

# ANIMAL WELFARE (PIGS) CODE OF WELFARE 2003 REPORT

## Introduction

1. This report accompanies the draft Animal Welfare (Pigs) Code of Welfare 2003 which has been developed by the National Animal Welfare Advisory Committee (NAWAC), pursuant to the Animal Welfare Act 1999 (the Act). The Act requires that when NAWAC recommends a code of welfare to the Minister of Agriculture (to issue it), the code must be accompanied by a report (section 74). That report must note:
  - (a) The reasons for the committee's recommendation;
  - (b) The nature of any significant differences of opinion about the code, or any provision of it, that have been shown by the submissions;
  - (c) The nature of any significant differences of opinion about the code, or any provision of it, that have occurred within the committee.
2. It should be noted that the Act does not define 'significant differences'. While there were a variety of different opinions expressed in the submissions, NAWAC did not consider that all differences necessarily represented significant differences of opinion. NAWAC has taken the view that significant differences are either where there are large numbers of submissions which are contrary to a minimum standard in the draft code or where a submission puts forward a justification based on scientific evidence or good practice for a different or alternative minimum standard. NAWAC notes, however, that in some instances there is a lack of scientific support or justification for a particular procedure and that procedure or practice has an historical reason for being carried out and for being carried out in a particular manner. In some cases NAWAC has taken what is in its considered opinion, a pragmatic approach based on the information at hand. NAWAC notes that some individuals or organisations may vary in their interpretation of what are significant differences.
3. The New Zealand pig industry numbers over 300,000 pigs. The industry has been consolidating with fewer numbers of producers but bigger units. There is a large variation in production styles and procedures e.g. the use of dry sow stalls may range from a few weeks to the entire pregnancy, or may not be used at all. Pigs are farmed outdoors and indoors. The farming of pigs outdoors is predominantly in the Canterbury area due to climatic conditions and soil types. While some people believe that the ideal is to have pigs living outside, NAWAC does not consider this is to be economically and environmentally sustainable in

some areas. The code has had to accommodate the implications of a wide variety of management systems carried out in a range of climatic conditions and physical environments.

Intensive, indoor production of pigs is a major part of pork production in New Zealand. Approximately 40% of the pork consumed in New Zealand is now imported, mainly from Australia and Canada. The industry is concerned that imported pork may be produced in less welfare friendly systems than those in use in New Zealand. In addition, the industry is concerned that constraints imposed by the Resource Management Act may result in costly and protracted measures before producers can make changes as required by the code.

## **Public Consultation**

4. The Act allows for any individual or organisation to draft a code of welfare. This code was drafted by a writing group convened by the New Zealand Pork Industry Board (NZPIB). NAWAC acknowledges the extensive effort by NZPIB including the Pricewaterhouse Coopers report that contributed to the development of the draft code. In addition, as required by the Act, the code was consulted with representatives of those most likely to be affected by it. The NZPIB organised a search consultation workshop in which a number of the major interest groups were invited to participate.
5. Following a deliberation by NAWAC to ensure that the code complied with the purposes of the Act, was clearly written and readily understood and that the code writing group had consulted with representatives likely to be affected by it (see section 71(2)(a)), the code was publicly notified on 1 November 2001, by public notices in the major newspapers in the four major centres, sent to all major libraries and to specific interested parties, as required by section 71 of the Act. NAWAC wishes to point out that at this stage NAWAC decided not to make any final decisions on the draft code until it had received submissions. The code is required to be publicly consulted and to make up its mind prior to this consultation would have meant that NAWAC was not following due process, by acting in a biased and predetermined manner.
6. A total of 692 written submissions, 1,188 SAFE forms and over 60,000 Royal New Zealand SPCA post cards, SAFE post cards and newspaper forms were received during the submission process. A summary of submissions is included in Appendix A. The draft code was publicly consulted for a second time on 9 December 2002. The second public consultation sought in particular comments on the proposed minimum standards for dry sow stalls, farrowing crates and space requirements. Twenty-two written submissions were received. A summary of those submissions is included in Appendix B.
7. NAWAC did not receive any oral submissions although the committee did meet with the writing group on one occasion. NAWAC members visited indoor systems and outdoor systems. NAWAC consulted with international researchers Professor Sandra Edwards and Dr Greg Cronin. In addition, the Report of the EU Commission's Scientific Committee on Animal Health and Animal Welfare (30 September 1997) on *The Welfare of Intensively Kept Pigs*, (the SVC Report) provided information particularly in the European context. It should be noted that there are very few published studies describing the welfare of pigs kept under New Zealand conditions.

## **Main issues raised by submissions**

8. Supporting submissions generally endorsed the draft as presented to NAWAC and requested that it be approved as presented. Particular support was given to the continued use of dry sow

stalls for the first 4 weeks of pregnancy but with a 10-year phase in period. Submitters indicated that aggressive behaviour was a welfare issue that needed to be managed by animal separation. Concern was expressed about the threat that any major changes to the code, as originally drafted, could pose for the industry in the form of an increase in imported meat from countries with lower animal welfare standards. Submitters also noted the time and cost required to obtain Resource Management Act and building consents to make changes to comply with the code requirements. Many voiced concerns about the tactics used in the Royal New Zealand SPCA and SAFE campaigns. Supporting submitters were concerned that any change in the proposed code would increase compliance costs, resulting in many farmers leaving the industry.

