

264 Effect of altered lysine:energy ratio during gestation on wean pig growth performance.

A. Ampaire*, C. L. Levesque, *South Dakota State University, Brookings.*

To determine the effects of altering dietary Lysine: energy ratio in gilt diets during gestation on wean pig performance, a total of 51 gilts were randomly assigned to 3 feeding regimens: Control, 2.21 kg/d from breeding to d 112 (1.93 g Lys/Kcal ME; 3276 Kcal ME/kg); Bump feeding (Bump-f), the control diet at 2.21 kg/d from breeding to d 89 and 2.61 kg/d from d 90 to 112; Phase feeding (Phase-f), 2.21 kg/d from breeding to d 89 (1.81 g Lys/Kcal ME; 3275 Kcal ME/kg) and 2.61 kg/d from d 90 to 112 (2.46 g Lys/Kcal ME; 3290 Kcal ME/kg). During lactation sows received the same diet (3368 Kcal ME/kg, 0.88% SID Lys). Thirty-nine sows successfully farrowed at least 7 piglets and remained in the study (Control $n = 9$, Bump-f $n = 13$, Phase-f $n = 14$ sows). Litters were equalized to 10 piglets within 72 h of birth by cross fostering within the same treatment. At weaning (20 ± 2 d), 8 pigs/sow were placed into 2 pens such that initial BW variation was $< 10\%$ /pen. All pigs received a commercial pig starter crumble diet for the first week postweaning and an early grower mash diet in wk 2, 3, and 4. Feed intake and BW were measured weekly. Data were analyzed using the Proc MIXED procedure in SAS. Maternal diet did not affect average BW at weaning (6.2 ± 0.2 kg) or the postweaning growth performance. Final BW was 14.9 ± 0.5 kg and overall ADG, ADFI and gain: feed from weaning until d 47 was 321 ± 15 g/d, 467 ± 18 g/d, and 0.690 ± 0.020 g/d, respectively. During the transition from crumble diet to mash diet, all pigs suffered a setback in daily gain (-66.1 , -26.1 , and -17.5 ± 26.92 g/d in Control, Bump-f, and Phase-f pigs, respectively) but this was not affected by maternal feeding regimen in gestation. There was an increase ($P < 0.001$) in ADG and ADFI and a decrease ($P < 0.001$) in gain: feed over the 4 wk postwean period but gain: feed was not different between wk 3 and 4. In gilts, constant feeding, bump feeding or bump feeding with altered lysine: energy during gestation may result in equivalent piglet growth performance in the first 4 wk postwean.

Key Words: Lysine, Phase-feeding, Bump-feeding
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265 Evaluating the impact of maternal dietary vitamin D supplementation on sow performance, serum 25OHD₃, and subsequent pig performance.

J. R. Flohr¹, J. R. Bergstrom², J. C. Woodworth¹, M. D. Tokach¹, J. M. DeRouche¹, S. S. Dritz¹, R. D. Goodband¹, ¹*Kansas State University, Manhattan,* ²*DSM Nutritional Products, Parsippany, NJ.*

A total of 104 sows (PIC 1050; mean parity 2.2 ± 0.3) in 4 farrowing groups (25–27 sows per group) were used to determine the effects of gestational and lactational vitamin D sup-

plementation on sow performance and serum 25OHD₃. Sows were allotted to 1 of 4 dietary treatments (800, 2000, or 9600 IU of D₃, or 50 µg of 25OHD₃ [equivalent to 2000 IU/kg D₃, DSM Nutritional Products Inc., Parsippany, NJ] per kg of diet) in a CRD. There were 25 to 27 sows per treatment. Maternal performance was not impacted by treatments. Increasing dietary D₃ increased (linear, $P = 0.001$) sow serum 25OHD₃. Sows fed 50 µg/kg of 25OHD₃ had greater ($P < 0.001$) serum 25OHD₃ than sows fed 800 or 2000 IU/kg, but decreased ($P < 0.004$) serum 25OHD₃ compared to sows fed 9600 IU/kg. At weaning, increased maternal D₃ increased piglet serum 25OHD₃ (quadratic, $P = 0.033$), and pigs from sows fed 50 µg/kg of 25OHD₃ had greater ($P = 0.001$) serum 25OHD₃ compared to pigs from sows fed 800 IU/kg D₃, but lower ($P = 0.001$) than pigs from sows fed 9600 IU/kg of D₃. A subsample population of pigs ($n = 448$; PIC 327 × 1050; initially 6.6 ± 0.3 kg; 21 d of age) from 52 litters (2 of 4 farrowing groups) were used in a split-plot design (maternal treatment = whole plot; nursery treatment = subplot) to determine the influence of maternal and nursery dietary vitamin D on postweaning growth. Once weaned, pigs were allotted to pens based on maternal treatment, maintaining pre-weaning BW differences, and pens were randomly assigned to 2 nursery diets (2000 IU D₃/kg or 50 µg 25OHD₃/kg). There were 12 and 9 pens/treatment in nursery and finishing, respectively. Pen was the experimental unit. Growth performance was not influenced by nursery vitamin D. In the nursery, pigs from sows fed increasing D₃ had increased (quadratic, $P < 0.003$) ADG and ADFI. Throughout finishing, ADG and G:F increased (quadratic, $P < 0.05$) with increasing maternal D₃. Pigs from sows fed 50 µg/kg 25OHD₃ had increased ($P = 0.002$) ADG compared to pigs from sows fed 800 IU/kg D₃. Overall, increasing maternal D₃ increased serum 25OHD₃ concentrations, but more D₃ (on an equivalent IU basis) is needed to achieve similar serum 25OHD₃ responses compared to feeding 25OHD₃. Pigs from sows fed 2000 IU/kg D₃ grew faster after weaning compared to pigs from sows fed 800 or 9600 IU/kg D₃ and pigs from sows fed 25OHD₃ had greater ADG compared to pigs from sows fed 800 IU/kg D₃.

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266 Development of precision gestation feeding program using electronic sow feeders and effects on gilt performance.

R. Q. Buis¹, D. Wey¹, C. F. M. de Lange², ¹*Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada,* ²*University of Guelph, Guelph, ON, Canada*

Computer controlled electronic sow feeders (ESF) allow precision feeding (PF) of individual gestating sows housed in groups. A study was conducted to evaluate PF gestating gilts using the NRC (2012) nutrient requirement model. The NRC (2012) model was adjusted to estimate daily energy require-