

Environmental enrichment and the prevention of tail biting in weaner pigs

Discusses recent studies in the use of environmental enrichment as a preventative measure against tail biting in undocked weaner pigs

Genevieve Corman

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Introduction

Tail biting is widely recognised as one of the central welfare issues facing the modern porcine industry (Mkwanazi *et al.* 2019). It has been hypothesised that tail biting is often associated with intensively raised pigs' lack of freedom to perform normal behaviour. This leads to boredom and stress, which may manifest inappropriately (Orihuela *et al.* 2019). Tail docking is frequently used as a management tool to reduce the incidence of tail biting, but it is often performed without analgesia and is thus associated with its own welfare concerns (Bulens *et al.* 2018). Environmental enrichment is one of the primary strategies proposed as an alternative to tail docking in pigs with intact tails (Van de Weerd & Ison 2019). This paper aims to explore recent research into provision of environmental enrichment and its impacts on tail biting.

Discussion

In the ideal management system, tail biting would be absent or minimised. A recent study by Chou *et al.* (2019) evaluated whether this could be achieved by the provision of a variety of enrichment types. In this study, 96 crossbred weaner pigs were distributed into eight pens. Each pen received a total of eight enrichment items, one from each of eight categories (lick block, floor toy, wood post, hanging wood, loose material in a rack, fabric, hanging chew toy and loose material in a container), with four possible items available in each category. No control group was included. Of the pigs studied, only one developed a tail wound of a significant nature. The findings of Chou *et al.* (2019) therefore suggest that a range of suitable enrichment materials on offer during the weaning period can keep the incidence of tail biting at acceptable levels.

However, it may not be affordable or practical for all producers to provide enrichment throughout weaning. Lahrman *et al.* (2018) conducted a study to determine whether environmental enrichment could be instead used as an early intervention tool to prevent the progression from tail damage to a tail biting 'outbreak' as defined by a threshold number of pigs with affected tails. To assess this, 60 pens of 30 crossbred weaner pigs each were inspected three times weekly for tail lesions. If at least one pig had a tail wound, the pen was allocated to one of four treatments: straw on the ground, haylage in a suspended spherical cage, suspended sisal rope and sweet block, or no enrichment. Assessment subsequently continued three times weekly and when, or if, four or more pigs had a tail wound, a tail biting outbreak was declared. Lahrman *et al.* (2018) found the likelihood of a tail biting outbreak was significantly lower in the pens provided with either straw or suspended haylage following the first tail wound compared to the control pens. Overall, the findings of Lahrman *et al.* (2018) support the idea that regular monitoring of at-risk weaner pigs can enable

early intervention with enrichment and thus reduce the incidence of tail biting outbreaks. However, 20% of the enriched pens still ultimately progressed to a tail biting outbreak, suggesting that consistent provision as outlined by Chou *et al.* (2019) remains the optimal management strategy.

In cases where environmental enrichment is not constantly on offer nor early intervention utilised, tail biting may progress to outbreak status. In these situations, Lahrman *et al.* (2019) aimed to investigate whether enrichment can still be employed, as a tool to combat the escalation of tail damage, by designing a study in which 1,987 crossbred weaner pigs were randomly allocated into 65 pens. Following a tail biting outbreak, as defined by Lahrman *et al.* (2018), the affected pen was assigned to one of three treatment groups: straw on the ground, suspended sisal rope or Bite-Rite (a suspended plastic manipulatable toy), and pigs assessed weekly for severity of tail wounds. Escalation of tail damage was defined directly by the occurrence of four fresh tail wounds, or indirectly by the removal of a 'biter' pig, both indicating failure of the implemented treatment. Lahrman *et al.* (2019) found that the provision of straw significantly reduced the risk of escalation of tail damage compared to both rope and Bite-Rite. These findings suggest that providing enrichment, preferably straw, can help guard against further tail damage once a tail biting outbreak has been established. However, tail damage still escalated in 26% of the pens with straw intervention, an unsatisfactory percentage from both a welfare and an economic standpoint. Therefore, if producers intend to rely exclusively on environmental enrichment for tail-biting management, provision throughout weaning as described by Chou *et al.* (2018) seems to be the only suitable strategy. If other management tools are available to be used in conjunction, enrichment as an early intervention (Lahrman *et al.* 2018) or as a 'treatment' following a tail biting outbreak (Lahrman *et al.* 2019) may then be appropriate.

All three studies were limited by a relatively small sample size. Additionally, in both studies conducted by Lahrman *et al.* (2018; 2019), pigs were not inspected daily. As a result, assessment of tail wounds could have been delayed, thereby skewing results. Furthermore, in the study by Chou *et al.* (2018), the absence of a control group meant no comparison was offered for tail lesion incidence under these study conditions in the absence of environmental enrichment. Results of these studies must therefore be viewed critically, and in conjunction with other published literature.

Conclusion

Whether as part of routine management, an early intervention tool, or a means to decrease severity in the face of an ongoing outbreak, the research of Chou *et al.* (2019), Lahrman *et al.* (2018) and Lahrman *et al.* (2019) respectively serve to support the hypothesis that the provision of environmental enrichment can to some extent aid in the reduction of tail biting and thus result in better welfare outcomes for pigs. Further research in this area should target forms of enrichment that have the desired effect on the incidence of tail biting while also being suitable and affordable for intensive management systems.

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