9. Opposing submissions in general concentrated on the following issues:
  - Sow stalls, farrowing crates and boar stalls deprive pigs of the opportunity to express natural behaviours and cause abnormal behaviours (e.g. stereotypic behaviours) and health problems (lack of physical fitness, lameness and skin abrasions), all of which mean that they contravene the Act
  - Provision of a high fibre diet for sows to alleviate hunger and reduce the incidence of stereotypic behaviours
  - Provision of appropriate material for rooting and bedding, and to help alleviate boredom and hunger, reduce aggression, and reduce the incidence of stereotypic behaviours
  - Routine husbandry procedures such as handling, tail docking, teeth clipping or grinding, nose-ringing and castration
  - Space requirements for growing pigs
10. A Colmar-Brunton poll carried out on behalf of the Royal New Zealand SPCA, found that 86% of the 500 people questioned thought that dry sow stalls were unacceptable and 87% thought that they should be banned (the survey had a margin of error of +/- 4.4%).
11. Many submitters believed that NAWAC or the government in some form drafted the code, and paid for it. Many suggest the code reads like a justification for the status quo, while others thought it capitulated to industry pressure. They believe that the code is designed to maintain the current management systems and hence current profits, rather than safeguard animal welfare.
12. Some submitters believed that organic farming is synonymous with good welfare, believing that organic systems are more humane, and therefore pigs should only be raised in free-range or outdoor systems.
13. Opposing submissions wanted labelling to be mandatory to indicate if the product, domestic or imported, was from animals which had been kept in stalls at any time. Some submitters noted that they would be prepared to pay a premium for free-range products.
14. While there was an emphasis on banning dry sow stalls by 2006, the negative consequences of banning stalls in the UK over a short time frame were highlighted by others.
15. It was noted that some submissions were unclear on the legal status of minimum standards. Failure to comply with a minimum standard may lead to a prosecution under the Act. There was also misunderstanding about the difference between minimum standards and recommended best practices. The Act does not define minimum standard. NAWAC has taken minimum standard to mean the minimum level of care required to meet the welfare of

the animal and to meet the obligations of the Act. The Act does not define recommended best practice. NAWAC has taken recommended best practice to mean the best practice agreed at a particular time, following consideration of scientific information and accumulated experience and public opinion. It is usually a higher standard of practice than the minimum standard, except where the minimum standard is the best practice. It is a practice that can be varied as new information comes to light. Recommendations for best practice will be particularly appropriate where it is desirable to promote or encourage better care of animals than is provided by a minimum standard. Failure to comply with a recommended best practice does not make an individual liable for prosecution under the Act. In many cases it is not possible to make a recommended best practice the minimum standard, while in others the minimum standard will be the best practice e.g. stunning prior to slaughter.

When recommending minimum standards and recommended best practices, NAWAC must take into account good practice, available technology and scientific knowledge. The Act does not define good practice. NAWAC has taken good practice to mean the carrying out of a customary or expected procedure in a manner which meets the required purpose, is sound and thorough, and which is recognised by others carrying out the practice. In addition, good practice meets the legal obligations of the Act and failure to comply could result in a prosecution.

NAWAC may recommend minimum standards and recommended best practices, which do not meet the obligations of the Act but only in exceptional circumstances (section 73(3)). In making such a recommendation section 73(4) requires NAWAC to have regard to –

- The feasibility and practicality of effecting a transition from current practices to new practices and any adverse effects that may result from such a transition
- The requirements of religious or cultural practices or both
- The economic effects of any transition from current practices to new practices.

### **Specific Significant Differences**

16. The following are the significant differences (considered by NAWAC to have arisen) between the draft code submitted for public consultation and submissions received. It should be noted that differences were taken to be rejections of the code – either wholly or in part. NAWAC points out that it has considered all submissions and all aspects of the draft code.
17. There are a number of minimum standards, where the animal welfare implications are clearly self-evident and require no explanation for their inclusion e.g. the provision of food and water. NAWAC has decided that it will not provide comment on those minimum standards or recommended best practices, but will provide explanations on minimum standards which it believes are complex, controversial or on which it received submissions with significant differences of opinion. Minimum standards as drafted may have been amended for a number of reasons including: to make them legally robust, to ensure a more effective coverage of the issue, to replace an existing minimum standard, to change from a recommended best practice to a minimum standard, or to delete or replace one as drafted by a new recommended best practice or minimum standards.
18. No significant differences of opinions amongst members.

## Dry Sow Stalls

19. The housing of dry sows (i.e. pregnant sows) is a very controversial issue and attracted a large amount of comment. There is community concern about the welfare of pregnant sows confined in stalls. In some countries the tethering of sows is permitted, which is where the sow is tied to the stall either around the girth or around the neck. Tethering is being phased out, including in New Zealand. Tethering will not be permitted by this code. The question then of the use of sow stalls is a very complex one. In reaching its decision on the use of dry sow stalls, NAWAC has considered current practices in New Zealand, carried out field visits to farms, considered relevant scientific literature and taken into account public opinion, and international practices and trends.
20. There are currently several options available for housing sows during pregnancy. These include dry sow stalls, group pens (both indoors and outdoors) and group housing on deep litter, such as straw or sawdust. Dry sow stalls may be used for differing periods depending on the management system and may vary in use for part or all of the pregnancy period (about 115 days). The overall use of dry sow stalls is less in New Zealand compared to overseas countries, including those countries where most imported pork originates.
21. The scientific literature sometimes appears to be equivocal on some of the issues in pig production, including the use of dry sow stalls. Differences in the findings and conclusions in the scientific literature may be due to differences in management, unit size, genetics, pen design or whether studies were carried out in an experimental situation or on-farm. Literature can be used to support or justify one position or system while alternatively there is literature to support a different viewpoint or system. Understandably there is more literature evaluating traditional systems of production compared to newer systems.
22. Section 4 of the Animal Welfare Act 1999, requires that there are five needs which must be taken into account when deciding the appropriate physical, health and behavioural needs of an animal. NAWAC believes that it must ensure that the five needs, as set out in section 4, are all taken into account when determining the minimum requirements for animals, acknowledging that the needs are appropriate to the species, environment and circumstances of the animal.
23. One of those needs is the ability to display normal behaviour. NAWAC has not evaluated the needs of a domestic animal solely on the basis of what the animal's behaviour may be in the wild or undomesticated state. However, the behaviour of a species in the wild does give us an understanding of how and why animals react or behave in a certain way in the domestic situation and what might be important in domestic situations.
24. NAWAC does not find though that it is acceptable to justify certain practices based on some natural behaviours (e.g. confinement at farrowing because sows seek isolation) and to disregard other natural behaviours because the system does not allow for it (e.g. nest building when no nest material is made available). In its submission of October 2001, the NZPIB states in the context of farrowing, that "confinement of the sow during this period is consistent with natural behaviours" and that the "sow's natural behaviour at this time involves nest-making at their selected birth site". This indicates a selective use of natural behaviours.
25. When confined in stalls, sows are only able to stand up and sit or lie down. The environment is barren and this, plus an inability to exert any control over this environment, may result in boredom and frustration and often abnormal behaviours which some describe as stereotypic

