

# A Review of Recent Researches into Reducing the Incidence of Tail-biting in Pigs

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## Introduction

Tail-biting is an abnormal behaviour with a major impact on the welfare of pigs in commercial intensive farming as well as on the economic profitability of farmers. The exact causes of tail-biting outbreaks among pigs are currently unknown but are thought to include environmental and nutritional factors, over-crowding, length of tail and lack of foraging substrates (Sutherland *et al.*, 2009). Recent research has investigated how management and animal husbandry practices can be manipulated to reduce the incidence of tail-biting.

## Discussion

Tail-docking piglets is a common management practice used in most countries to reduce the incidence of tail-biting. However, wound healing after tail-docking may have variable effects on tail-biting behaviours, according to Sutherland *et al.* (2009), who conducted two experiments to compare the effect of different methods of tail-docking. The first experiment compared wound healing in pigs tail-docked using hot-iron cautery (CAUT, n=20) or conventional blunt trauma cutters (BT, n=20). The healing process took slightly longer in pigs tail-docked using CAUT, but there was no difference in acute inflammation response between CAUT and BT as indicated by C-reactive protein levels or total white blood cell count from blood samples. Tail-biting lesions were also assessed and scored based on tail length, the appearance of injuries and the appearance of blood. Pigs from the control group (non-docked, n=40) had a greater tail-biting lesion score than CAUT and BT at the end of the experiment (7 weeks).

The second experiment was conducted to determine if tail-docked length influences tail-biting behaviour. Piglets were docked at a length of 2cm (Short, n=40) or 5cm (Long, n=40) from the base of the tail. Using the same method as experiment 1, tail-biting lesions were scored and recorded every two weeks from weaning until the end of the study (20 weeks). In general, pigs tail-docked at a longer length had greater tail-biting lesion scores than pigs tail-docked at a shorter length. Furthermore, tail-docking pigs at a longer length still results in acute pain, which does not benefit the welfare of the pigs in the short term (Sutherland *et al.*, 2009). Therefore, it is recommended to dock tails at a shorter length because the risk of tail-biting is reduced. However, neuroma formation has been associated with the tail stump of docked pigs (Simonsen *et al.*, 1991).

The authors concluded that until the root causes of tail-biting are fully understood, the long-term benefits of tail-docking at 2cm (Short) outweigh the acute stress arising from this procedure. Results suggested that CAUT may be a practical alternative compared with conventional tail-docking because there was a reduction in acute stress response to tail-docking (Sutherland *et al.*, 2008) and there was no increased incidence of infections in the pigs (Sutherland *et al.*, 2009). Further research to determine the effect of tail-docking length on stocking density would be rewarding for farmers.

Tail-docking causes acute pain in pigs and also conceals the existence of a more serious animal-welfare issue. This includes behavioural deprivation and frustration (Zonderland *et al.*, 2008). Previous studies have suggested that environmental enrichment (e.g., provision of rooting material) reduces tail-biting incidence (Zonderland *et al.*, 2008). More recently, Jensen *et al.* (2010) investigated the effect of types of rooting material and space allowance on explorative and abnormal behaviour in growing pigs for 20 weeks. Pens were assigned to one of four treatments: low space allowance (n=17 pigs) and maize silage as rooting material; high space allowance (n=11 pigs) and maize silage as rooting material; low space allowance

(n=17 pigs) and straw as rooting material; and high space allowance (n=11 pigs) and straw as rooting material.

The study showed that in pens with maize silage, more pigs manipulated rooting material and fewer pigs manipulated pen components and pen mates than those in pens with straw. The authors suggested that silage is more diverse and nutritious compared with straw, which may have stimulated more exploratory behaviour, resulting in a decrease of manipulation of pen mates and pen components. More pigs manipulated rooting material in pens with high space allowance than in pens with low space allowance. The authors concluded that maize silage may provide a better source for exploratory behaviour than straw resulting in a lower frequency of aggressive behaviour. They also suggested that the provision of rooting material has more effect on aggressive behaviour than space allowance.

In another recent study, Samarakone and Gonyou (2009) evaluated the social strategy of growing/finishing pigs living in large social groups, with the aim of investigating the effect of introducing pigs with different social experiences into unfamiliar social groups of different sizes. The study consisted of two group-size treatments, 18 (small group (SG)) and 108 (large group (LG)) pigs per pen. Two pigs (focal pigs) from one social group (SG or LG) were randomly selected and introduced into another social group (SG or LG) for 2 hours. There were four different treatment combinations: SS (SG to SG), SL (SG to LG), LL (LG to LG) and LS (LG to SG). Results from the study showed that focal pigs introduced into SGs spent a significantly greater percentage of time in aggressive behaviour than when introduced into LGs. They also showed that the LL treatment combinations spent a significantly lower percentage of time in aggressive behaviours compared with LS, SL or SS treatment combinations. Focal pigs from LGs were observed to participate less in aggressive behaviour than those from SGs, which supports the authors' hypothesis that pigs may adopt a less aggressive social strategy in large social groups. The authors concluded that pigs did, indeed, become less aggressive and may adopt a low-aggressive social strategy in large social groups. However, more detailed research must be done to fully understand how pigs assess their social status within large groups.

## Conclusion

Tail-biting reduces the welfare of pigs, so discovering preventive measures to reduce its incidence is vital. Tail-docking is not the solution to tail-biting outbreaks. Further research into better understanding of tail-biting behaviour and methods to prevent it may highlight other management opportunities to improve the welfare of pigs by reducing tail-biting incidence.

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