



# OPINION ON MUTILATIONS AND ENVIRONMENTAL ENRICHMENT IN PIGLETS AND GROWING PIGS

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## FAWC Opinions

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### Opinions published to date

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Enriched cages for laying hens, 2007

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Policy instruments for protecting and improving farm animal welfare, 2008

Welfare of the dairy cow, 2009

Osteoporosis and bone fractures in laying hens, 2010

Lameness in sheep, 2011

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<sup>1</sup> Where we refer to 'Government' we are addressing ourselves to the Department for Environment, Food and Rural Affairs in England, the Scottish Government's Rural Affairs and Environment Department, the Welsh Assembly Government's Department for Rural Affairs and other responsible Government Departments and Agencies.

# Opinion on Mutilations and Environmental Enrichment in Piglets and Growing Pigs

## Scope

1. To assess the need for, and explore the welfare costs and benefits of, mutilations carried out in piglets and growing pigs (up to slaughter weight, e.g., 120 kg liveweight).
2. To consider the extent to which management or husbandry practices, including environmental enrichment, might reduce the need for mutilations, and other welfare benefits of environmental enrichment.
3. To consider how mutilation procedures can be refined where they are necessary, including the possibility of providing pain relief.
4. Consideration of sows and boars is excluded. In some cases, welfare considerations will be similar to those for young pigs, but differences arise from age, reproductive state and husbandry.

## Background

### Extent and nature of the topic covered

5. A mutilation is defined in British legislation<sup>2</sup> as “*a prohibited procedure*”, which means “*a procedure which involves interference with the sensitive tissues or bone structure of an animal otherwise than for the purposes of its medical treatment*”. Secondary legislation<sup>3</sup>, however, allows certain procedures, otherwise prohibited, for piglets and growing pigs:

- Castration to reduce the risk of boar taint in pig-meat and expression of undesirable behaviours such as riding and aggression;
- Tooth clipping or grinding to reduce the damage to the sow’s udder and littermates’ faces during competition for teats between suckling piglets;
- Tail docking to reduce the risk of tail biting in piglets and growing pigs; and
- Ear notching, ear tagging, tattooing, micro-chipping and slap marking for individual or group identification.

6. Environmental enrichment can be defined as “*modification of a barren-captive environment to improve the biological functioning of animals*”<sup>4</sup>. This term “*should only be applied to situations where environmental modifications have enhanced the performance of strongly motivated species-specific behaviours or have led to the expression of a more complex behavioural repertoire*”. For pigs, environmental

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<sup>2</sup> Animal Welfare Act 2006, Chapter 45 (England and Wales); Animal Health and Welfare (Scotland) Act, 2006 asp 11

<sup>3</sup> The Mutilations (Permitted Procedures) (England) Regulations 2007, SI 2007, No. 1100 (as amended); The Mutilations (Permitted Procedures) (Wales) Regulations 2007, SI 2007 No. 1029 (W96) (as amended); The Prohibited Procedures on Protected Animals (Exemptions) (Scotland) Regulations 2007, SSI 2007 No. 256 (as amended)

<sup>4</sup> Newberry. R.C. 1995. Environmental enrichment – increasing the biological relevance of captive environments. Applied Animal Behaviour Science. 44: 229-243.

enrichment encompasses the nature of housing and the provision of bedding, recreational substrate or toys.

#### Welfare concerns and opportunities to improve welfare

7. Mutilations involve handling stress, acute pain (short term, arising from tissue damage during the procedure) and the possibility of chronic pain (longer term, arising from nerve damage). Opportunities to improve welfare therefore arise from either avoiding the need to carry out the mutilation or refining the procedure to reduce stress and pain.

8. Many mutilations are carried out to prevent undesirable consequences of behaviours that may be manifested later. An ethical balance therefore has to be struck between the harms associated with the mutilation and the risk and severity of subsequent events that the mutilation may alleviate.

9. Environmental enrichment is one approach to satisfy the behavioural needs of the pig, including exploration and foraging. If no suitable outlet for such behaviours is provided, they may be redirected towards other animals in the group and give rise to harmful behaviours such as tail, ear and flank biting.