behaviours (a sequence of movements that is repeated several times with little or no variation and which has no obvious purpose). Dry sow stalls are an unrewarding environment for sows.

26. Section 10 of the Act requires that the physical, health and behavioural needs be met in a manner that is in accordance with good practice and scientific knowledge. NAWAC has viewed those needs in light of good practice and scientific knowledge. In considering good practice, NAWAC has considered both current New Zealand industry practice and international practice.

27. What is current practice in New Zealand?

71% of New Zealand pig producers do not use dry sow stalls – this equates to 55% of sows. Most of these producers are termed as small or medium sized producers. Of the 29% of producers who use dry sow stalls, most are big producers (known in the pig industry as ‘three-vote’ producers) with over 218 sows per producer. In a sow housing survey prepared for NZPIB in July-August 2001, 91% of these ‘three-vote’ producers indicated that they are not planning to reduce the use of dry sow stalls in the future.

76% of ALL producers (including those producers who are currently not using dry sow stalls) have said that they do not intend to use dry sow stalls in the future. This figure most likely takes into account the 71% of producers who do not use stalls, since as noted previously most of the big producers do not intend moving away from using dry sow stalls. Not stated in the report is the fact that of the 45% of sows that are housed in dry sow stalls, most of them (about 91%) are in indoor systems with the remainder in outdoor systems.

The NZPIB in its submission of 22 January 2003, notes that there is no New Zealand research about the relative welfare of sows in stalls, group housing or those farmed outdoors, although it also notes that the welfare of sows on farms that have converted to group housing has been reduced. It further states that conversion of farms from stall housing to group housing was driven more by public opinion and political pressure than clear evidence of improved sow welfare.

28. Internationally, in most countries such as Canada, Australia and USA dry sows stalls are permitted. Dry sow stalls are banned in the UK and Sweden, and will be in Finland in 2006, Switzerland in 2007, Netherlands in 2008 and Denmark in 2014. The EU will only allow the confinement in dry sow stalls for a maximum of 4 weeks after mating from 1 January 2013.

29. Previously NAWAC considered that confinement of sows in dry sow stalls does not meet the obligations of the Act. However, after further review of the literature, further field visits, and consultation with the pig industry and veterinarians, NAWAC has concerns about the management of any transition period to a complete phase out. This will take time and accordingly NAWAC has recommended a gradual reduction in the use of dry sow stalls to allow an option for up to 4 weeks following mating (see Minimum standard no.10). Management issues that will need to be addressed during the transition period include the:

- Standard of stockmanship in managing aggression in group housed systems
- Limitations of space when converting existing buildings (for indoor systems)
- Rapid genetic selection against aggression in the national herd
- Most suitable design of feeding systems and housing that limit aggression
- Appropriate methods of introduction of gilts to minimise aggression

- Evaluation of the perception that there are higher levels of aggression at mating and in the first stages of pregnancy and the implications for the management of the post mated sow.
30. With respect to scientific knowledge, as noted earlier, scientific studies of pig production may be equivocal and conflicting, and scientific findings may be used to support different systems and arguments for those systems.
  31. The SVC Report lists the following advantages of stalls: fighting with associated stress is prevented, individual feeding (with no competition), easier management and treatment of individuals. The disadvantages include high levels of stereotypic behaviour, of unresolved aggression and of inactivity associated with unresponsiveness, weaker bones and muscles, less cardiovascular fitness, more urinary tract infections and more abnormalities of bone and muscle development.
  32. The SVC Report lists the following advantages of group housing are listed as: more exercise, more opportunity for normal social interactions and better potential for the provision of opportunities to root or manipulate materials, less abnormality of bone and muscle development, less abnormal behaviour, less likelihood of extreme physiological responses, fewer urinary tract infections and better cardiovascular fitness. The major disadvantages of group housing are the number of injuries, which occur due to fighting, and a reduced ability by the stockhandler to provide individual attention.
  33. Stalls are predominantly used to reduce aggression, facilitate routine procedures such as pregnancy testing, and control feed intake. The mixing of unfamiliar pigs usually results in fighting which leads to the formation of a stable hierarchy. Fighting results in stress and injuries which are major welfare concerns. In addition, there are a number of effects of stress, one of which is the effect on reproduction. Reproductive performance can serve as a barometer of animal welfare and monitoring it offers a potential measurement of stress in animals. It is well recognised that the embryo implantation phase is particularly susceptible to stress, and stress may cause increased embryo mortality with a consequent reduction in conception rate and litter size.
  34. As noted previously the data comparing group housing with individual housing are equivocal.
  35. Interpretation of farm surveys may be complicated by unrecognised differences in management. In a study of the two largest UK national recording schemes, where stalls were compared to group housing there were no detrimental effects found on reproductive performance of group housed sows in comparison with stalled sows. Other studies quoted in the SVC Report all concluded that, after carrying out large-scale studies on commercial farms, there was no difference in litter size or farrowing rate between stalled sows and group housed sows. In contrast, however, still other studies show greater difference between group housing and stalls, which may be due to poorer management of group housed sows. Fearful pigs have sustained elevated levels of cortisol that resulted in poor growth and reproductive performance. A number of authors have found that the use of group housing immediately after mating has been associated with a reduction in conception rate and reduced litter size, when compared to sows housed in stalls for early pregnancy. This indicates a detrimental effect of group housing during this time on sow welfare. The consequences of housing in stalls for shorter or longer periods and the advantages or disadvantages for overall welfare remain unresolved.
  36. In recognition of an apparent disparity in the advantages and disadvantages of different systems as reported in the literature, the SVC Report notes that 'the quality of stockmanship

