviours expressed

- Improve animal performances (feed intake, average daily gain (ADG) and feed conversion ratio (FCR))
- Boost positive use of space
- Reduce stress in the animals

Results from a recent project at Prairie Swine Centre showed that piglets given enrichment before weaning showed less pen-mate manipulation (tail-biting, ear-biting, belly-nosing, etc.) and tended to fight less at weaning than the other pigs. This is important because weaning is stressful for piglets, so anything that can help to reduce weaning stress has the potential to benefit their health, welfare, and productivity throughout the nursery and beyond. Similarly, piglets provided enrichment only in the nursery had fewer head and shoulder lesions at four weeks post-weaning than the other groups, indicating that they fought less towards the end of the nursery phase. Additionally, pigs given enrichment spent more time exploring their pens at three weeks post-weaning, indicating that they were more engaged with their surroundings. Pigs enriched post-weaning also showed reduced fear of humans, which has implications for both welfare and ease of handling.

How well are we doing?

A project funded by Swine Innovation Porc (2018) examined the auditing of best management practices on farms across Canada, with enrichment being one of the parameters measured. Based on audit data, providing enrichment in the nursery and finishing are areas that require additional attention from pork producers. As seen in Figure 1, only 11 % of farms audited incorporated enrichment into nursery facilities, with chains being the most common form of enrichment. When looking at finishing facilities, the adoption of enrichment was higher than in nursery,

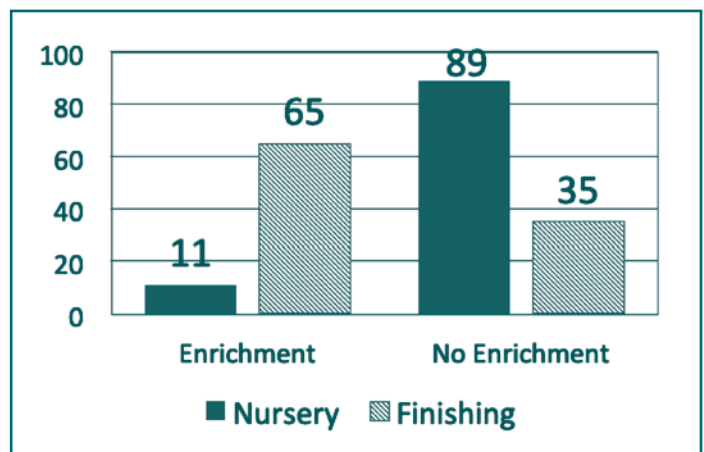


Figure 1. Estimated rates of on-farm adoption of enrichment on pork production facilities across Canada

with 65% of farms using some type of enrichment in finisher barns. Chains were again the most common form of enrichment (70 %) followed by wood (30 %).

According to the Code of Practice for the Care and Handling of Pigs (NFACC, 2014) pigs must be provided with multiple forms of enrichment that aim to improve the welfare of the animals through the enhancement of their physical and social environments. The incorporation of enrichment into individual facilities is unique to each operation. Support tools regarding enrichment materials are available in Appendix H of the Code, with different types of enrichment grouped into categories along with the advantages and disadvantages of each type. The Six Ss - Simple Criteria for Choosing Enrichment for Pigs As outlined in Appendix H (page 54) of the Code of Practice there are six criteria to consider when choosing enrichment for your operation. Considerations could include the follows aspects: SIMPLE, SAFE, SANITARY, SITE, SOFT, & SUSPENDED. Figure 2 (below) provides more detail for each of these considerations.

Cost of Enrichment

There are several options available for producers to enrich the environment of pigs, some being more expensive than other options. However, reusing materials or objects already available on the farm can help to keep costs in check and maintain their effectiveness. It is important to hold pigs' interest, and this means changing the enrichment items on a regular basis.

Like anything else, we always have a choice on how much we decide to spend on any given investment. This is no different when it comes to deciding on our choice of enrichment. Lets take the example of installing a chain, with cotton rope attached, in a finishing room containing 12 pens, 260 pigs, and a 16-week finishing period. Based on the assumptions listed below producers would assume a one time annualized cost of \$.65/hog marketed.

Installation Cost

- Chain, mounting hardware - \$40/pen
- Labour (3 hours, \$25/hour, 12 pens) - \$6.25/pen
- Total - \$46.25/pen or \$555/room

Room Throughput

- 260 pigs/room
- 3.25 turns/year (based on 16 week finishing)
- 845 pigs/year

One time annualized cost = \$0.65/pig

What happens if we take another approach to assessing this economic value? Assume that a market hog is worth \$170. To achieve payback on our enrichment investment of \$0.65/pig would represent 3.26 pigs (\$555 / \$170) or 0.4% (3.26 / 845) of the hogs marketed through that room annually. In other words we would need to find this value in order to make installation of enrichment economically worthwhile.

The benefits could be seen in a number of ways, perhaps we have less tail-biting and subsequently see a reduction in the number of mortalities, condemnations, or even amount of trim deducted at the packing plant. The point being, it takes only a very small change in these figures to see a positive economic



The Six Ss: Simple Criteria for Choosing Enrichment for Pigs

The Six Ss (41)¹

SAFE

- No sharp edges
- No tires
- No poisonous wood or wood that may have been preserved, or ant other toxic material
- No staples of fixings in wood
- No materials that may be toxic to pigs
- Limbs or other body parts cannot become trapped
- if the enrichment can be broken or dismantled by the animals, the fragments must not pose a safety risk
- The enrichment should not be able to be used to injure pen-mates or damage the enclosure

SANITARY

- Materials should not be fouled
- Materials should be easily cleaned or sterilized to prevent disease transmission

SOFT

- For pig to slowly destroy the object, it must be malleable (adds to the novelty factor)

SIMPLE

- Anything too complex can cause frustration and could lead to vice
- A number of simple items is better than one complex item, and allows more pigs to gain access at one time

SITE

- Do not site toys over lying, drinking or feeding areas
- Dunging areas prove to be the optimum position
- Switch sites regularly to help maintain novelty

SUSPENDED

- Provides extended novelty factor
- Avoids fouling
- Allows more pigs to gain access to the toy if it is suspended in a central location

All enrichment objects must meet requirements contained in *National Swine Farm-Level Biosecurity Standard*, and the section on Biosecurity in QOA® for Canadian Hog Producers, Reders to AppendixO — *Resources for Further Information*.

¹ Adapted from *Environment Enrichment for Pigs – Providing objects or substrates for proper investigation and manipulation - keeping pigs occupied in non-harmful behaviour (refer to Cited References)*. Additional text from *Guide for the care and Use of Agricultural Animals in research and teaching (refer to Cited References)*

CODE AND PRACTICE FOR THE CARE AND HANDLING OF PIGS - 2014

Figure 2. The Six Ss - Simple Criteria for Choosing Enrichment for Pigs

benefit from enrichment. And if we assume that the benefits accrue over a four-year period rather than in a single year - installing enrichment looks even more economically viable, as we only need to find full value for one pig per year. Which seems easy to do given the wealth of research showing benefits of enrichment.

Conclusion

There is no denying that enrichment for pigs has been slow to catch on with pork producers. Besides the cost of materials and the time needed to install, clean or repair enrichments, producers may ask, "what's the big deal about pig toys?" However, there is now an impressive amount of research that providing enrichment to pigs results in benefits from reduced aggression, fewer damaging behaviors, and increased growth. We can also see that installing enrichment is an economically viable strategy for your operation.

