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SCIENCE, PIGS, AND POLITICS: A NEW ZEALAND PERSPECTIVE ON THE PHASE-
OUT OF SOW STALLS.

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ABSTRACT. Sows housed in stalls are kept in such extreme confinement that they are unable to turn around. In some sectors of the pork industry, sows are subjected to this degree of confinement for almost their entire lives (apart from the brief periods associated with mating). While individual confinement is recognized by farmers and animal welfare community organizations alike, as a valuable tool in sow husbandry (to mitigate against aggression), what remains questionable from an animal welfare point of view is the necessity to confine sows in such small spaces.

In 2001, the *Australian Journal of Agricultural Research* published a review article on the science associated with the use of the sow stall, and claimed that "no scientific evidence to support the recommendation in the Code of Practice advising against housing of sows in stalls followed by housing in crates" (Barnett et al., 2001:21). If all the available scientific publications on the animal welfare implications of sow stalls are consulted (many of which did not feature in the above review), then one will indeed find scientific evidence to support recommendations against the housing of sows in stalls. Because there is science on both sides of this policy divide, the argument to defend the use of sow stalls, therefore, is not one of science vs public opinion, but one of ethics.

An analysis of the scientific arguments against the use of the sow stall should be used to encourage ethical debate on this issue. As an ethical debate, the issue of the use of the sow stall can then focus on the degree of suffering we as a society are willing to tolerate in agricultural practices, and the animal welfare costs associated with extreme economies of scale in sow stocking rates, rather than get bogged down in red herring debates over whether there is any suffering at all.

KEYWORDS. Animal Welfare, New Zealand, Pigs, Pork Industry, Sow Stalls.

INTRODUCTION

Sow stalls are an intensive housing system used in the pork industry for the confinement of breeding sows during pregnancy. They consist of narrow cages commonly 0.6-0.7m wide and 2.0-2.1m long allowing a space of 1.2 to 1.5 square meters per sow (CWF, 2000). They normally have no bedding or rooting material and confine the sow to the degree that she cannot turn round. The purpose of the sow stall is to increase the intensity of the farming system (i.e., maximize the number of sows in a given area), increase the pregnancy rate and litter size, decrease labor intensity of pork farming, and mitigate husbandry problems associated with aggression.

In the United Kingdom and Sweden, sow stalls are completely outlawed. Switzerland will be phasing out the sow stall by 2007, and the European Union will allow confinement in sow stalls for only the first 4 weeks of pregnancy by 2012. In Australia, the Model Code of Practice for pigs states that pigs in stalls should have “sufficient space in which to feed and sleep and a clean dry place on which to lie.” If this requirement were followed, then sow stalls would not be permissible, since the space available within sow stalls does not allow pigs enough space to avoid lying in their own excrement. Appendix 2 of the same code contradicts its own requirements by allowing a space of as little as 0.6 x 2.0 m for an adult sow (minimum space requirements discussed below).

In New Zealand, a public consultation process was undertaken by the National Animal Welfare Advisory Committee (NAWAC) in 2002 as part of a national review of animal welfare codes. NAWAC received over 64,000 submissions calling for a ban of the sow stall. In late 2002, the New Zealand National Animal Welfare Advisory Committee (NAWAC) released a draft Code of Animal Welfare for pigs specifying a gradual phase out of sow stalls allowing for their use in the first 10 weeks of pregnancy until 2009, reducing to the first 4 weeks of pregnancy in 2012, and phased out completely by 2015. These codes of conduct will have legal status under the new Animal Welfare Act (1999). The amended code has been the subject of a substantial public awareness campaign by Animal Rights/Welfare groups. At stake in the New Zealand situation (as is the case elsewhere) is not so much the individual confinement for sows,

sometimes required for welfare and health reasons, but the minimum permissible area for sow housing. The New Zealand Animal Welfare Act (1999) states that animals must be able to express normal patterns of behavior. Like the Australian regulations, this requirement, if applied to pigs without exception, would outlaw the sow stall that does not enable the pig to turn around, wallow, forage, and interact socially with other pigs.