has a considerable influence on pig welfare and hence the results of studies comparing welfare in different systems'. It notes that poor stockmanship can lead to poor welfare in any system. In addition, the report notes that there are always problems with new systems. Group housing systems have had a shorter development period than stall systems, and the problems first encountered in stall systems have been addressed. Experimental comparisons should be carried out using good examples of systems and high levels of management. Because of differences in stockmanship, it can be difficult to make meaningful comparisons between systems and therefore is likely to be a major reason for the other equivocal results when comparing different systems.

37. The SVC Report concluded that "since overall welfare appears to be better when sows are not confined throughout gestation, sows should preferably be kept in groups. However, only housing systems resulting in minimal aggression or injury should be used."
38. NAWAC is firmly of the opinion that when making changes to husbandry practices for animal welfare reasons, the outcomes must result in an improvement in overall welfare. Only housing and management systems resulting in minimal aggression or injury should be used.
39. NAWAC agrees with the finding of the SVC Report that the quality of stockmanship has a considerable influence on pig welfare and that poor stockmanship can lead to poor welfare in any system. The SVC Report also states that recommended systems should be manageable by the average farmer but if a substantial proportion of farmers would find the system difficult to manage, an alternative should be recommended. While NAWAC would be in general agreement with the principle of this finding, it notes that this should not stop change from occurring, as change can be achieved over a transition period which must include industry-wide training.
40. Sows will also spend up to 6 weeks in farrowing crates before they may be transferred to dry sow stalls, and the period of confinement may vary for all or part of the pregnancy, so that the total period of confinement needs to be considered.
41. NAWAC notes the following:

### **Aggression**

- Sows are naturally aggressive animals and when mixed fighting will occur.
- Fighting will occur until a hierarchy is formed. The length of time taken for a hierarchy to develop will determine the amount of time during which animals will experience stress - both acute stress (e.g. due to fighting) and chronic stress (e.g. due to the restriction or prevention of feeding of subordinate sows). The literature reports that the time for aggression to subside and for a hierarchy to form may vary from 3 days to 28 days although one study showed that aggression persisted until 8 weeks after mixing.
- Fighting will result in acute and chronic stress, and subordinate or submissive animals will probably suffer to varying degrees ongoing bruising from fighting, and fear and prevention from feeding, by dominant animals throughout their entire pregnancy.
- It is not entirely clear whether aggression remains generally constant throughout the gestation period, or whether it is higher following mating; anecdotal evidence claims both.
- The levels of aggression may be linked to the hormone status of the sow. Metabolites of progesterone are known to have calming neuroactive effects and analogues of them are used as anaesthetics and sedatives. Progesterone concentrations and those of its metabolites usually change in parallel, and progesterone concentrations are known to rise

following ovulation, reaching a plateau at about 28 days, and then begin to fall again immediately prior to parturition. This may account for the anecdotal evidence that sows are more aggressive at and soon after mating than subsequently and the firm observation that aggressive behaviour is seen in sows prior to farrowing. NAWAC, however, is unaware of any specific data that relate aggressiveness to progesterone and its metabolite levels in pigs.

- The hierarchical nature of the sow can therefore expose animals to significant levels of stress in group housing situations and for a significant period of time, which may have both behavioural and physiological effects.
- The general impact that stress can have on physiological functioning has been well documented, including on reproductive performance. It is well known that stress can negatively affect the critical early part of pregnancy when implantation of the embryos is occurring (the first 4 weeks).
- The industry therefore seeks a 4 week option for the use of stalls due to the effect on implantation (which is completed by the 4<sup>th</sup> week after mating) and the ability to provide extra feed for thinner sows, especially younger sows.

### **Group Housing**

- Welfare may also be poor in group housing systems if aggression is not properly managed.
- It is imperative therefore that group housed sows are well managed to address the effects of aggression.
- For this reason the section in the code on mixing of pigs has been extended, as this is an important issue and there must be strategies in place to ensure the welfare of those pigs that are subordinate and that will bear the brunt of the aggression. One study found that 5% of sows were not able to adapt to group housing or had to be removed because of fighting.
- While it is recognised that there are detrimental effects of group housing after mating, in New Zealand 71% of pig producers are not using dry sow stalls.
- The use of a combination of stalls and group housing has been found to significantly lower the removal rate of sows from the herd due to infertility, lameness, deaths and euthanasia when compared to the use of group housing alone.

### **Outdoor Systems**

- It is clearly easier to provide more space for sows in outdoor systems, however outdoor systems are only suited to some parts of New Zealand such as Canterbury.
- Outdoor systems are also associated with other welfare problems such as thermoregulation in winter and summer (young pigs are particularly susceptible to chilling), nose ringing, litter desertion, avoidance of other pigs at feeding times and shelter.
- Outdoor systems have a higher incidence of lameness and/or infections of the legs and many sows and boars are culled for these reasons.