#### Number of animals involved, duration and extent of poor welfare

10. Most of the 9 million piglets born in the UK each year experience some form of mutilation.

11. Very few male piglets are castrated in the UK (only 1-2%). This is associated with slaughtering pigs for meat at a relatively young age, which reduces the risk of boar taint. However, the UK imports approximately half of its pig-meat, and most male piglets that go on to produce pig-meat for import to the UK are castrated, i.e., approximately 4.5 million imported pigs each year. Castration is usually by surgical removal of the testes without anaesthesia or analgesia, which involves transient handling stress, severe acute pain, and also medium term pain (lasting one to several days) of uncertain intensity and duration.

12. We were told by the British pig industry that reduction of the sharp canine teeth by clipping or grinding shortly after birth is carried out on a high proportion of indoor-kept piglets and a smaller percentage of outdoor-kept piglets in the UK, determined by an individual risk assessment, and on the majority of piglets that supply imported produce. The majority of UK farmers use sharp clippers to cut the teeth to gum level, which will open the pulp cavity. This is carried out without anaesthesia or analgesia and involves transient handling stress, but the extent of associated pain is uncertain. If performed by unskilled operators or with poor equipment, splintering of the tooth and damage to the gum can occur, with chronic pain and risk of infection. The prevalence of such side-effects in the UK is unknown but believed to be small. In other countries, the prevalence of tooth splintering has been estimated at between 4 and 26% and of tooth infection at 7-20%, with a 1-2% increase in polyarthritis. Tooth grinding uses abrasion to remove the sharp point of the tooth. The risk of splintering is reduced. The amount removed can vary between operators, and if grinding continues beyond the

recommended period (1-2 s), a high temperature is generated. This is likely to cause pain, but the extent is again unknown.

13. The industry estimates that at least 80% of UK piglets are tail-docked, as are the majority of those that supply imported produce. The tail is severed using clippers, a hot cauterising iron or a scalpel within 7 days of birth, without anaesthesia or analgesia. The amount of tail removed can vary between operators from very little (tipping) to more than half. Tail-docking is accompanied by handling stress and short term pain from tissue damage. The extent of medium term and chronic pain is uncertain.

14. Individual identification for management purposes is done by ear notching, ear tagging, tattooing (usually of the ear but sometimes on the shoulder) or micro-chipping. It is normally done only for breeding stock or trial purposes; probably less than 5% of UK piglets are marked individually for these reasons. The procedures are normally carried out without anaesthesia or analgesia, and involve handling stress and acute pain from tissue damage. Ear notching or tattooing is typically carried out within 48 hours of birth. Ear tagging can be carried out at any time, but normally not before weaning.

15. Identification with the farm of origin is a mandatory requirement for traceability before a pig leaves the farm, prior to dispatch for killing. Most finished pigs (~99%) are slap marked with a tattooed number on one or both sides of the animal, typically the shoulder, by 'slapping' with inked needles. This procedure presumably involves acute pain; the extent of any medium term pain is unknown but bruising is seen on some carcasses.

16. There are no precise data on the nature of environmental enrichment provision for piglets and growing pigs. Industry surveys indicate that about two thirds of UK herds supply some straw for bedding or occupation. Most others provide other substrates or toys to comply with legislative requirements. The majority of pigs supplying imported produce will also have had some form of enrichment. There is debate on what constitutes acceptable enrichment.

### Legal context

17. The welfare of farmed pigs in the UK is governed by the Animal Welfare Act 2006 (Animal Health and Welfare (Scotland) Act 2006) and by the Welfare of Farm Animals (England) Regulations 2007 (as amended) (and similar legislation in the devolved administrations). These implement the EU Council Directive, updated as 2008/120/EC<sup>5</sup>, which establishes minimum requirements for mutilations and environmental enrichment in all member states. The Directive states that "*Neither tail-docking nor reduction of corner teeth must be carried out routinely but only when there is evidence that injuries ... have occurred. Before carrying out these procedures, other measures shall be taken ... inadequate environmental conditions or management systems must be changed*". The Directive is currently under consideration for revision in the light of recent European Food Safety Authority (EFSA) Opinions.

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<sup>5</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:047:0005:0013:EN:PDF>

18. The Council of Europe's latest recommendation concerning pigs came into force in 2005. It states that *"The mutilation of pigs shall be generally prohibited; measures shall be taken to avoid the need for such procedures in particular by changing inappropriate environmental factors or management systems by enriching the environment, or selecting appropriate breeds and strains of pigs"*, but recognises that exceptions may be necessary for tail docking, tooth clipping, castration and identification. It further states that *"Endeavours shall be made to provide pigs with adequate facilities to allow the expression of the different behaviours"*.