The purpose of this paper is to evaluate the statement by Barnett et al., (2001: 21) that “there is no scientific evidence . . .” by searching for readily available scientific publications that provide evidence to the contrary (which may have been missed by the Barnett et al., review).

SCIENTIFIC APPROACH

Reviews of the “scientific evidence” for or against a particular practice in agriculture are commonly used by lobbyists, policy makers, and their advisors to legitimate certain policy decisions against others (see Rampton and Stauber 2001; Beder, 2000). One of the more common ways to discredit an argument for animal welfare is to assert that the arguments of animal welfare advocates are “not scientific.” If such perceptions are accepted by politicians and key sectors of the voting public, then animal welfare initiatives (such as proposals to phase out sow stalls in the pork industry) can more easily be sidelined on the political (and therefore regulatory) stage.

Barnett et al., (2001) undertook a review of the welfare issues associated with the housing of pigs in the pork industry. They evaluated the literature using the homeostasis response to animal welfare, where (citing Broom, 1986) the “welfare of an individual is its state as regards its attempts to cope with its environment” (Barnett et al., 2001: 2). Using this approach they state that “the risks to the welfare of the animal by an environmental challenge can be assessed at 2 levels: firstly, the magnitude of the behavioral and physiological responses; and secondly, the biological cost of these responses” (ibid.). This approach assumes that the welfare of animals can be assessed (only) through physiological indicators such as cortisol, ACTH, glucose and antibody titers, white blood cell counts, T cell killer activity, and cell mediated immunity. Other means of assessing animal welfare such as the presence of abnormal behavior are described briefly but not given much weight. Consumer concerns relating to extreme confinement of sows are described as “emotive,” the reason why pigs showed behavior indicative of learned

helplessness when confined in stalls is described as “unknown,” and improving the conditions in which pigs are raised by providing them with straw is described as a “perceived benefit.”

Barnett et al., (2001) recommends that the use of sow stalls be continued for the first 4 weeks of pregnancy. They state that there is “no scientific evidence to support the recommendation in the [Australian] code of practice advising against housing sows in stalls followed by housing in crates.” It is our contention that the definitions of “rigorous science” given by Barnett et al., (2001) are too narrow, and when all available scientific evidence is taken into account, there are convincing arguments for a total ban on the extreme degree of confinement provided by sow stalls. We acknowledge that individual confinement is an important component in sow husbandry, but we do not see any reason why individual confinement must be so extreme that the sow is unable to:

- a. Turn around
- b. Have access to bedding and rooting material, and
- c. Eat and lie down in a place that is separate from their toilet area.

The issue of whether it should be legal to rear pigs in sow stalls is both a scientific and an ethical argument. However, even when restricting the criteria for determining the degree of suffering in farmed pigs to published science (i.e., excluding ethical considerations), we are able to find ample evidence to support the supposition that sow stalls cause unnecessary suffering in pigs. In the sections below, we consider some of this evidence. In terms of defining the conceptual framework for what we consider legitimate evidence, we adopt an inclusive approach that is aimed at employing all that is readily available in the knowledge basket, rather than ruling some forms of knowledge out simply because it does not fit a narrow criteria for inclusion.

BEHAVIOR AND SUFFERING

There is general agreement that animals such as pigs can feel the basic sensations of pain and pleasure. With this has come the moral claim that infliction of pain upon any sentient creature is therefore intrinsically wrong (Singer 1990). While it is not always obvious what causes pain in animals, common sense and the argument from analogy would suggest that unless it can be proved otherwise, anything that is physically painful for humans must be assumed to be painful to animals.

The presence of higher psychological states in animals is more controversial than the presence of physical pain. However, as our awareness of animal behavior increases it has become apparent that mammals and birds, and possibly other animals are capable of advanced thought processes (Dawkins 1998; Varner 1999; Griffin 2001). If this is the case, then it is reasonable to assume that these animals can suffer from emotional disorders such as boredom, stress, and frustration if they cannot meet their behavioral needs, and that this suffering is detrimental to their welfare.