### **A Transition Period**

- In the draft code which was publicly consulted for a second time in December 2002, NAWAC proposed that there should be a stepwise reduction in the use of dry sow stalls and proposed that a first step should be a maximum of 10 weeks as from 1 January 2009.

There was however no scientific reason for selecting 10 weeks. NAWAC notes that the normal pregnancy is 16 weeks which would only allow sows freedom for 6 weeks in any pregnancy, if a 10 week maximum was selected.

- In reviewing this proposal, NAWAC has decided that a more appropriate step would be 6 weeks. While there was no scientific basis for a proposed 10 weeks there is arguably more substantive justification for 6 weeks.
- A 6 week interval accommodates the option to confine sows, after they have been successfully mated, for a period sufficient to reduce the effects of aggression between sows that is apparent following mating. As noted, this maybe linked to rising levels of progesterone until it peaks at around 6 weeks when the placentas are fully developed. As noted this is a critical time for implantation of the foetus. This period is also sufficient to allow for normal management procedures such as pregnancy testing or recognition of sows that return to service.
- It also allows adequate time for most sows that have slipped in condition during the preceding pregnancy to gain sufficient weight to be put onto normal dry sow feeding rates. Whenever sows are mixed there will be some aggression and foetuses are more vulnerable to the effects of reduced feed intakes that would occur when sows are mixed at 10 weeks than they would be at 6 weeks.

## Conclusion

- While there is public pressure to move away from individual housing, and it is popularly thought that group housing will improve sow welfare, it is important to emphasise that there are advantages and disadvantages with both stall systems and group housing.
- Dry sow stalls provide an impoverished situation where sows have no control over their environment, and where they are unable to display their normal behaviours.
- NAWAC considers that the use of dry sow stalls for extended periods or throughout the entire pregnancy does not meet the obligations of the Act and has therefore recommended that the use of dry sow stalls continue but as an exceptional circumstance under section 73(3) of the Act. Minimum standard 10 allows for phasing out of dry sow stall use beyond 4 weeks after mating, at 2013.
- It agrees with the SVC Report that overall welfare appears to better when sows are not confined throughout gestation, and that sows should preferably be kept in groups. It agrees with the SVC Report that group housing of sows is more difficult to manage than stall housing.
- NAWAC is concerned though that some sows are likely to be bullied in group housing systems and their welfare may in fact be worse than during confinement in dry sow stalls.
- NAWAC considered housing in individual pens but concluded that from an economic and management point of view it would not be a viable industry-wide proposition.
- Provided that they are well managed, group housing should be a recommended best practice.
- Pig producers need to maximise production and in the case of sows, maximise the number of live piglets born.
- NAWAC recognises that some submitters wanted a reduction in the use of dry sow stalls to occur earlier, but NAWAC is strongly of the opinion that the industry must be given a reasonable time to make the in order to allow for resource consent, design preparation, building consents and upskilling of stockpersons.

- NAWAC believes that given the equivocal nature of the scientific data and the lack of rigorous recommendations, if dry sow stalls are to be phased out completely, further research must be carried out to address the current problems with alternative housing systems.
- NAWAC therefore wishes to see further scientific evaluation carried out on different group housing systems and for the industry to assess the changes in management practices that it will need to undertake.
- NAWAC has allowed a 5 year period until 2009 when it will review the research both national and international, and review the current code. At this time it will determine whether to completely phase out dry sow stall use.
- NAWAC suggests that research should be directed towards the following areas:
  - since much aggression occurs at feeding, the use of individual feeding systems, whether electronic or mechanical, may provide a further means by which bullying and aggression might be minimised.
  - genetic improvement in the breeding of less aggressive sows
  - the perception that sows are more aggressive during the period following mating
  - the use of partial stalls within pens
  - pen size and shape
  - turn-around stalls
  - separate mixing areas
  - training requirements for stockmanship
  - identification of the features of successful group housing management systems
- Individuals which are sick or injured, or which have been attacked by other sows may temporarily be kept in individual pens (but not stalls).

### **Farrowing Crates**

42. There is public concern over the use of farrowing crates, since they confine the sow in much the same way as do dry sow stalls, generally from before farrowing until weaning (a period of up to six weeks). This concern could lead to the restricted use of farrowing crates in the future. However, as with dry sow stalls, the issue is complex and multi-factorial.
43. In its submission of October 2001, the NZPIB argue that “once she has given birth, the sow will not generally move far from the birth site and prefers to live a relatively sedentary life during the period of lactation”. While this may be used as a justification for confinement of the sow, it does not necessarily justify confinement in a crate where the sow is unable to turn around.
44. The main reason for confining sows during nursing is to prevent crushing of piglets. The welfare of the sow, however, may be poor in a system that provides good welfare for the piglets, and vice versa (the SVC Report). Criticisms of the farrowing crate principally focus on the welfare of the sow rather than the piglet.
45. Most of the literature supports that 80-90% of total piglet mortality occurs within the first week of life. While death by crushing is claimed to be the major reason for piglet mortality, with up to 50% of deaths occurring by overlying, reviews of different studies have shown that

this may actually range from 20% to 50% of total deaths. Inadequate colostrum/milk intake has been found to be responsible for an equally large proportion of deaths. Low birth weight is also a very important risk factor for the newborn piglet. Efforts to increase the birth weight would be important in improving the chances of survival.