19. The main British regulations on mutilations are covered above. There is also relevant legislation in the form of the Veterinary Surgeons Act 1966. The amended mutilations legislation (England and Wales) provides that: *"Tail docking, or castration, of pigs may only be carried out by a veterinary surgeon or, where the animal is aged not more than 7 days, by a person experienced in performing the techniques involved and who is either a person responsible for the animal or a person employed or engaged by such a person to attend to the animal"*.

20. The Code of Recommendations for the Welfare of Livestock: Pigs gives advice for best practice on mutilations and environmental enrichment.

21. In England, the Pigs (Records, Identification and Movement) Order 2007 (and similar legislation in Wales) requires that all pigs are identified before they move off a holding, either by an ear tag or a tattoo (or by a temporary mark for farm-to-farm movements of pigs less than one year old). A tattoo *"must be applied either by tattoo forceps, in which case it must be in an ear, or by slap marking equipment, in which case it must be on each shoulder"*.

22. The Pigs (Records, Identification and Movement) Order 1995 is still in force in Scotland. It allows a single slap mark to be made or the use of another identifier, e.g., a paint mark that could identify the farm of origin in conjunction with paperwork travelling with the pigs.

### International considerations

23. While all EU Member States are subject to the same minimum legal requirements, there are no such requirements in most other major pig producing countries, which provide less than 3% of UK imports.

24. There are significant differences in practice between the UK and other EU countries exporting to the UK (primarily Denmark and The Netherlands). UK Farm Assurance Schemes, covering 90% of all pigs in the country, do not permit castration while the prevalence of systems providing straw is higher in the UK.

25. Some other EU Member States have additional legislation regarding mutilations. Tail docking is forbidden in Sweden, while in Denmark it is only allowed when piglets are aged 2 – 4 days, and no more than half the tail can be removed. Voluntary schemes have recently been implemented in Denmark and The Netherlands requiring anaesthesia for surgical castration of piglets, and other countries are moving in this direction. In 2010, in a European Declaration on Alternatives to Surgical Castration of

Pigs, various stakeholders pledged to end surgical castration without pain relief by 2012 and altogether by 2018, on a voluntary basis.

### Commercial interests and developments

26. The UK pig industry has changed substantially over the past decade, with fewer producers, more sows per farmer but many fewer sows in total; more pigs are produced on contract. The proportion of sows kept outdoors has risen to over 40%. With less re-investment, the quality of housing has deteriorated. In 2010, farmers started investing in infrastructure again after a period of better returns, but these did not last. The Agriculture and Horticulture Development Board estimated that there were 32,800 people employed on pig farms and in the supply chain in the UK in June 2008.

27. Immunocastration has recently been licensed in the EU. It offers an alternative to surgical castration but is not currently in widespread use. It involves two injections at about 50 and 75 kg liveweight. There is concern over additional handling and abscesses at the injection site. Retailers have expressed doubts about consumer acceptability of this method, but this has not yet been assessed formally.

28. Micro-chip technology has made electronic identification feasible as an alternative to current methods but at a higher cost. The Food Standards Agency is also concerned about the potential for migration of the micro-chip.

29. A device for pneumatic application of a shoulder tattoo has recently been marketed. This tattoo can be applied to piglets up to weaning age, which obviates the need for later slap marking if pigs do not subsequently move between units. The practicality and welfare implications have yet to be evaluated critically, but initial reports from farmers are positive.

### Advice by FAWC and EFSA

30. On a number of occasions in the past two decades, FAWC has advised Government about its concerns about mutilations<sup>6</sup>. FAWC is pleased that very few pigs in the UK are now castrated and would encourage farmers elsewhere to end this practice wherever possible.

31. Our 1996 recommendation on other mutilations<sup>7</sup> was that they *“should not be carried out routinely but only when it can be clearly demonstrated that the animals would otherwise suffer to a greater extent than as a consequence of the operation. We believe that steps should be taken to eliminate, or at least minimise, the pain caused by all mutilations. These points should be strongly made in the Welfare Code which should include reference to the appropriate legislation.”* We also recommended further research on analgesia and anaesthesia for teeth-clipping and tail-docking.

