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# **Manipulating Pig Production XIV**

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# The influence of Danish versus Dutch feeding of lactating sows on piglet growth and milk composition: A pilot study

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Piglet mortality in The Netherlands is lower (12.9%) than in Denmark (13.8%) (Christiansen, 2010) despite both countries having hyperprolific sows. Dutch and Danish sow feed recommendations differ, with the Dutch recommendations generally containing higher dietary fibre. It is therefore relevant to consider how suckling piglets are affected by these differences in sow feed recommendations during pregnancy and lactation (Danish versus Dutch). Inclusion of fibre in sow lactation diet is likely to improve growth rate of piglets during the suckling period (Quesnel *et al.*, 2009) due to increased production of short chain fatty acids, thus leading to an increased milk production and fat percentage in the sow's milk. We hypothesised that offspring born to sows fed a Dutch feeding regime would have greater weaning weights due to improved nutritional conditions namely the quality of milk produced during lactation.

This study was conducted as part of a larger project in a Danish production herd (660 sows) (St. Ladegaard, Sorø, Denmark) investigating Danish versus Dutch feeding regimes on feed efficiency and piglet mortality of Danish Landrace x Danish Yorkshire sows. During gestation, multiparous sows fed according to Danish recommendations were placed on different feeding levels depending on visual body condition scoring. During lactation they were fed according to appetite. Sows fed according to Dutch recommendations received different feeding levels depending on P2 back fat depth during gestation and lactation. During lactation both diets contained the same amount of potential physiological energy (PPE) of 7.70 MJ/feed unit for sows (FU<sub>sow</sub>), with a crude fibre content of 3.3% and 4.7% per FU<sub>sow</sub> for the Danish and Dutch feeding regime, respectively. Birth weights were recorded for 711 piglets from 50 sows and of these, 392 piglets that remained with their birth mother were ear-tagged at birth and followed through to 3 weeks of age. The ear-tagged piglets were weighed weekly and growth rates (average daily gain, ADG) calculated. Milk samples (about 30 ml) were collected at d 10 of lactation and analysed for dry matter, fat, protein and lactose concentrations using an infrared analyser (MilkoScan™ FT2). Data were analysed using the MIXED procedure in SAS. Birth weight was included as a covariate for analysis of ADG, and sow included as a random effect in the model.

Sows fed the Dutch feeding regime had a higher ( $P < 0.05$ ) milk fat percentage than Danish-fed sows [7.49 % (SEM 0.25) versus 6.79 % (SEM 0.24)]. No differences ( $P > 0.05$ ) were found in dry matter, protein and lactose in the milk of Danish- and Dutch-fed sows.

**Table 1.** Birth weight and ADG of piglets born to sows on a Danish or Dutch feeding regime.

	Sow Feeding Treatments		SEM	Significance
	Danish	Dutch		
Number	315	396		
Birth weight (kg)	1.37	1.37	0.020	0.890
Number	156	236		
ADG d 0-7 (g/d)	186	163	22.8	0.005
ADG d 7-14 (g/d)	238	202	6.0	0.001
ADG d 14-21 (g/d)	234	201	6.7	0.001
Total ADG d 0-21 (g/d)	223	195	4.6	0.001

ADG, average daily gain; SEM, standard error of the mean.

Sows fed the Dutch feeding regime had more fat in the milk at d 10, most likely due to the higher fibre level in the feed. However, in this subsample of piglets this did not directly translate to increased growth rate in the piglets born to Dutch sows. On the contrary, the piglets from Danish-fed sows had a higher ADG than Dutch piglets up to 21 d of age. In this experiment it was not possible to measure total milk yield, however it cannot be ruled out that although Dutch sows had a higher milk fat percentage, Danish sows might have had a higher total yield, due to *semi ad libitum* feeding during lactation versus the more restrictive feeding regime of the Dutch sows. This could in turn have positively influenced growth rates.

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