Feed intake and weight and body condition changes of 100 % organically fed lactating sows

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Implications

Energy and protein density of the 100 % organic lactation diet should be increased as early as from 3rd week of lactation onwards in order to minimize the weight loss of the sow during the at least 40 day lactation period. Feed amino acid balance from 22nd day of lactation should match the amount of live weight lost during the first 21 days of lactation. This should be supported by providing the piglets feed attractive enough to ensure their high dry feed intake during the late lactation period.

Background and objectives

Multi-phase feeding with amino acids optimized for the particular stage of parity of the sow better meets the nutrient requirements of the sow than single feed for the whole lactation period (Kim et al. 2009). Most studies on sow feeding during lactation have had focus on conventional production and maximum 28 days of lactation.

When nutrient intake of the lactating sow is low, milk production is dependent on the ability of the sow to release body reserves for milk production (Etienne et al. 2000). Thus, the milk production and weight loss of the sow seem to be dependent on the feed intake of the sow during lactation (Quesnel et al. 2005). In organic pig production, designing optimal lactation feed for sows may be challenging as some feed ingredients may lower the palatability of the feed.

The objectives of the present study were to investigate the feed intake and changes of live weight and back fat thickness of sows fed 100 % organically during at least 40 days lactation period and the weight change of the piglets of these sows. Based on these results and previous research the aim was to suggest the amino acid balance for sows during long lactation and optimal timing of diet change in phase feeding.

Key results and discussion

Feed intake of the 100 % organically fed sows was 3534-4120 MJ NE (7.5 kg/d) during the period from 109th day of pregnancy until weaning at average 45 d after farrowing. In shorter, restrictedly fed conventional lactation periods the feed intake is lower (4.0-5.0 kg/d, King et al. 1997). The sows lost weight during the lactation period on average 22.8 kg and back fat thickness 7 mm despite the well increased voluntary feed intake (Figure 1). The piglet average weight gain (ADG) was 107 g/d for days 1-5, 340 g/d for days 5-21 and 362 g/d from d 22 to weaning. The corresponding estimates of milk production of the sows, calculated according to Noblet & Étienne (1989) was 4.3 kg/d, 13.6 kg/d and 17.7 kg/d, respectively. However, the maximum milk production of a sow, reached around 15th day of lactation, is circa 11-12 kg/d (Hansen et al. 2012). The additional feed enabled the good ADG for the piglets, but the sows still mobilized energy and protein from own tissues to fulfill the needs of the milk output probably because of their non-optimal organic diet. With 12-15 kg weight loss during 21 d lactation 20 % of amino acids in milk output have derived from the tissue catabolism of the sow. Based on this Kim et al. (2009) presented the optimal ratio of limiting standardized ileal digestible (SID) amino acis to lysine: Threonine 0.63, Valine 0.78, Leucine 1.18, Isoleucine 0.59, Arginine 0.59 for lactation period from 22 d onwards.

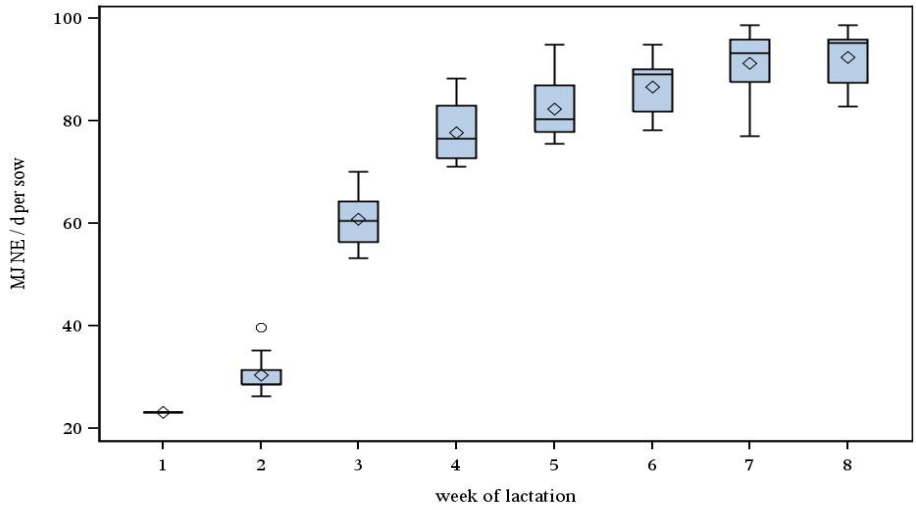

Figure 1. Weekly 100 % organic feed intake in net energy (MJ NE) of the sows from 2-7 days before farrowing to weaning at approx 45 days of lactation. T=maximum, minimum, o=outlier, ▭=50 % of observations, __=median, ◇=mean.

How work was carried out?

A total of 12 sows (7 Finnish Landrace and 5 Finnish Landrace x Finnish Yorkshire) from parities 1 to 6 started the trial at 109th day of pregnancy. The sows were fed 100 % organic diet which consisted of oats, wheat, barley, rapeseed cake, peas, faba beans, vegetable oil and vitamins and minerals to meet the Finnish feeding recommendations for lactating sows (MTT 2012). The feed contained, on as fed basis, 9.3 MJ NE/kg, 14.3 % crude protein, 6.5 % crude fat and 0.6 % SID lysine. Roughage was given daily a handful per sow and sows got their feed three times daily from feeders.

Lactation period lasted for 45-49 days and live weight and back fat thickness of the sows was recorded weekly. Piglets were weighed at birth, once a week throughout the suckling period and at weaning. They were given additional dry feed from 13 days of age. Live weight of sows and piglets at d 21 was determined with linear regression from the whole lactation period.

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