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<sup>6</sup> Farm Animal Welfare Council 1988. Report on assessment of pig production systems

<sup>7</sup> Farm Animal Welfare Council 1996. Report on the welfare of pigs kept outdoors

32. EFSA has recently published its advice about tail biting in pigs<sup>8</sup>, housing and husbandry systems for boars, sows and unweaned piglets<sup>9</sup> and fattening pigs<sup>10</sup>. It concluded:

- mutilations to piglets such as tail docking and tooth clipping are associated with pain;
- both tail-biting and tail-bitten pigs experience poor welfare;
- tail biting has a multi-factorial origin but absence of appropriate environmental enrichment is a major cause; and
- tail docking reduces the frequency of tail biting but does not completely eliminate the problem.

33. An earlier EFSA opinion considered castration in pigs<sup>11</sup> and concluded that it is painful at any age and that local anaesthesia offers the best practical prospects for pain alleviation. An update on knowledge and stakeholders' attitudes has been provided by the EU Specific Support Action, PIGCAS<sup>12</sup>.

## **Evidence**

### Castration

34. Surgical castration is painful for a piglet, even at younger than 8 days as usually recommended and currently specified in legislation, if no anaesthesia is used. The pain is intense and is still obvious in the first few hours following castration but thereafter it is not clear whether the castrated piglet still suffers from pain or discomfort. The duration and intensity of pain in the days following castration are also unclear.

35. General or local anaesthesia, in combination with long term analgesia, reduces pain from surgical castration. However, this benefit has to be weighed against the stresses of additional handling and injection or inhalation of the anaesthetic, including its effectiveness and safety, and the possible impact on the piglet's viability.

36. The Netherlands has adopted CO<sub>2</sub> anaesthesia, which, unlike other inhalation anaesthetics, can be administered by the farmer. The optimal gas mixture has been established in Dutch experiments as 70% CO<sub>2</sub> + 30% O<sub>2</sub>, which demonstrated analgesia during castration. However, the European Association of Veterinary Anaesthetists has queried whether the anaesthesia is sufficient. In addition, aversion to this mixture prior to loss of consciousness has been demonstrated in older pigs, but there are no comparable data for piglets. The duration of anaesthesia is critical and failsafe equipment is essential.

37. Local anaesthesia may be administered using various techniques, which may themselves be painful. Recent studies have revealed inconsistent results regarding the

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<sup>8</sup> EFSA. 2007. Opinion on risks associated with tail biting in pigs and possible means to reduce the need for tail docking considering different housing and husbandry systems. The EFSA Journal. 611: 1-13.

<sup>9</sup> EFSA. 2007. Opinion on animal health and welfare of different housing and husbandry for adult breeding boars, pregnant, farrowing sows and unweaned piglets. The EFSA Journal. 572: 1-13.

<sup>10</sup> EFSA. 2007. Opinion on animal health and welfare in fattening pigs in relation to housing and husbandry. The EFSA Journal. 564: 1-14.

<sup>11</sup> EFSA. 2004. Opinion on the welfare aspects of castration of piglets. The EFSA Journal. 91: 1-18.

<sup>12</sup> <http://w3.rennes.inra.fr/pigcas/>

effectiveness of local anaesthesia for alleviating pain, depending on the treatment designs and measurements taken. Local anaesthesia does not always fully eliminate pain during surgical castration, but does reduce it.

38. There are some unsolved practical problems with local anaesthesia. For example, piglets must be handled twice and the optimal interval between anaesthesia and castration may be difficult to achieve in practice.

39. Few anaesthetics and analgesics are licensed for use in pigs. For example, ketamine is the anaesthetic of choice; it is an injectable anaesthetic that may be used by veterinarians but not usually by farmers. Its use may soon be restricted in many EU countries because it is psychoactive (consciousness altering).

40. Few studies have evaluated the welfare implications of immunocastration. This technique requires two injections and the additional stress of handling; injection site abscesses have also been reported.

41. Raising entire males improves their welfare in early life, as they are not subjected to the pain and discomfort of castration. Welfare may be impaired subsequently because of aggression and mounting, potentially leading to injuries, but good husbandry can largely prevent these. The alternatives to control boar taint include specialist diets to reduce skatole production and genetic selection against taint. Neither method guarantees taint-free carcasses; on-line detection and diversion of tainted carcasses will be necessary for entire males in many markets, although these techniques are not yet sufficiently developed for commercial application.

### Tooth reduction

42. Assessment suggests that the acute pain associated with tooth clipping is transient with only slight and short-lived behavioural and physiological changes. There have been no reports of elevations in cortisol or adrenocorticotrophic hormone, immediately after the procedure, or in the medium term.