Observations of animal behavior when they are kept under barren conditions bear this out. Animals in a barren environment show repetitive and often destructive behavior, which is also associated with mentally disturbed humans (Webster 1995). Spedding (2000) from the Farm Animal Welfare Council in the United Kingdom gave the opinion that the presence of stereotypies can mean that an animal is being driven insane.

In sows, repetitive behavior such as chewing the bars of their cages (oral stereotypies) has been associated with a lack of oral satisfaction (Lawrence and Terlouw 1993), and with keeping pigs in barren environments (Whittaker et al., 1998). Commercially reared sows are often given restricted diets that fail to satisfy them. They are also unable to forage as a means of satisfying their feeding motivation (Lawrence and Terlouw 1993).

The view that psychological as well as physical needs have to be met for animal welfare has been incorporated into the New Zealand Animal Welfare Act. Sections 4c and 10 of the Act states that animals must have the “opportunity to display normal patterns of behavior.” Section 73 does allow this requirement to be waived under “exceptional circumstances.” While the circumstances of farming could be deemed to be “exceptional” and allow some restriction of “normal behavior,” we can find no reason why the behavioral needs of the animal must be restricted to such an extent that their physical and mental health suffers as a result, particularly when economically viable alternatives exist.

NORMAL PATTERNS OF BEHAVIOUR

A study of domestic pigs reared in a wild environment has shown that their behavior did not differ markedly from that of wild pigs. One aspect of this behavior was a preference for separate feeding and dunging areas. Pigs did not defecate closer than 5 m from their nesting area (Stolba

and Wood-Gush 1989). Evidence suggests that the rooting instinct in pigs is distinct from the feeding instinct. Even pigs who were well fed on commercial rations liked to spend about 20% of daylight hours searching for food when kept in a semi-natural enclosure (Wood-Gush et al., 1990). The provision of rooting material such as straw has been observed to reduce stereotypical behavior (Spoodler et al., 1995; Whittaker et al., 1998; Kelly et al., 2000), and can reduce aggressive actions such as tail biting (Schrøder-Petersen and Simonsen 2001). Preference tests have also shown that pigs prefer pens with straw or other bedding material to concrete pens, for thermal and physical comfort (SVC 1997) and for rooting and foraging (Burne et al., 2001).

The amount of space needed for pigs to lie down comfortably has been calculated to be proportional to their length and width, which is proportional to the two thirds root of their body weight, sometimes referred to as the “Spoodler formula” (see Spoodler et al., 2000). The space available in sow stalls is lower than this minimum. Crowding and limiting space has shown to have adverse effects on agonistic interactions (Ewbank and Bryant 1972), although pigs housed individually have shown better growth rates than pigs kept in group housing (Gehlbach *et al.*, 1966; Patterson 1985; Petherick *et al.*, 1989). Sow performance has been shown to improve steadily as the space allocation for pigs (at an initial weight of 55.5 kg) was increased to 1.20m² (Brumm, 1996). The growth rate of adult pigs improved when space allowance increased to 1.80m² (*ibid.*). Weng et al., (1998) monitored injury, aggression, and time spent foraging when 6 sows were kept in a pen with a space allocation of 2.0, 2.4, 3.6 and 4.8m² per adult pig. Based on results from the study, the authors recommended a space requirement of between 2.4 and 3.6m² per sow.

Sows have a strong instinct to make a nest before birth. The ability of pigs to express this is inhibited if bedding material is not available. The strength of this instinct can be measured by the amount of work sows are prepared to do to gain access to bedding material (Matthews and Ladewig 1994). If the ability to make a nest is thwarted by confining sows in crates (where they cannot turn round) with no bedding, the results include acute stress, (Jarvis et al., 2001), increased frequencies of stereotyped movements (Cronin *et al.*, 1996; Lammers and De Lange 1986), and increased restlessness (Marchant and Broom 1993; Jarvis et al., 2001). Sows prefer crates in which they can turn around (SVC, 1997), and pseudopregnant sows show a preference for straw pens, where they manipulate the straw in a way suggesting nest building is taking place (Burne et al., 2001). Sows kept in pens where they had room to turn around but no straw, showed

increased restlessness while farrowing when compared with sows given straw (Thodberg et al., 1999). Sows in crates have adapted themselves to some extent to their environment by their second pregnancy, but stress levels, as measured by plasma cortisol are still higher than in sows in pens with enough room to turn around, and with provision of straw for nest building (Jarvis et al., 2001).¹