46. Again the literature appears to give conflicting results. One study, which reviewed much of the literature on piglet mortality from the previous 30 years, reported that the average piglet mortality for litters in crates was 10.9% compared to 21% for open pens. Similar results have been found by other authors (see NZPIB Submission October 2001, and references therein).
47. Internationally, Sweden banned the use of farrowing crates in 1988 and Switzerland has banned the use of farrowing crates from June 2007. Already nearly half of the farms in Switzerland use farrowing pens and they have achieved piglet survival rates as good as those achieved in crates (Cronin, personal communication). Cronin et al (2000) reported a similar finding in Australia, in an on-farm trial comparing sow and litter performance in a farrowing pen (Werribee Farrowing Pen) with conventional farrowing crates. The natural behaviour of the sow confining herself to the birth site can still be achieved in a farrowing pen, such as the Werribee Farrowing Pen (Cronin, personal communication). Cronin (personal communication) noted that the key factors found in Swiss research associated with reduced piglet mortality in farrowing pens were:
  - The need for genetic selection to select progeny from litters in which sows did not overlie the piglets.
  - Sows should not be overweight at parturition.
  - Air movement can be incorporated as a design feature to help ensure sows choose the correct section of the pen for their farrowing nest.
48. It is important to note that Switzerland has a high proportion of small herds and, therefore, presumably a lower number of sows per stockperson when compared to other pig producing countries. One benefit of this lower pig:stockperson ratio and the round the clock attendance of stockhandlers that is practised is the improved monitoring of individual animals and resulting higher number of weaned piglets per sow per year. It should be noted that New Zealand does not have the same financial subsidies that are available to Swiss producers. Other differences include building structure and cost of feed.
49. Another study evaluated piglet mortality in 361 litters using the Scan farrowing pen. The sows are confined in the pen, in the same way that sows are confined in conventional farrowing crates, for 4-6 days following farrowing. After this time the sow is free to move around except for a piglet hiding area. It was found that 87% of the losses by crushing had occurred by the third day of life when the sows were crated in the farrowing pens, which reflects the same situation in conventional crates. In this study, it was noted that mortalities were highest in piglets with low birth weights.
50. NAWAC also notes the following:
  - Farrowing crates have advantages and disadvantages, the advantages being reduced piglet mortality, easier management, better individual attention, easier health control, reduced competition, less disturbance and fighting between sows, reduced fighting between piglets, easier treatment of sows and piglets. Disadvantages for the sow include restriction in movement, inability to carry out nest building, increased stereotypic behaviours, a lack of control over the environment, an increase in diseases of the urogenital system, an increase in metritis-mastitis-agalactia and lameness.

- In confined sows there is evidence of self-narcotisation by endogenous opioids which is taken to mean poor welfare.
- The Swiss and Australian research carried out on-farm, shows that farrowing in pens provides a viable alternative to farrowing crates in terms of piglet survival, however this has to be balanced against stockmanship, ratio of stockpersons to sows, herd size and economic factors such as subsidies.
- Pens provide the same advantages as crates.
- Pens may allow for a suitable compromise within the 'confines' of intensive production, between the protection of the piglets and meeting the welfare needs of the sow.
- There will be an economic cost to move away from conventional farrowing crates, however some existing systems may not be too difficult to convert. NAWAC has offered some suggestions in the code.

### **Conclusion:**

- The welfare of the sow has been compromised in favour of ensuring maximum survival rates of piglets.
- It may not be possible to have a housing system that maximises welfare for both sow and piglets simultaneously.
- It is possible to improve the welfare of lactating sows by restricting the time spent confined in the crate.
- NAWAC considers that the extended use of farrowing crates does not fully meet the obligations of the Act, and therefore recommends that their use be an exceptional circumstance under section 73(3) of the Act.
- The code proposes a minimum standard allowing for a maximum confinement of six weeks in farrowing crates. This is consistent with current practice and reflects the minimum time for weaning of four weeks.
- In addition, there is a recommended best practice that sows should be confined in the farrowing crate for less than the maximum of six weeks, since most deaths of piglets from overlying occur within the first few days after farrowing.
- NAWAC has deleted the minimum space requirements for pens in Minimum standard 5 for two reasons. There are a number of different pens currently being evaluated and NAWAC believes that it would be premature/inappropriate to recommend a minimum space at this stage. Secondly farmers should be given the opportunity to develop new systems by adapting current facilities to provide more space, without being restricted by a minimum space requirement which would preclude such initiatives.
- NAWAC encourages the development of alternative farrowing systems which allow for the maximising of both sow and piglet welfare, in particular systems where the sow can be kept loose and carry out normal nest building, but without compromising piglet survival.
- NAWAC will consider the results of research into alternative farrowing systems in five years time in 2009 and at this time will determine whether to provide a transition to alternative farrowing systems.

## Minimum Space Requirements

### Growing Pigs

51. Subsequent to its consideration of the public draft of the code and submissions received, NAWAC proposed increasing the minimum space requirements for growing pigs by 20% to provide space for a dunging area. This was on the basis of the recommendation in the deemed code of welfare for pigs. In addition it also proposed increasing the space requirements for breeding animals. The NZPIB subsequently submitted that the proposed changes far exceeded the internationally accepted minimum space requirements (including those set down in the EU Directive 2001/88/EC) and that they were therefore not justified both by scientific evidence or good practice.
52. The NZPIB proposed that the space requirements should be determined by a mathematical formula set out in a paper by Spoolder et al (2000). The formula uses a multiplier of  $0.03 \times \text{Liveweight}^{0.67}$  to determine the space requirements in  $\text{m}^2$ . When the available space was calculated by this formula, Spoolder found that there were no negative effects on production and welfare. The temperature at which this study was carried out ranged from  $14.5^\circ\text{C}$  to  $26.3^\circ\text{C}$ . The Spoolder formula also shows that as a pig gets heavier its dimensions and space requirements do not increase at the same rate as its body weight, therefore the relationship between the weight of a pig and its minimum necessary space requirement in intensive housing systems is not linear. It should be noted that NAWAC's proposal was based on a linear mathematical model, which results in a very significant divergence from the appropriate curve as the pigs get bigger.
53. Petherick and Baxter 1981(cited in the SVC Report) note that  $0.019 \times \text{Liveweight}^{0.67}$  provides enough space for sternal recumbency (lying upright on the chest) and  $0.047 \times \text{Liveweight}^{0.67}$  provides enough space for lateral recumbency (lying flat on the side).
54. The factor 0.03 takes account of the fact that pigs under thermoneutral conditions prefer to lie in contact and to some extent therefore share space (Professor Edwards, personal communication). Professor Edwards has qualified this further by recommending that 0.03 is a minimum and not appropriate for solid floors or hot climates, and it also assumes that pen design and environment are good.
55. Spoolder et al (2000) also found that floor type and the provision of straw as bedding material may have an effect on welfare parameters. They found that the provision of "straw resulted in higher levels of manipulation: straw enriched the environment, stimulating exploratory and foraging behaviour and resulting in significantly altered time budgets". Compared to other pigs with no straw they spent less time manipulating other substrates such as walls, dung and pen mates. They were also cleaner, but had more skin lesions, which may have indicated more aggressive activity.
56. In addition to the above proposal, NZPIB also provided information on a survey of pig producers which represented 25% of the industry's total commercial pork production. The survey showed that current industry practice in New Zealand provides spaces for most classes of pig at a level which is above the minimum space requirements specified by the Spoolder formula and also above the EU requirements. It also showed that the trend for current New Zealand practice is similar to international trends.

