



Environmental enrichment for pigs

The use of different environmental enrichment options to prevent tail-biting in pigs is being investigated by **TEAGASC** researchers.

Pigs are highly motivated to perform exploratory behaviours. In commercial facilities these behaviours are often directed towards other pigs, particularly in times of stress. This results in tail-biting, an abnormal behaviour that is one of the most serious health, welfare and production problems in the pig industry. The consequences for pigs include pain, injury, infection and isolation, and for producers include lighter pigs, carcass condemnations, treatment costs, and additional labour and space requirements. Provision of adequate environmental enrichment not only reduces the risk of tail-biting but is also a legal requirement under current EU legislation (Council Directive 2008/120/EC).

In March 2016, the European Commission issued a recommendation regarding management of tail-biting in pigs, clarifying that enrichment materials should be edible, chewable, investigable, and manipulable, and should sustain the interest of the pigs (Commission Recommendation 2016/336).

Optimal enrichment materials (e.g., straw, hay, silage) possess all these characteristics, and are provided in the form of bedding. Irish pig production systems are almost all fully slatted, however, so these options are not possible. In fully slatted systems, alternative 'sub-optimal' materials, which conform to a subset of these characteristics (e.g., wood, ropes, compressed straw), are permitted, ideally with an optimal material provided in a rack. An ideal enrichment material should not only maintain or improve pig welfare, but should also improve the economics of the production system, and be practical to employ. We are carrying out the first research programme in Ireland aiming to identify commercially feasible enrichment options for pigs in fully slatted systems.

Producer survey

We carried out a survey (n = 58 producers; 90 to 3,000 sows/unit) to determine producer attitudes to tail-biting and enrichment. All respondents commented on the sporadic, unpredictable nature of tail-biting outbreaks, and the fact that there was no definite solution when it does occur. There was no correlation between herd size and the frequency of outbreaks, levels considered acceptable or perceived seriousness of tail- or ear-biting. When asked about an acceptable level of tail-biting, 82% of respondents stated that less than 2% of pigs should ever be affected. In the preceding year, 96% of respondents had observed tail-biting on their farm, and this occurred during all stages of production; 26% of responders reported tail-biting in first-stage weaners, 63% in second-stage weaners, and 72% in finisher pigs.

For 65% of respondents, the most common method of attempting to stop an outbreak was to add additional enrichment to the pen. For routine enrichment, chains were most commonly used. Wood was the most common organic material used, and straw/hay the least frequently used (**Figure 1**).

Wood was frequently mentioned as being particularly effective in reducing the rate, or intensity, of biting outbreaks, but there was concern regarding splintering, and damage to the mouth and internal organs.

Compressed straw blocks

We then carried out two experiments on a commercial farm investigating sub-optimal enrichments that may be appropriate for fully slatted systems. The first study investigated the feasibility of

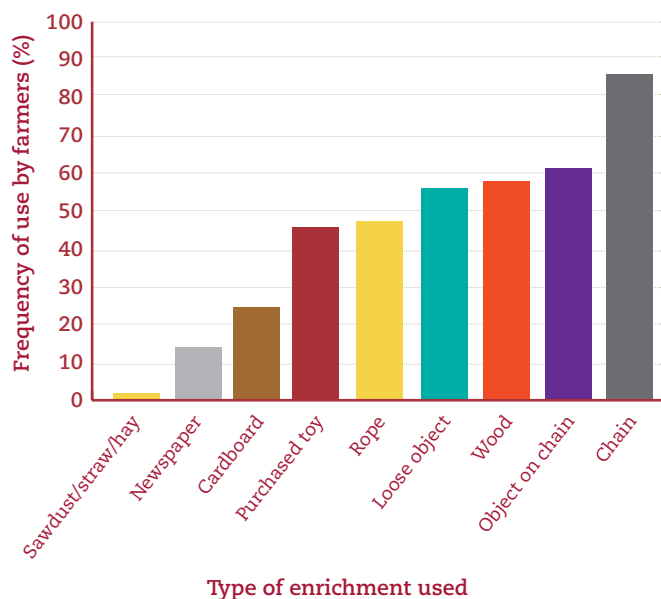


FIGURE 1: The percentage of respondents using the various types of enrichment material provided to pigs in Ireland.

supplying straw in the form of compressed blocks, dispensed through a holder on the wall (one holder/25 pigs). The study was from weaning to finish, and compared the blocks with hanging plastic toys. We saw no benefits of straw in any parameter used to assess welfare (tail and ear lesions, salivary cortisol level, reactions in open field and novel object tests, performance), or in lesions on the carcass in the factory.

Moreover, the blocks were prohibitively expensive, and labour intensive to manage. Based on the rate of use, we estimated a cost of approximately €20,000/year for every 500 sows in the herd to provide enrichment for all offspring through to the finisher stage.

Wood type

Although wood has been compared with other materials, there has been no published work investigating different species of wood. Our second experiment focused on the finisher stage, and compared wood from four tree species – spruce, larch, beech, and scots pine (control) – provided in the same style of holder as the compressed straw blocks.

Spruce was the softest wood, and was consumed more quickly (greater weight loss and reduction in length) than other wood types. Pigs interacted with the spruce more frequently than all other wood types, which could have contributed to this and indicates that it was more favourable to them. Nevertheless, there were no differences in the frequency of injurious behaviours (tail/ear/flank-biting), or in tail and ear lesions (levels were low in all treatments). Neither did we find any damage to the mouths of the pigs, nor differences in carcass quality related to the type of wood. When it came to cost, due to the different rate of wear, using spruce is considerably more expensive than the other species (Table 1).

Table 1: Annual cost of providing finisher pigs with beech, larch or spruce as environmental enrichment.

	Beech	Larch	Spruce
Price/kg	€1.67	€1.57	€1.71
Price/pig	€0.016	€0.039	€0.176
Price/year (finisher stage only):			
Per 500 sows in herd	€202	€504	€2,286

Conclusions

- Producers in Ireland are open to using wood as environmental enrichment, which is considered an appropriate enrichment type for slatted systems.
- Compressed straw blocks are not feasible in the manner that we provided them.
- Spruce, the softest wood, was most attractive to the pigs, and will be investigated further.

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