SOW STALLS

Pigs prefer social interaction, and choice experiments have confirmed that they find sow stalls “aversive” (SVC, 1997), where behavior that has been prevented (in stalls) is expressed to a high degree once they are free of such confinement. Phillips *et al.*, (1992) showed that sows preferred wider than narrower stalls when given the choice. Sows in stalls cannot exercise, which results in weak bone structure and joint damage. Sows in stalls have also been shown to have a higher basal heart rate, indicating a lack of physical fitness (Marchant et al., 1997), with all the accompanying health problems that can result.² This is recognized and acknowledged by the European Commission in 2001 with its decision in 2001 to revise the pig welfare Directive 91/630/EEC. In its amendments to the Directive it stated,

Pigs should benefit from an environment corresponding to their needs for exercise and investigatory behaviour and that the welfare of pigs appears to be compromised by severe restrictions of space. . . . Sows prefer to have social interactions with other pigs when provided with freedom of movement and environmental complexity. The current practice of keeping sows in continuous close confinement should therefore be prohibited . . .

In pigs confined in stalls, stereotypical behavior can take the form of continuous chewing, bar-biting, head weaving, and tongue rolling. The SVC (1997) report that in “every detailed study” of sows in stalls, a “substantial level” of stereotypies have been found. In contrast, stereotypies are rare or absent where sows are reared in complex environments.

In their review, Barnett et al., (2001) explored what is known about stereotypies and

¹ The issues surrounding the use of farrowing crates is beyond the scope of this paper, but nesting behaviors are included here as part of the review of behavioral effects relating to extreme confinement.

² Cortisol levels in sows confined in stalls indicate increased stress. Stress levels reduced if sows were able to turn around. Sows in crates are also more aggressive to their neighbors (Barnett et al., 2001).

concluded that they are indicators of poor long term welfare. Webster (1995) and Spedding (2000) are much stronger in their argument that stereotypies are an indication of suffering. It has often been stated that sow stalls are beneficial to pig welfare as they reduce bullying and aggression. Barnett et al., (2001) cite some cases where welfare was improved by housing pigs in stalls. The welfare comparisons described by Barnett et al. (op. cit.) however, are between pigs in group housing and pigs in individual confinement. The issue in this instance (and this is pivotal to the debate), therefore, is one of *confinement*. This need for occasional confinement in no way specifies that this confinement needs to be so extreme that the sow is unable to turn around. In its amendments to the Pig Welfare Directive 91/630/EEC, the European Commission stated that “sows may be kept individually [during the first four weeks of pregnancy] provided they can turn around easily . . .”

Should individual confinement be considered necessary for the first 4 weeks of pregnancy (after which time they are put into group housing, for example), this should be allowed to happen within an area that is large enough for the sow to turn around, with a separate sleeping and dunging area, and with soft bedding material. Improvements in group housing to reduce aggression also need to be considered. More than half of New Zealand pork producers find no need to use the sow stall at all and have developed other methods of pig husbandry (Gregory and Devine, 1999).

The causes of aggressive behavior in pigs are multifactorial, but the following have been found to increase aggression, including tail and vulva biting.

- Mixing of unfamiliar pigs (Weary et al., 1999; Turner et al., 2001).
- Overcrowding (SVC, 1997; Weng et al., 1998; Schröder-Peterson and Simonson, 2001).
- Lack of straw or other bedding material (Barnett et al., 2001; Schröder-Peterson and Simonson, 2001).
- Lack of other environmental enrichment (Schröder-Peterson and Simonson, 2001)
- Temperatures that are too hot or too cold (Schröder-Peterson and Simonson, 2001)
- Inadequate ventilation (Schröder-Peterson and Simonson, 2001).
- Hunger or inadequate nutrition (SVC, 1997; Whittaker et al., 1999; Schröder-Peterson and Simonson, 2001).
- Stress (Schröder-Peterson and Simonson, 2001).