57. With respect to space for growing pigs NAWAC notes the following

- It accepts the principle that the space requirements for pigs in intensive housing does not follow a linear relationship, since weight (volume/size) when related to surface area does not increase proportionately.
- Growing pigs are generally kept in the same group from weaning to slaughter.
- The minimum space requirements are only reached for a short time as pigs reach the maximum weight before being shifted into a larger pen (or sold for slaughter).
- Once the pigs have been shifted into a larger pen, they will be at a lower stocking density and therefore the space allowance will be greater than the minimum.
- In the NZPIB survey (which accounted for 25% of total commercial production) the average space and the mean minimum space exceeded for all classes of growing pig, the recommended minimum based on the Spoolder formula.
- When the available space is calculated by the Spoolder formula, a similar degree of welfare is provided, when compared to the banded system as set down in the EU Council Directive 91/630/EEC.
- NAWAC notes that the Spoolder formula does not allow enough space for growing pigs under hot climatic conditions (Professor Edwards personal communication), which might occur from time to time in some areas in New Zealand during summer. Producers would therefore have to take appropriate steps to address this, such as, temporarily reducing stocking density, overhead sprinklers or water drippers, increase ventilation rates, opening flaps and doors, as has been noted in Minimum standard no.6.
- The need for adequate space, warmth and good ventilation should be a priority in the design of any piggery accommodation. Space allowances for pigs must provide for their comfort at all times throughout the year. As far as possible, in periods of high ambient temperatures, enough space should be provided to allow pigs in a pen to lie in lateral recumbency without the need to have body contact with other pigs. In periods of low ambient temperatures accommodation should be such that chilling resulting in huddling or inappropriate dunging patterns should be avoided.

## Conclusion

- It was agreed that the minimum space should be determined by the use of an allometric equation, such as the Spoolder formula, which continuously relates total space requirements to average pig liveweight by some appropriate factor.
- A banded system imposes less flexibility in the management of grower pigs compared with a system using an allometric formula.
- Where a dunging area, as part of a total slab, and/or an open drain, is provided, this area must be excluded from the calculation of the total space requirement per pig.
- Pigs will have more space than the minimum specified for most of the growing cycle, as they will be shifted 1-2 times between weaning and being sent to slaughter. As pigs approach a maximum weight, it is only at this stage that they will approach the maximum density permitted by the minimum space requirement. At this point they will be shifted into a pen which will provide more space or sold for slaughter. In practice therefore, for much of the growing cycle the actual space available will exceed the minimum requirements.

## Breeding Pigs

58. In its submission of 28 August 2002, the NZPIB submits that its proposed space allowances for breeding pigs kept in groups are drawn from recommendations set out in a book by Taylor G., Kruger I., and Ferrier M. entitled *Australian Pig Housing Series; Plan it – Build It. New South Wales Agriculture* (Tamworth; Australia 1994), which is based on information from agriculture experts from Australia, USA and Hong Kong.
59. While it is claimed by the NZPIB that these recommendations are ‘totally consistent with good practice and scientific knowledge’, the degree of scientific rigour is not clear from the pages quoted in Taylor et al’s book. In addition, NAWAC notes that the publication is nearly 10 years old and that the publication bases the recommendations on three countries only. NAWAC would suggest that, at least in 1994 (the publication date of the book) the levels of animal welfare awareness and certainly research were lower in the USA and Hong Kong, than in a number of European countries, Australia and New Zealand. In fact at a symposium on Swine Housing and Well-Being in Des Moines, Iowa in June 2002, one of the papers presented noted that concerns over animal welfare combined with European based scientific data which led to the phase out or restricted use of dry sow stalls, had increased the pressure on the USA swine industry to consider advantages and disadvantages of alternatives to dry sow stalls. Note, this was in 2002. The same paper also noted that to that date there had been few published North American studies on the effects of gestation housing. NAWAC notes also that information from the Taylor publication uses words such as ‘recommends’ and ‘at least’ when referring to space requirements. In addition, an area of 9 m<sup>2</sup> is recommended for boar pens ‘to allow sufficient freedom of movement, especially if the boar pen is also used as a mating pen’.
60. NAWAC notes that the *EU Directive 2001/88/EC of 23 October 2001* requires a minimum:

1.64 m <sup>2</sup>	for mated gilts
2.25 m <sup>2</sup>	for mated gilts and sows kept in groups, to be increased by 10% when kept in groups of less than 6 and decreased by 10% in groups of more than 40

and that the *EU Directive 2001/93/EC of 9 November 2001* requires a minimum:

6.0 m <sup>2</sup>	for adult boars
10.0 m <sup>2</sup>	when the pen is used for natural service

These minimum space requirements are also reflected in the minimum space requirements in the UK code of welfare for pigs which was released by the Department for Environment, Food and Rural Affairs in March 2003.