43. Histological evidence suggests that there may be chronic consequences of opening the pulp cavity including fracture, bleeding, infiltration and abscess formation. While this suggests that there might be chronic pain, no behavioural or physiological evidence of this has been reported. The severity of the welfare implications is heavily related to the skill of the operator and the effectiveness of the equipment.

44. Evidence on welfare benefits is contradictory. Comparisons with control litters with intact teeth have yielded differing results regarding the extent of mouth damage associated with the procedure, and varying reduction in udder lesions of sows and facial lesions of piglets. Similarly, the consequences for mortality and growth are inconsistent. However, there have been few attempts to relate this systematically to litter size, mothering ability of the sow, husbandry system or breed. It is known that problems occur when intact piglets suckle in large litters or are cross-fostered, or sows have low milk yield, all of which increase competition for teats.

45. The evidence about the welfare of piglets during and after clipping and grinding is also contradictory, despite a significant number of comparative studies. In many

studies, the grinding procedure may not have been optimal, as a significant portion of the tooth was removed rather than just its point.

### Tail biting and docking

46. Tail biting has a major adverse impact on welfare with a prevalence of 5-10% in all countries. It occurs in all production systems, but is less prevalent in extensive systems, more prevalent in slatted housing systems where straw is not provided and is also affected by the volume and rate of straw provision and stocking density. It is not known whether prevalence has changed in recent years, as there is no systematic surveillance.

47. Tail biting has a multi-factorial aetiology; the risk factors are tail length, genetic line, diet form and composition, environmental stressors from inadequate climate (including atmospheric ammonia) and competition for resources. These interact, so that outbreaks of tail biting occur unpredictably and often without apparent change in circumstances. Recently, decision support systems have been developed using scientific and practical knowledge to assist on-farm identification and control.

48. In the context of this variable incidence, tail docking can reduce the risk of tail biting, but does not abolish it. Docked tails have fewer lesions than undocked tails, and these tend to be less severe, and the incidence of tail-biting behaviour is greater in pigs with intact or long-docked tails compared with short-docked tails.

49. Behavioural and physiological assessments suggest that the stress and acute pain associated with tail docking is transient. There is no scientific basis for allowing tail docking without analgesia up to 7 days of age but not later. The permitted lack of analgesia was based on the erroneous assumption that animals of that age feel little pain.

50. Pig tails vary greatly in length and width. The anatomy of the pig's tail and the healing and repair mechanisms after tail docking have been well documented. There is no bone in the tail after birth, it is a long piece of cartilage. The different structures within the tail are indistinguishable externally within the first week of birth giving no control over the anatomical site of docking. A major feature of the healing process is the rapid closing off and healing of the wound by the growth of skin from the sides over the exposed central core of the tail. This is best achieved at the narrowest point of the tail and as early in life as practical.

51. Evidence about welfare implications of different methods of tail docking is inconsistent. Some studies have found that tail docking with a cauterising iron is more stressful than with simple clippers, but others have come to the opposite conclusion. Accidental superficial burning before docking may explain this difference. Cauterised tails heal with less infection risk, although large scale studies comparing infection with different methods are lacking.

52. There has been little study of the possible benefits of local anaesthesia or analgesia during docking. In one study, administration of local anaesthesia prior to docking did not appear to give sufficient pain reduction to offset the stress associated with double handling. However, another study found that administration of a cold

analgesic spray at the time of docking reduced behavioural and physiological indicators of pain during and immediately after the procedure.

53. Histological studies demonstrate the presence of neuromas in all pigs with docked tails, more in those tails that are docked shorter. Neuromas (masses of nerve fibres) form at the ends of damaged nerves and have been associated with chronic pain in other species. There is no conclusive evidence regarding the presence or extent of chronic pain in docked tails in pigs, nor is there evidence of increased sensitivity to stimuli (hyperalgesia or allodynia).

54. Outbreaks of tail biting usually occur in growing pigs (> 4 weeks old). Tail docking is performed shortly after birth as a preventive measure based on previous experience in a particular husbandry system. It is not practical to dock older pigs during an outbreak. If detected at an early stage, outbreaks can sometimes be successfully managed by removal of the tail biter and/or correction of putative environmental or nutritional causes. However, outbreaks of tail biting can be difficult to control and farmers are therefore inclined to use tail docking as a precaution.