The stress factor can be exacerbated if pigs are afraid of humans. The skill of the stock-keeper can have a major influence in reducing (or increasing) stress (Hemsworth, 2000). It should be noted that in one experiment the provision of straw actually increased aggression and vulva biting (Whittaker et al., 1999). Statistical analysis showed, however, that aggressiveness when sows were not feeding could be accounted for simply because the pigs were more active when given straw. The authors also noted that aggression during feeding could have been caused by food being hidden in the straw, with the result being a greater foraging time, more opportunity for interactions, and a perceived shortage of food, since the amount of food available was not immediately apparent.

These factors can be mitigated by the provision of individual feeding stalls in an indoor system. The cost of this system is quite high, but can be reduced by incorporating electronic feeding technology. Under this system a sensor on the sow monitors the amount of food given to each sow (Webster, 1995).

Ample evidence exists to suggest that aggression can be reduced to acceptable levels through improved husbandry methods, which mitigates against the need for individual confinement. Food should be nutritionally adequate and extra fiber should be available to prevent feelings of hunger. Pigs should not be overcrowded, adequate ventilation should be provided, and rooting material must be available. Stock handlers can also be trained to best practice standards that can reduce the risks of aggression. If these provisions fail to reduce aggression to such an extent that welfare is compromised, then the offending individuals can be housed individually in pens as an emergency measure.

THE HOMEOSTASIS APPROACH

In their review of welfare issues for sows in relation to housing, Barnett et al., (2001) based their analysis on what they described as the functioning-based (homeostasis) approach. The authors relied solely on anatomical and physiological data such as cortisol concentration, immune response, and production efficiency. Underlying this is an assumption that welfare can be reduced to physiology. We regard this assumption to be too narrow for animal welfare considerations for several reasons. Firstly, in the development of policies for minimum standards in agriculture under a framework of sustainability, it is important that decisions are able to be

made on the basis of sound scientific evidence, together with other sources of knowledge (e.g., ethical and economic considerations). Sound scientific evidence for a sustainable economy needs to include all the evidence available, rather than reducing the scope of evidence to fit with a particular epistemology or ideology.

In terms of the homeostasis approach itself, there are a number of reasons why we consider it to be too narrow in scope for animal welfare public policy evaluations of science. For example, a number of factors can produce identical physiological indicators. The stress hormone cortisol for instance, is released in response to stress and physical pain but also to pleasurable excitement (Fisher, 1998). Secondly, not all occurrences of psychological suffering are associated with stress. It is generally regarded that for humans, too little stress can be just as harmful as too much, and for the pigs in sow stalls, the problem would appear to be boredom as much as stress. Thirdly, there is not always a correlation between physical health and mental states. There are many people who may be physically healthy but desperately unhappy, and many others who achieve substantial degrees of happiness in spite of health handicaps. Workers in the field of animal welfare, who use physiological and also other indicators of adverse mental states, such as behavioral problems, acknowledge the limitations of reducing welfare to physiology. These can be compared with what is known about abnormal human behavior, and extrapolated to other species on the basis of the argument from analogy. Webster (1995) and Spedding (2000) for example, both conclude that stereotypies are an indication of mental suffering on this basis. Sneddon et al., (2000) investigated cognitive abilities of pigs and concluded that barren environments cause mental deterioration, the latter falling within the bound of animal welfare concerns.

