

Protecting pigs against themselves: Recent advances in the control of cannibalism in intensive pig production

Discusses the prevalence of tail biting in pig production, examining reasons, current control measures and their effectiveness.

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Introduction

Pigs reared in intensive production systems often express abnormal cannibalistic behaviours, such as tail biting (Schroder-Peterson & Simonsen, 2001). The occurrence of tail biting is difficult to predict but is believed to arise from several complex factors, particularly lack of environmental enrichment as well as inadequate food intake (Moinard *et al.*, 2002; EFSA, 2007). The presence of cannibalism on farms is a serious welfare issue for pigs and a major focus of current research. Tail docking is a common control measure used in many countries (McGlone *et al.*, 1990), but this technique also poses welfare questions and is now unacceptable as routine practice in the European Union (Council directive (EU), 2008). This paper explores possible motivations for this behaviour, as well as the effectiveness of current control measures and the possibility of eliminating tail docking from husbandry practices.

Discussion

Tail biting in piglets is believed to be a result of frustration and a lack of environmental enrichment (EFSA, 2007). Telkanranta *et al.* (2014) examined this hypothesis by assessing how early rearing behaviour and environmental factors affect problems later in life. Their experiment used 59 sows from five consecutive farrowing weeks to determine if the provision of chewable materials prior to weaning would reduce tail biting after weaning. Conventional pens and husbandry techniques were used with the addition of ropes, plastic balls, newspaper and wood shavings for 30 of the litters. The remaining 29 litters were used as control groups. Behaviour was examined through video monitoring of the frequency of pig oral or nasal manipulation of both objects and penmates. Tail damage was recorded during week 9 after birth, when both groups had spent five weeks in identical post-weaning environments. Damage was scored on a scale of 0-4 through visual assessment and palpation. The results showed that piglets in the treatment groups were more likely to direct biting behaviours toward objects rather than penmates. Tail damage differed significantly and was much more severe in control groups.

Telkanranta *et al.* (2014) came to an overall conclusion that a barren environment in pigs' early lives makes them more susceptible to tail biting, particularly when exposed to other unfavourable conditions, such as shortage of food. This was predominantly apparent during week 9 of the experiment, when there was a feeder malfunction in some of the pens. From this short period of hunger, it was found that piglets in the control pens suffered much worse tail damage than those in the treatment groups, confirming the study's hypothesis. However, this experiment is limited in its validity because of the unequal group sizes. Despite 64 sows being chosen, 5 had to be excluded due to death, illness or behavioural issues. This action may have affected final results.

A study by Scollo *et al.* (2013) is useful for comparison as it examines tail biting in heavyweight pigs and explores whether the presence of straw helps reduce the incidence of the problem, as has been shown in lightweight piggeries (Van de Weerd & Day 2009). It was hypothesised that their prolonged fattening period may increase the risk of cannibalism due to their older age, as well as decreasing space as each pig increased in size. Based on this, 672 commercial crossbred pigs were reared in a fattening unit. Half of the pens were provided with long straw at all times and refilled three times each week. Blood samples were taken from each pig as an indicator of their physiological health and welfare. Corticosteroids are generally released throughout the body in response to stressful stimuli (Kaneko, 1989) and thus cortisol was the predominant hormone measured to assess stress levels. Two trained vets visually measured ear and tail lesions throughout the study. Results showed that undocked pigs had lower concentrations of cortisol present in their blood, indicating lower stress, that is, emotional strain or tension. However, undocked pigs were also found to be more likely to engage in conflicts with other pigs. Importantly, piglets with undocked tails were found to be significantly more likely to show ear and tail lesions. The investigation furthermore concluded that the presence of straw in an environment significantly reduced the risk of tail biting from week 3-14.

Abriel and Jais (2013) examined a similar hypothesis to the previous papers, as well as investigating the risks associated with leaving tails intact, as is in the current EU legislation (Council Directive (EU), 2008). This study aimed to determine risks associated with undocked piglets as well as to investigate husbandry practices that may prevent tail biting. This experiment involved four trial runs. The first two trial runs left the pens in conventional constitution, with half the piglets' tails being docked. The next two trial runs focused on the influence of housing conditions, and all piglets were left undocked, with enrichment materials in half of the pens. Behaviour was analysed through video recordings, with tail lesions being assessed twice a week. A major finding of this study was that while all docked animals were left unharmed, nearly all of the undocked piglets had some form of serious damage due to tail biting. Nevertheless, the study also found that the enriched pens had a much less severe form of tail biting, which did not begin until two to three weeks after the piglets began to be bitten in the conventional pens. The study concluded that the sudden withdrawal of tail docking would not be possible without severely increasing the incidence of tail biting.

Conclusions

All three studies concluded that environmental enrichment significantly reduces the incidence of tail biting in piggeries. However, this was never enough to stop the behaviour completely (Abriel & Jais 2013; Scollo *et al.*, 2013). The most effective means of stopping cannibalism during pig production was found to be tail docking. This practice was also found to noticeably raise cortisol concentrations in pigs, indicating increased stress and therefore decreased welfare (Scollo *et al.*, 2013). Further research into the problem behaviour should be focused on a stress-free way to completely eradicate the presence of tail biting in pigs.

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