



## **Tail biting in pigs**

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**This paper based on international research, has been prepared to provide good practice information to assist pig farmers in New Zealand to minimise and manage tail biting. It provides some insight into the phenomenon of tail biting, risk factors and mitigation measures. It has been reviewed by NZPork technical advisers for its applicability to New Zealand pig farming.**

### **What is tail biting?**

Tail biting is the oral manipulation of the tail of another pig that inflicts skin wounds and can result in amputation of parts of the tail or even the rump. Normal pig behaviour does not include tail biting. The occurrence of tail biting is a complex and multi-factorial problem and many risk factors are known to increase the chance of tail biting. In an attempt to prevent tail biting many farmers dock the tails of new born piglets. However, despite tail docking, tail damage due to tail biting still occurs to a greater or lesser extent. Tail biting leads not only to a reduced animal welfare, but also diminishes the work satisfaction of affected pig farmers and their staff and does have negative financial consequences.

### **Relevance of tail biting among pigs**

Unfortunately quantitative information on the prevalence and economic consequences regarding tail biting for an individual pig farmer and the pig sector in New Zealand is scarce. The incidence varies between farms and the problem is known to exist on farms raising pigs under different housing and environmental control systems, using a variety of feeds, in different regions, over different seasons and in pigs of different ages. Depending on severity, tail biting can result in welfare issues, as minor as intermittent irritation or, if left unmanaged, as severe as significant pain, loss of blood, and open wounds that can lead to secondary pathological changes in different parts of the body, such as spinal abscesses. Besides causing welfare problems, tail biting can result in considerable economic losses at the farm level (extra inspections, treatment costs, poor growth rates etc). Further to this, a pig with a tail bite that is severe and extends into the rump of the pig, or is swollen or weeping is not fit to be selected for transport to slaughter (refer NZPork's *Fit to Load* Guidelines) and this therefore results in a loss of income.

### **How does tail biting start?**

In pigs, tail biting can occur at any stage after weaning. Generally one can safely assume that 'happy pigs' (i.e. pigs with all their behavioural, nutritional, health, climatic/environmental and social needs met) don't bite tails. Where pigs are restless or unsettled for whatever reason, tail biting behaviour can quickly emerge. Pigs are highly motivated to explore their environment. When pigs explore their surroundings, they do this with a distinct purpose of e.g. finding feed or an attractive place to lie down. When there is lack of environmental enrichment or stimulation in their surroundings, this exploratory behaviour may become redirected and maybe misdirected to pen mates' tails. Research has demonstrated that environmental enrichment, like the provision of a layer of straw, is known to reduce tail biting to an extent.

Apart from tail biting evolving from redirected exploration behaviour, there are suggestions that tail biting is an act of aggression. Understanding the background of how tail biting evolves in a group of pigs under specific circumstances (i.e. every farm has different circumstances) is important in order to prevent future tail biting problems.

There are many risk factors that can trigger tail biting, but they all relate in some way to some defect in the pigs' living environment that impacts in some way on the background motivation of redirected exploration behaviour or aggressive behaviour. When tail biting problems already exist, it helps to observe a tail biting pen for about half an hour to look for misdirected exploration behaviour or aggression directed to a pen mate's tail.

### **Escalation of tail biting**

Once tail biting results in pigs with damaged and bleeding tails, often more victims will follow rapidly and few pigs are unaffected. The blood from damaged tails is suggested to be an important factor in this rapid tail biting escalation and therefore it is very important to spot tail biting problems in an early stage. In pens with first signs of tail biting, it is recommended to remove the main biter. To find the main biter, take some time, and observe the animals. Remove any pigs with a damaged tail, to avoid further biting by other pigs. In addition, provide new environmental enrichment, preferably straw or other substrates like wood chips.

To identify tail biting in an early stage, look at the pigs' tail posture. Research has shown that when one or more pigs keep the tail between their legs, instead of curled up, chances are that one or more animals have already a damaged tail or it will become apparent over the next couple of days. This also is an indication that something is not right with the pigs.

### **Risk factors for tail biting**

Multiple factors have been associated with the occurrence of tail biting, therefore only the most important risk factors will be mentioned below.

The overarching generalisation is that happy pigs don't tail bite!

### *Feeding*

Since feeding is a socially facilitated behaviour (pigs tend to synchronise their feeding behaviour), limited feeding or drinking space can lead to competition and subsequent tail biting. In this case pigs will use aggression to drive pen mates away from the feeder. Biting their exposed tail is an effective way for doing so. Research has shown that once pigs learn that tail biting is an effective way to gain access to the feeder, they will repeat this behaviour causing damaged tails to their victims as a consequence. If pigs are trough fed, ensure enough feeding space to allow all pigs to feed simultaneously.

Feed quality and diet composition, such as mineral or protein deficiencies, mycotoxins, low fibre, level of feeding, feed distribution, new season's grain and sudden diet changes can also increase the chance of tail biting.

### *Climate*

Climatic conditions can also induce tail biting. Climate is complex and is made up of many factors, e.g. airspeed, draughts, cold or heat stress, inadequate ventilation and large changes in diurnal temperature. Common sense is needed to reduce this risk factor. Allow sufficient lying space for each pig, and ensure the sleeping area is warm, dry, comfortable and free from draughts. The environment should be appropriate for the pig's live weight. Using smoke from a smoke machine close to the air inlet of indoor pig housing is an effective way to determine airflows that may result in chilling of the pigs.