The argument from analogy is based on likelihood, also known as an Inference To The Best Explanation, and is accepted by philosophers of science as a sound scientific method (Bird, 1998; Sober, 2000). The argument from analogy is also accepted as valid in law. The codes of conduct for the use of animals in science in both Australia and New Zealand stipulate that any procedure that causes pain in humans must be assumed to cause pain in animals unless it can be proved otherwise. Like the homeostatic approach, the argument from analogy is also scientifically rigorous, even though it may stem from a different form of science than the homeostatic model. The argument from analogy is used by workers in the field of animal welfare as a starting point for devising ways of measuring the welfare of animals based on behavioral

criteria and comparisons with human behavior. Some of these methods include preference testing, where the animals are allowed to choose what conditions they prefer (as mentioned above). A method favored by Dawkins (1980) is to measure the amount of work an animal is prepared to do to gain a benefit such as food, social contact, or straw for bedding.

The presence of abnormal, inappropriate, or redirected behavior is also used as an indicator of poor welfare. The most extreme of these are stereotypies, which include repeated and often destructive behavior usually associated with mentally ill human patients. The argument from analogy suggests that animals showing this behavior are being driven insane (Webster, 1995, Spedding, 2000). It has been suggested that stereotypies are a coping mechanism and even that they have a function of stimulating the release of endogenous opioids to mitigate stress (Cronin et al., 1985). Nevertheless, as pointed out by Wiepkema and Koolhaas (1993), even if stereotypies can be regarded as coping mechanisms, it could be argued that in setting minimum standards in agriculture, animals under human care should not be subjected to environments where such coping mechanisms are required.

This debate concerning the use of sow stalls cannot be reduced to science alone (acknowledged by Barnett et al., 2001), but is ultimately a moral and legal debate centered around the issue: *should humans be permitted to force intelligent, and curious animals to live in conditions where they are kept in extreme confinement, unable to turn around, in situations of darkness, without rooting materials, and ultimately where they are unable to express normal patterns of behavior?*

ECONOMIC ISSUES

Once it has been established that a morally driven intention to phase-out of sow stalls can be supported scientifically (even if there is still argument among some scientists – as is often the case), it then becomes necessary (in a policy environment) to determine whether such an initiative would be economically practicable. A recent survey of larger New Zealand pig farms revealed that 67% of sows are kept in farrowing crates, and 32% in sow stalls (for most of their pregnancy), and 49% use sow stalls at some stage of the pregnancy. Only 29% of sows are kept in both (Gregory and Devine 1999). The fact that 51% of pork producers currently manage to produce pork without using the sow stall at all, is an indication that the pork industry in New

Zealand could thrive without the sow stall. This is evidenced by the fact that these farmers have undertaken this transition voluntarily, and yet are also able to successfully compete in the market against those pork producers who still use the stall.

The next question focuses on the economic effects of such a transition to phasing out the sow stall. In a brochure entitled “the welfare of pigs in New Zealand: The facts,” the New Zealand Pork Industry Board state that the result of an immediate ban on sow stalls would be that “the farmers involved would go out of business,” and that “New Zealand would have to import more pork from countries where legislated animal welfare standards are lower.” Neither of these statements was supported by economic data, which would have been useful if an open evaluation of the options is to be considered. The economic data available seems to suggest that fears of massive price rises are exaggerated. New Zealand pork farmers who currently do not use the sow stall do not receive any more for their meat than farmers who use sow stalls (i.e., there is no market premium associated with non-sow stall production), nor do they receive any compensation or incentives from the Government.

Economic data from EEC countries suggests that production cost increases associated with the phase out of sow stalls would be minor. An economic simulation model of a Dutch farm, described by the SVC (1997) estimated that converting a farm from stalls to group housing with a space of 2.5 square meters per pig, changing from farrowing crates to individual pens for lactating sows, and the provision of 300g of straw per sow per day, would add about 3.5% to the production cost. If the farrowing crates were not altered, the extra cost is 0.8%. Production cost is also only a small proportion of the cost to the consumer, once transport and distributors’ mark-up prices are added. Compassion for World Farming (CWF, 2000) conducted an analysis of economic data from France, Netherlands, Denmark, and the United Kingdom, and came to the conclusion that the extra cost of providing group housing with straw is 1.5-1.8p per kilogram of pig meat. If this cost is passed on to the consumer, the additional cost would be a mere 36-95p per year.