55. Because of the rapid escalation of tail biting outbreaks after initial occurrence, and the lack of any reliable method to guarantee cessation, there is a pressing need to develop methods to predict outbreaks and/or to intervene at an early stage if preventive tail docking is to be rendered unnecessary. Recent work has highlighted the potential of measurement of pig activity, tail posture and pre-damaging tail contact to predict tail-biting outbreaks.

### Identification

56. There have been few scientific studies of the pain associated with identification procedures. There is evidence that both ear notching and ear tagging cause acute pain in addition to handling stress. Notching impairs welfare more than tagging, probably as a result of the longer time taken, but tagging may also cause pain later if tags tear out. There are no comparable data for tattooing or slap marking.

### Environmental enrichment

57. Environmental enrichment has many immediate and developmental effects on pig behaviour. These are generally positive for welfare, encouraging foraging and exploration, reducing fearfulness and reducing redirection of behaviours towards pen mates. It has been demonstrated repeatedly that provision of straw reduces, but does not abolish, the risk of tail biting. The efficacy of other forms of enrichment is less clear and there is no conclusive evidence that provision of toys reduces the risk of tail biting. An enriched environment appears to advance pubertal development and may sometimes increase potentially injurious mounting and riding by entire males.

58. Many studies have been carried out on the efficacy of different forms of environmental enrichment for piglets and growing pigs, using their time of involvement with the enrichment or reduction in abnormal behaviours as criteria. There is general agreement that novelty, deformability and destructibility are important features of objects or materials, stimulating interest. Hygiene is also important: enrichments should not become fouled.

59. It is important that enrichment materials do not increase the risk of injury or ill-health, e.g., wood splinters, wire in tyres, and pathogens or mycotoxins in straw.

60. Most enrichment studies have comprised small-scale projects in controlled environments with small samples. A new project initiated by the pig industry (British Pig Executive, BPEX) will provide a representative picture of the types of enrichment in commercial use in England and their associated welfare outcomes.

#### Evidence from veterinarians and other welfare professionals

61. Veterinarians frequently recommend tail docking to farmers. In consultation, most believed that tail docking is essential to control the risk of tail biting in all systems and that any ensuing pain is minor and transient relative to the greater injury arising from tail biting.

62. Tooth clipping is less often recommended by veterinarians, but is considered beneficial when the litter size is large, piglets are cross fostered or a herd is experiencing a short term problem with milk yield, for example due to disease.

63. When consulted, the British Veterinary Association was concerned that there was no analgesic specifically approved for pigs in the UK, although the cascade system could be used (which allows veterinarians to prescribe other drugs if needed). If pain relief or anaesthesia were to be required for mutilations, the increased handling and farmers' attitudes about the need for pain relief might affect compliance.

#### Evidence from farming and allied industries

64. The pig industry informed us that tooth clipping or grinding was not standard practice in many herds. Rather, tooth reduction would be applied to the next batch of piglets after a problem occurred with facial or teat damage in a litter. The suggested causes were factors that limited access to milk (e.g., suckling in large litters) or availability of milk (e.g., feed problems, general health and environment). Facial damage tended to happen in batches. However, some farms reduced teeth in most or all litters.

65. The industry believed that tooth clipping and grinding should not be banned but should be available for use on specific litters if needed. There was concern over the effectiveness of some equipment used, especially the heat generated during grinding, and the deterioration in quality of the equipment after a period of use.

66. Most farmers did not think that they could cease tail docking without suffering serious tail biting outbreaks. In one survey in 2009, representing about 17% of the English pig herd, the tail was docked in the progeny of all indoor sows and ~90% of outdoor sows. Alternatives to tail docking had been tried by 48% of indoor and 64% of outdoor farmers, but very few felt confident that they could prevent or deal with outbreaks of tail biting if tail docking was to be banned. Currently, the pig industry is actively exploring approaches to reduce the need for tail docking without risking tail biting.

67. A concern expressed by some farmers about tail docking was the absence of pain relief. There were contrary arguments that indicated that analgesia by injection was also painful, with limited acute relief before pain returned, and additional handling.

68. The industry stated that constraints on provision of straw or other particulate types of enrichment were imposed by liquid manure handling systems in slatted housing. These housing systems were preferred by some farmers because of better hygiene, absence of bedding cost, lower labour requirement and easier automation of manure removal, storage and distribution.