### *Barren Environment*

A barren environment is undoubtedly a factor related to the occurrence of tail biting. Many studies showed that the absence of suitable environmental enrichment like straw increases the risk of tail biting although not in all cases. Therefore, providing pigs with substantial amounts of straw or other substrates is a very effective way of lessening the risk of tail biting. However, provision of substrates like straw is not always possible, especially not in fully slatted, slurry-based housing systems. Other enrichment devices or 'toys' such as rubber hoses and wooden beams could be used instead. However, these toys have proven to be less effective compared to a daily provision of straw. There are commercial pig toys available, but farmers can improvise, so long as the materials used are safe for the pigs as well as for humans (i.e. no meat residues). For pig toys to be effective they need to be well accessible for biting, nosing, chewing, etc. Some kind of reward (e.g. food) every now and then from the toy will have the pigs coming back more often. Alternating different toys will also stimulate play as pigs are very curious for new objects, and can also get bored with them quickly.

### *Genetics and gender*

Genetic factors appear to have a considerable influence on tail biting, although the effects are not clear, their mechanism are unknown and the variation within breeds is large.

Gender differences have been found in many studies and male pigs (both intact and castrated) are more often the victim while female pigs are more often the biters. When comparing the tail biting risk of keeping pigs in single-sex pens or mixed, the chances are not very different.

### *Other risk factors*

High stocking density can increase the chance of tail biting, as does mixing of piglets after weaning. The presence of internal and external parasites and poor hygiene as part of the environment are factors to consider. This list can be extended, but the bottom line is that a lot of these risk factors cause the animals to be unhappy by causing restlessness, commotion or unsettled behaviour. This results in more active pigs and a higher motivation to explore their surrounding including pen mates and increases the chance of tail biting. Therefore, reduction of factors contributing to restlessness or unsettled behaviour will reduce the chance of tail biting. In other words, happy pigs don't tail bite!

### **Questions in case of tail biting**

Once tail biting occurs on a farm the following questions can help to identify the problem and prevent further tail biting:

- Observe pigs in tail biting pens; what kind of problem behaviour is going on? Healthy growing pigs will rest peacefully except when eating and dunging. Restlessness, rubbing or tail-twitching is abnormal.
- Is there misdirected exploration behaviour or aggression directed to a pen mate's tail?
- Is there enough environmental enrichment for the pigs and do they still use it?
- Are pigs competing over feed, water or other resources?
  - Check drinkers are working and more importantly measure the flow rate. Multiply the number of pigs by their daily water consumption, how long will it take them to obtain their daily requirements. Can they effectively drink from the drinker? Are the drinker heights appropriate for the size of pigs in the pen? What about water quality - would you drink it? (Consider microbial state, salts and flavour.) In hot weather does the dominant pig lie on or near the drinker not allowing others access?



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*(The photo above shows the dominant pig lying in front of 2 drinkers to keep cool and so limiting access for others. Can you place drinkers further apart?)*

- Do pigs fight at the feed or at feed time? Are feed levels and feed intake appropriate for the class of pig? Do the feeders have 'out of feed events' either from blockages or lack of feed? Check the pigs to feeder ratio. In general it should be lower than that recommended by the manufacturer. Multiple feed spaces reduce competition and, depending on group size, well-spaced multiple feed stations will reduce competition. Is there a build-up of crud in the base of the feeder? Is feed being 'rooted' out of the feeder indicating unpalatable feed. Any signs of mycotoxins? Is the grain being used of good colour and has it been stored well? With pipeline feeding into a trough can all pigs get access to the trough at once at feed time? Check feed mixing regime - is the formulation being followed accurately? Check with a nutritionist as to the salt and protein levels. Low salt and protein can trigger tail biting. Check fibre content of the diets as well.
- Are pigs highly active? If so, what could be the reason of this increased activity?
  - Do you mix pigs? Do you change the pig dynamic within a pen?
- Have there been any changes recently regarding feed, climate, group composition, and stocking density?
  - Have you recently changed over to new season's grain? Grain needs a 'maturing' phase of up to 6 weeks from paddock to plate. Has the feed mix formulation changed suddenly or has the feed source changed suddenly to incorporate a high level of by-products? Have the ventilation controllers been modified to adjust to changing conditions i.e. on full noise during the heat summer, but with cool evenings and milder days of autumn, has the ventilation been adjusted? This can be particularly bad in autumn with hot humid days followed by cooler nights. Is a particular pen affected? Check lying pattern - are pigs unsettled and lying in a haphazard manner? Is there an

under-door draught coming into the pen or up the drainage channel? Have fans been cleaned? Do the curtain controllers work - check them. What has happened with group size – has it increased, putting pressure on lying /dunging space? Do you lighten off numbers per pen over summer? Can you increase over the winter? Are the pigs dirty? Do they maintain clearly defined sleeping and dunging areas? Check maximum and minimum temperatures. Is the atmosphere in the pens stuffy? Can you detect ammonia? If so is this the result of poor hygiene or poor ventilation?

- Health aspects: A droopy tail exhibited by an unhealthy pig has been implicated as a trigger to tail biting by other pen mates. Ensure good hygiene, feed, appropriate temperature and group sizes at weaning to prevent scouring. Depending on health status of the herd, maintain mange and worm treatments if required.

If these questions don't lead to answers or adequate measures that can relieve tail biting, consult your Veterinarian or a pig / pig behaviour expert to have a fresh look at the situation.

***Biographic note Johan Zonderland:***

Johan Zonderland graduated from Wageningen University in 1997 and subsequently worked as a Pig Scientist for the Animal Sciences Group of Wageningen UR for more than 13 years. His main research topics during these years were pig behaviour, farm management and system innovations. His PhD thesis "Talking Tails" investigates the development of tail biting behaviour in groups of pigs. Johan immigrated to New Zealand two years ago and currently works as a Research Leader for Veterinary Health Research NZ in Hamilton.