The welfare implications of large litter size in the domestic pig II: management factors

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Abstract

Increasing litter size has long been a goal of pig (Sus scrofa domesticus) breeders and producers in many countries. Whilst this has economic and environmental benefits for the pig industry, there are also implications for pig welfare. Certain management interventions are used when litter size routinely exceeds the ability of individual sows to successfully rear all the piglets (ie viable piglets outnumber functional teats). Such interventions include: tooth reduction; split suckling; cross-fostering; use of nurse sow systems and early weaning, including split weaning; and use of artificial rearing systems. These practices raise welfare questions for both the piglets and sow and are described and discussed in this review. In addition, possible management approaches which might mitigate health and welfare issues associated with large litters are identified. These include early intervention to provide increased care for vulnerable neonates and improvements to farrowing accommodation to mitigate negative effects, particularly for nurse sows. An important concept is that management at all stages of the reproductive cycle, not simply in the farrowing accommodation, can impact on piglet outcomes. For example, poor stockhandling at earlier stages of the reproductive cycle can create fearful animals with increased likelihood of showing poor maternal behaviour. Benefits of good sow and litter management, including positive human-animal relationships, are discussed. Such practices apply to all production situations, not just those involving large litters. However, given that interventions for large litters involve increased handling of piglets and increased interaction with sows, there are likely to be even greater benefits for management of hyper-prolific herds.

Keywords: animal welfare, cross-fostering, human-animal interaction, litter size, nurse sow, split suckling

Introduction

Increasing litter size through genetic selection and management techniques, driven by a desire to improve production efficiency, has been, and is likely to continue to be, a goal of the pig industry (Webb 1998; Spötter & Distl 2006). However, concern has been expressed that there may be detrimental animal welfare consequences (Prunier et al 2010). Welfare issues related to litter size in the domestic pig (Sus scrofa domesticus) are complex, affecting sows and piglets. A companion review article (Rutherford et al 2013; this issue) examined the biological aspects of large litter size, identifying a number of important issues including increased piglet mortality, low birth weight, piglet pain and suffering, and detrimental longer term outcomes resulting from early life effects. The biological consequences for sow welfare are more uncertain but were discussed in relation to the process of carrying, delivering and raising a large litter. This review details the welfare consequences of certain management interventions that are used when litter size routinely exceeds the ability of individual sows to successfully rear all the piglets (ie viable piglets outnumber functional teats). Such interventions include: split suckling; cross-fostering; the use of nurse sow systems and early weaning, including split weaning; and the use of artificial rearing systems. In addition, tooth reduction is used on some farms as a measure to limit the damage caused by fighting at the udder, often exacerbated in larger litters.

This welfare analysis takes an integrated approach, considering effects of large litter size management techniques on development, mortality, physiology, behaviour and health. Consideration is then given to the role of management in mitigating the welfare impact of large litter size. Key to this is the influence of human attitudes and behaviour towards pigs. Standards of stockhandling at all stages of the reproductive cycle play a critical role, with links between staff attitudes towards pigs, their subsequent behaviour and the