69. The industry was also concerned about the relative age and condition of much of the pig housing in the UK. This gave poor environmental conditions and increased risk of injurious behaviours.

#### Other pertinent information

70. A visit was made to Wageningen UR Livestock Research Group at Raalte research station in The Netherlands to see a demonstration of the Comfort Class housing system for pigs. This has been designed to meet a pig's ethological needs and provides natural lighting and ventilation, more space, differentiation of the pen into functional areas, provision of enrichment through (minimal) bedding substrate, toys and reward feeders. The scientists reported increased growth rate and a reduced risk, though not abolition, of tail biting. Elements of the system had been applied on five farms, but the system as a whole had yet to be commercially adopted.

71. The Dutch perspective on mutilations was also discussed during the visit. There was a national policy to abolish castration by 2015 and all mutilations by 2023. Castration was currently only allowed with anaesthesia, tooth clipping was no longer allowed although some farms still used grinding, ear notching was no longer allowed, only two different identification marks were permitted in the lifetime of the pig and slap marking had been replaced by use of metal tags for slaughter identification. Financial incentives under Pillar II of the Common Agricultural Policy were being used to facilitate this transition through tax refunds on investment in new buildings with welfare benefits.

72. Research on anaesthesia and analgesia for castration was described and a video of the experimental work and subsequent commercial procedure for CO<sub>2</sub> anaesthesia was shown. Piglets given CO<sub>2</sub> in experimental chambers showed little visible sign of distress. However, the equipment used in commercial practice made it difficult to assess the piglet's responses under field conditions from video.

73. In Denmark, pigs going to slaughter are slap marked twice, once on each side of the rump, which is more visible and likely to be less painful (being over flesh rather than bone). However, this may not be feasible if rind-on hams are being sold and marked produce risks being devalued.

#### Areas of incomplete evidence, including irresolvable or disputed issues

74. There is a lack of consensus about the need for tail docking of pigs in Britain. Some animal welfare organisations believe that as some farmers are able to operate without tail docking, others should be actively encouraged to make the necessary

changes to accommodate this. The pig industry believes that large-scale production of undocked pigs is not feasible because of an inability to predict and control outbreaks of tail biting. A meta-analysis of tail docking and biting studies might be productive.

75. There is a lack of information on the prevalence of mutilations, the ways in which they are carried out and the circumstances which make them necessary on British farms.

76. The scientific evidence about the welfare of pigs undergoing different procedures for mutilations is conflicting. In particular, the benefits and practicality of analgesia are poorly understood. More information is needed about immunocastration, about both its effects on welfare and public acceptability.

77. The criteria for the adequacy of environmental enrichment under practical conditions are poorly defined, making interpretation of current legislation and recommendations for slatted housing difficult.

### **Critical issues**

78. The critical question is whether mutilations are necessary, either for precautionary or remedial purposes.

79. If some mutilations are currently necessary, how should British stakeholders work together to reduce their use and eventually phase them out?

80. If mutilations are currently unavoidable, how can the pain and suffering caused be reduced or prevented? Could - and should - pain relief be applied?

### **Ethical analysis**

81. A fundamental ethical principle is respect for the integrity of an individual. All mutilations contravene this principle.

82. In accordance with Banner's First Principle<sup>13</sup>, one question is whether any mutilations ought to be permitted. However, it would be difficult to argue that the degree of harm involved is such that mutilations should "*under no circumstances be inflicted on an animal*".

83. Banner's second principle is utilitarian. From the pig's perspective, the critical question is whether the suffering of the mutilation(s) is outweighed by the benefits. Whilst pain and stress are often relatively small, very large numbers of animals are involved.

84. Banner's third principle suggests that pain relief during and following mutilations should be employed.

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<sup>13</sup> Banner, M. 1995. Report of the committee to consider the ethical implications of the emerging technologies in the breeding of farm animals. HMSO, London.

85. We suggest that a piglet having undergone one or even several of the mutilations considered here is not thereby prevented from having “*a life worth living*”. However, this would prevent it from having “*a good life*”, which FAWC has also suggested that we should aspire to provide for animals<sup>14</sup>. In this respect, provision of appropriate environmental enrichment that allows the pig to express biologically relevant behaviours is an important consideration, independent of any benefit in preventing harmful behaviours such as tail biting.

