Trough half empty: Pregnant sows are fed under half of their ad libitum intake

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Abstract

Pregnant (dry) sows (Sus scrofa) are fed a rationed amount of feed to maintain healthy weight and production but this does not satisfy their hunger. This study measured the extent of feed restriction compared to sows’ desired intake. Forty-seven Large White × Landrace sows were housed in small groups with straw bedding and individual feeding stalls. Following three days on a standard ration of 2.5 kg, they were offered 10 kg a day of commercial dry sow feed for three days, split into four 2.5-kg meals a day which enabled individual intakes to be measured. This quantity was effectively ad libitum (maximum daily intake 9.4 kg). Mean (± SEM) intake per day over the three ad libitum days was 5.67 (± 0.24) kg, compared to the 2.5-kg standard ration. The ration thus provides less than half (44.1%) of sows’ desired intake. Behaviour on their third rationed day was compared with behaviour on the third day of ad libitum. Eating rate and the display of hunger-related behaviours, particularly following the morning feed, was greater under ration feeding; sows spent more time in the food stall and less in the straw bed, and more time active rather than resting. During ration-feeding sows also chewed and nosed more at straw bedding and pen equipment and used the drinker more after their morning meal than when they were fed ad libitum. Eating rate on the last rationed day was positively correlated with feed intake on each of the ad libitum days. Despite an EU requirement for fibre to be added to diets to ameliorate this problem, and the provision of straw bedding, hunger resulting from food restriction remains a welfare concern for dry sows.

Keywords: animal welfare, behaviour, eating, hunger, quantitative restriction, sows

Introduction

Breeding sows (Sus scrofa) are feed restricted during pregnancy (Lawrence et al 1988; Meunier-Salaün et al 2001; D’Eath et al 2009, 2018). Becoming overly fat during gestation can negatively affect the sow’s physical health and cause locomotory problems. Gestation diets are formulated and rationed to meet the nutritional needs of the sow and her growing piglets, with adjustments to ration allocation based on factors including parity, body condition and stage of pregnancy (Ball et al 2008). Rationing thus maintains good sow health and piglet production (de Leeuw et al 2008). However, since diet formulations are typically relatively nutrient and energy dense, the food quantity provided is not enough to satisfy the sow, leading to behavioural stereotypies that reflect hunger and unfulfilled motivation to eat (Meunier-Salaün & Bolhuis 2015). Sows under quantitative feed restriction display more activity, more foraging and more redirected oral behaviours, including manipulation of pen equipment and substrate, sham chewing, teeth grinding and an increase in drinking (Appleby & Lawrence 1987; Terlouw et al 1991; De Leeuw & Ekkel 2004; D’Eath et al 2009, 2018). Group relationships seem also to be affected; Marchant et al (1995) identified inter-sow aggression as a major welfare concern in group gestation housing that can also reduce productivity and attributed its prevalence to feed restriction in addition to mixing of sow groups.

One starting point for quantifying the extent of hunger in dry sows is to identify the mismatch between the quantity of feed provided in a standard ration and the sows’ desired ad libitum intake of the same type of feed. Whittemore et al (1977) mentioned that sows would eat three times their ration, and this was supported a decade later by Petherick and Blackshaw (1989), who found that sows fed ad libitum during early pregnancy in their study ate 6.1 kg compared to a rationed amount of 2 kg (suggesting their ration restricted...