61. The NZPIB in its submission of 28 August 2002, supplied the results of a survey which had been carried out in August 2002 which accounted for 25% of total commercial production in New Zealand. It found that the average space provided for all classes of breeding pig exceeded the minimum space requirements proposed by the NZPIB.
62. The question of what minimum space should be provided to meet the purposes of the Act is a challenging and complex one. NAWAC disagrees that the spaces recommended by the NZPIB, which are based on a 1994 Australian publication, should be the minimum on the

basis of good practice and scientific knowledge. NAWAC does not believe that this has been adequately demonstrated.

63. NAWAC is of the considered opinion that it wishes to see more space provided for breeding pigs, rather than less space, unless there are good reasons not to. In its judgement breeding pigs should have the ability to have more freedom of movement than many current systems offer. However to provide more space also means increased costs to the industry, which NAWAC believes should be shared by the consumer or society as a whole. NAWAC has no desire to send the industry into decline with producers being forced out of business, because of a too rapid transition to welfare standards required to meet the obligations of the Act.
64. With respect to breeding pigs, NAWAC notes the following:
- In its considered opinion breeding pigs should have more space than is currently proposed, although this must be balanced against thermoregulatory needs.
  - On the basis of the NZPIB survey, the industry itself appears to be committed to providing more space, since all classes of breeding pig were ‘on average’ receiving more space than is being proposed.
  - NAWAC disagrees with the implications of the opinion expressed in the NZPIB statement that the ‘direction of current scientific thinking appears to support smaller space requirements for breeding stock in groups’, suggested that less space, not more, should be provided. This also appears to be out of step with current practice in New Zealand as evidenced by the NZPIB survey.
  - NAWAC believes that it must take note of New Zealand based information and that it must take into account the NZPIB survey which indicates current practice in New Zealand, as has been done elsewhere in the code, and which has been the cornerstone of many NZPIB recommendations.
  - NAWAC considers that the recommendations in the Taylor publication are not shown to be good practice and scientifically based, as claimed by the NZPIB, and that they represent practice in only three countries, in two of which, NAWAC considers that, at time of publication, a commitment to efficient production would have been the dominant driver not animal welfare. NAWAC is therefore of the opinion that the NZPIB has provided no sound basis for the proposed recommendations to be the minimum required to meet the Act.
  - NAWAC notes that Professor Edwards has stated that in theory the Spoolder formula could also apply to breeding stock in groups. NAWAC disagrees. NAWAC has agreed to the application of the Spoolder formula to determine space requirements for growing pigs with the strict proviso that growing pigs only reach the minimum space requirements for a short period, before being moved into a larger area or sent for slaughter. In contrast, breeding groups are maintained at the same stocking density for their entire breeding life.
  - NAWAC also notes that in general, sows are getting bigger and therefore will require more space.

## Conclusion

- That the minimum space requirements for breeding pigs be set at the average (rounded) figures as per the NZPIB survey but that there will be a phase in period of 5 years. This will allow for any requirement to obtain resource consents, design preparation, building consents and upskilling of stockpersons (which would be necessary to build new housing or expand existing houses) and also reduce the economic cost to producers. In the

intervening period, NAWAC agrees to the proposed recommendations by the NZPIB. Since it is recommending a minimum standard that does not meet the obligations of the Act, section 73(3) will apply.

### **Boar stalls**

65. Boars may be kept on their own, in small groups or with a group of breeding gilts or sows (usually outdoors). Boars that are kept in stalls are normally taken out of their stalls several times a week for mating purposes.
66. There appears to be no specific research on the housing requirements of mature boars, although it is reasonable to expect that information on factors such as space, temperature, flooring etc for pigs at other stages would apply. Under natural conditions mature boars are solitary and only come into contact with other pigs during mating.
67. It is normal commercial practice to keep mature boars individually, either in pens or in stalls. Stalls are commonly used in semen collection centres.
68. Mature boars will fight if unfamiliar animals are mixed, and severe injury may result, and therefore mixing should be avoided. If mixing is to occur it should only be carried out under supervision.

### **Conclusion**

69. NAWAC has concluded that the treatment of boars should not differ significantly from that of sows and that confinement in stalls for long periods is not acceptable and does not meet the obligations of the Act. In addition, NAWAC is concerned about the increased risk of skin conditions due to urine scald, as a result of the boar's anatomy, which is potentially more of a risk when boars are confined in stalls, compared to pens. NAWAC is also concerned that stalled boars must receive exercise if they are not being used for mating. If stalled, boars must be exercised at least twice a week, to prevent muscular and skeletal weakness, unless they are being used for mating. Boars should also be housed with visual and olfactory contact with other pigs.

NAWAC agrees with the draft as proposed that boar stalls should be phased out, and believes that there are no valid reasons to wait until 2012, as was proposed in the draft code. NAWAC originally proposed a total phase out date by 2006, but believes that this is too early since it could cause economic hardship and because of the time it takes to obtain resource consents, design preparation and building consents.

- It has therefore agreed that the above provisions will take effect from 1 January 2008. This provides for a 4 year period which allows for obtaining resource consents, design preparation, building consents and upskilling of stockpersons. In the meantime a section 73(3) exception will apply, which takes into account the need for a transitional period due to the economic cost of such a change

**Recommendation**

70. NAWAC recommends that you issue the draft code as recommended to you, with the amendments and additions that NAWAC has made. NAWAC requests that you make this report publicly available when you issue the code.



Professor David J Mellor  
Chairman  
National Animal Welfare Advisory Committee

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