86. Farmers must weigh the benefit of less intervention (reduced labour and cost) against risk of subsequent problems (with both financial and psychological consequences). Consumers and citizens also gain both advantages and disadvantages from mutilations (which may affect the price of pigmeat but cause concern for pig welfare).

## **Conclusions**

87. British pig farmers and Government should develop production systems in which mutilations are not necessary. Government should determine whether Pillar II support could be used in this regard.

88. Farmers should (continue to) seek alternatives to mutilations. Surveillance is needed to help farmers to avoid the need for mutilations, e.g., by identifying risk factors.

89. The food chain should support the efforts of farmers and Government to eliminate the need for mutilations.

90. There is currently no one system in which tail biting is prevented reliably. To obviate the need for tail docking, the pig industry should adopt various approaches, e.g., genetic and environmental. Better awareness of the early signs of an incipient outbreak and advice on mitigating actions could improve confidence in managing risks. With increasing confidence, producers could be persuaded to remove a smaller proportion of tails that they dock, and in due course leave more tails intact.

91. Evidence on the best method for docking tails is lacking, and sometimes differs between systems. Staff competence and equipment quality have the greatest effect in minimising stress, but practical methods of analgesia should also be developed.

92. Tooth reduction should only be carried out selectively in defined circumstances where the risks from not performing it are great. When carried out, the mutilation should involve minimal reduction to a blunt point. There is a need for better equipment and competence in its use.

93. Better evidence is required on optimal methods for pig identification – without mutilation if possible – and the benefits of topical analgesia. When slap marking, the objective should be a clear mark on one side only, with minimal stress and pain. Any new techniques that meet these requirements should be permitted.

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<sup>14</sup> Farm Animal Welfare Council 2009. Report on farm animal welfare in Great Britain: past, present and future.

94. Raising entire males improves their welfare in early life, avoiding the pain and discomfort of castration. Welfare may be impaired subsequently because of aggression and mounting, but these should be minor problems with good husbandry. Increased pressure to reduce taint as slaughter weight increases should be addressed by genetic selection for reduced taint and improved, automated on-line detection.

95. Government ought to provide improved guidelines on enrichment for piglets and growing pigs, to remove any uncertainty regarding interpretation of legislation. The efficacy of enrichment is better assessed by outcome measures than by a prescriptive list of materials. As enrichment has a wider impact on pig welfare than just preventing behavioural problems, there is a need to consider species-specific behaviours and not just the absence of injurious behaviour.

## **Recommendations**

96. Farmers and other stakeholders should continue to work towards the goal of a reduction in the use – and eventual abolition – of mutilations in piglets and growing pigs.

97. Pig breeding companies should set breeding goals that minimise the need for mutilations, e.g., by incorporating appropriate behavioural measures in breeding indices.

98. Incentives should be provided by retailers and others to avoid mutilations in piglets and growing pigs. Retailers should apply consistent criteria in their sourcing from different countries.

99. Government should consider making available CAP Pillar II funding for improvements to buildings or practices, which reduce the need for mutilations.

100. If mutilations are to be carried out on piglets and growing pigs, the industry and Government should provide guidance on best practice and training. Operators should have a certificate of competence.

101. Further research should be carried out on optimal methods of analgesia when mutilations are required.

102. Where pain relief is practical during and after mutilations, it should be applied.

103. There should be improved public surveillance and enforcement of current legislation prohibiting routine tail docking. Farm Assurance Schemes should give increased attention to compliance with this requirement.

104. A Tail Docking Action Group should be set up by the British pig industry and Government, to put existing initiatives on a formal basis, to devise and implement a strategy to reduce the need for tail docking while preventing tail biting.

105. Tooth reduction in pigs should be permitted only after a risk assessment, and involve minimal blunting with suitable equipment done by competent staff.

106. Castration of pigs should not be practised and should be banned, except as a procedure carried out by a veterinary surgeon. Retailers should require imported produce to come from pigs that have not been castrated, with increased emphasis on prevention and detection of boar taint.

107. Further research is required on the best methods for identification of pigs, taking account of welfare, clarity and durability and avoiding mutilation if possible. As soon as possible, legislation should be amended to permit the use of a single slap mark or equivalent.

108. The role of environmental enrichment in facilitating good welfare, as well as preventing injurious behaviour, should be recognised. Guidelines for efficacy under farm conditions should be developed.

## APPENDIX

FAWC gratefully acknowledges the information supplied by:

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