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Minimising aggressive behaviour between pigs confined in intensive production systems

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Introduction

The intensive confinement of pigs in commercial production systems and its subsequent effect on welfare is a subject of ongoing concern in the community. Keeping artificial groups in a closed area, with limited access to resources, creates a competitive environment in which aggression and social stress are frequently seen (Anderson et al, 2004). Aggressive events include biting, head knocking and shoving, and may be reciprocal or one-sided (D'Eath, 2005). High levels of aggression may cause injury, impinge on growth, and by implication, reduce welfare (Schmolke et al, 2004). Recent research has investigated how the management of pigs in intensive production systems can be manipulated so that aggressive behaviours are minimised.

Discussion

Alternatives to the indoor production system have been suggested as one way of minimising stress in pigs, with recent research showing that pigs kept in outdoor production systems are less aggressive than their intensively confined peers. A study by Hotzel et al (2004) compared the behaviour of piglets reared in intensive indoor versus outdoor systems, both during lactation and after weaning, with the aim of identifying whether differences between the systems affect pig behaviour. The indoor environment for sows and litters during lactation consisted of individual farrowing crates with concrete floors. The outdoor environment consisted of individual farrowing huts, contained within paddocks that were divided so that piglets but not sows could move between them. Observation of piglet behaviour during lactation showed that indoor piglets spent more time interacting with the sow, nursing, and displaying aggressive behaviours towards their littermates, compared with outdoor piglets, who spent more time feeding on solid food and exploring the environment. At weaning, when litters from each system were mixed in their respective new areas, the outdoor pigs were more active and displayed negligible levels of aggression, compared with the indoor pigs who performed more aggressive and oral-nasal (chewing, sucking) behaviours.

The authors conclude that the indoor system does not offer the physical and social environment necessary for the development of appropriate, natural behaviours in pigs, and that this results in high incidences of preventable aggressive behaviours between penmates. They suggest that several aspects of the environment may contribute to reduced aggression in the outdoor system, including the different interaction between sows and litters, pre-weaning socialisation of litters and the increased complexity of the environment. That said, this study was unable to confirm the relative importance of these various factors.

It is worth considering whether the principles behind these suggested factors could be adapted to indoor production systems, while further research into the viability of outdoor production systems continues. For instance, previous studies have demonstrated an inverse relationship between the overall complexity of environment and aggression in pigs, and suggested that the provision of substrates (such as straw) in the indoor environment is a simple and effective way of enabling some appropriate behaviours and reducing undesirable agonistic ones (Beattie et al, 1995; de Jong et al, 1998).

More recently, further evidence that pre-weaning socialisation of piglet litters reduces aggression between unfamiliar pigs has been published (D'Eath, 2005). In this study, each piglet litter was mixed with one other litter by removing a barrier between two farrowing pens, between ten and thirty days of age. A control group of litters remained separated and

unmixed. At weaning, all pigs were assessed by both resident-intruder testing and mixing with unfamiliar pigs from the same treatment or control group. In the resident-intruder test, each pig was independently confronted with an unfamiliar pig, and its behaviour towards this intruder was evaluated. Mixing involved combining two unfamiliar litters (from the same treatment or control group), and then evaluating the aggressive behaviour in these new groups. D'Eath (2005) found that, in resident-intruder tests, socialised pigs were more likely, and quicker, to attack the intruder pig than control pigs. However, amongst socialised pigs, fights were shorter, one-sided aggression was less common, and within ten days there were fewer skin lesions than amongst control pigs. The author concludes that mixing litters before weaning reduces aggression and improves the ability of pigs to integrate into a new social group and form a stable hierarchy. In addition, he suggests that mixing before weaning has welfare advantages over mixing at weaning, because injuries are reduced and the problem of multiple stressors at the time of weaning is lessened.

This study supports the suggested role of pre-weaning socialisation in reducing aggression between pigs in the outdoor production system, and provides a method of socialising piglets that is easy to implement in indoor production systems. However, only small numbers of pigs were mixed at weaning, so further research is needed to confirm that the same results could be achieved in large groups, which tend to have a more complex organization of relationships (Schmolke et al, 2004). It has been suggested that large groups may have increased levels of aggression, because of the increased potential for fighting between pairs of pigs (Schmolke et al, 2004). This concern was investigated recently, by a study in which aggression between unacquainted grower/finisher pigs in groups consisting of ten, twenty, forty or eighty pigs, was evaluated over an eight hour period (Schmolke et al, 2004). Results indicated that fewer pigs participated in fights with increasing group size, and since higher levels of aggression were not observed, the authors conclude that housing pigs in large groups does not appear to be detrimental to their welfare. However, this statement warrants further investigation, because there may be other unknown effects of group size, such as stress associated with a blurred dominance hierarchy.

Conclusion

Recent research has indicated that aggression between pigs is minimal in the outdoor production system, and that several factors contributing to this low level of aggression, including the provision of a stimulating environment, and early socialisation, may be adapted to indoor production systems. Further research into the effect of pre-weaning socialisation on behaviour in large groups, and the social dynamics within large groups, may highlight other management opportunities to enhance pig welfare by reducing aggression.

References

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