It could still be argued that even a small price rise could result in consumers switching to other forms of meat, or to buying imported pork from countries that have fewer animal welfare restrictions. One policy option to circumvent this problem would be the establishment of a labeling regime that required both the country of origin, and method of farming practice to be displayed on the retail product. This would give consumers the opportunity to make an informed

purchasing choice. A New Zealand public opinion poll published in December 2001 asked respondents the following question: “Do you think the practice of keeping pigs in sow stalls is acceptable or unacceptable?” Out of 500 respondents, 87% believed that sow stalls should be phased out by 2006 (RNZSPCA, 2001). This is a significant proportion of the existing and potential market that is likely to respond positively to a marketing effort designed to encourage discerning consumers to choose welfare-friendly pork products, and would enable domestic product to compete with imports arising from sow stall operations.

Some might argue that phasing out the sow stall in a country like New Zealand whilst still importing pork that has been produced using sow stalls would be unfair on New Zealand domestic producers who would have to meet higher and more costly welfare standards than their foreign competitors. This argument has been used in the forest industry against calls for higher standards of sustainability practice involving native timbers, under the premise that by doing so one would simply shift the geography of the problem rather than solving it. This would be true if there were no alternatives and if there were no international conventions capable of affecting the conduct of producers of internationally traded products.

International trade is commonly affected by restrictions arising out of local regulations and international agreements. The CITES agreement, for example, bans international trade in endangered species. According to the European Commission, animal welfare stands at the crossroads of economic, ethical, animal health, food production, and legal issues. The EC propose a combination of actions to address this issue including the development of multilateral agreements, appropriate labeling rules, and making available transitional funding to assist the industry meet new animal welfare standards permissible under WTO rules.³

There may be pork producers who are still using the sow stall and who are unable to sustain their competitiveness in the industry if they are compelled to shift to farming practices that do not use the sow stall (i.e., go out of business). If this is the case, a question arises as to the efficiency of these producers and whether they should be in the industry at all. By means of analogy, if a factory owner was unable to survive financially without the use of child or slave labor, then that factory owner should perhaps think of shifting to another industry or go out of business. It is not the responsibility of governments to lower their standards of animal welfare or

³ Communication From The Commission To The Council And The European Parliament on the welfare of intensively kept pigs in particularly [sic] taking into account the welfare of sows reared in varying degrees of confinement and in groups. Brussels, 16.01.2001, COM(2001) 20 final, 2001/0021 (CNS).

employment conditions for the sake of businesses that are inefficient and unable to behave in a fashion that the community regards as responsible.

There are also likely to be pork producers who are efficient and who could cope with a phase out of dry sow stalls, but who have recently invested in sow stall housing facilities. A rapid phase-out could prove to be unfair to these producers who have made lawful (recent) investments. However, sow stall facilities have a limited life. If depreciation is taken into account, then those producers who have invested in sow stalls some years ago will have realized much if not all of their investment, particularly those who have stalls that are nearing the end of their productive life. Such producers should not qualify for any transitional funding assistance as they will be needing to reinvest in new facilities anyway. The degree of any transitional funding granted to producers (should this be considered by policy makers) should be a function of how recently new sow stall housing facilities were installed, and the duration of the transition period.

CONCLUSIONS

Where there is scientific evidence on two sides of a public policy divide, the debate continues to be scientific. Situations like this are common in the environmental and animal welfare arena where there is strong political inertia by regulators and industry stakeholders. Often these disagreements come down to differences in epistemology, and ultimately differences in values. In other words, such debates remain ethical from start to finish. Sometimes the ethical debates happen among “lay people,” and at other times they happen in the context of philosophy of science. Often the same principles are argued but in a different language. We have shown that the phase-out of dry sow stalls in the pork industry in New Zealand (and no doubt in other countries where sow stalls are still used) can be supported scientifically. We have also provided evidence that it is economically feasible and reasonable. As for the moral justification – this argument will no doubt continue, but ultimately it must focus on whether society will allow intelligent social animals to be kept in such extreme confinement that they cannot turn around, and whether this moral price for cheap pork is something their conscience can afford.

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