

6.2, 5.5, 5.7, and 6.3% in milk collected on d 3, 7, 14, 21, and 28, respectively. The concentrations of 5' AMP, 5'CMP, 5'GMP, and 5'IMP increased from d 0 to d 3 and d 7 and then decreased during the remaining lactation period (cubic effect, $P < 0.05$). The concentration of 5'UMP decreased linearly ($P < 0.01$) from d 0 to d 28 of lactation. In colostrum, 5'UMP represented 98% of all 5' monophosphate nucleotides and in milk, 5'UMP accounted for 86-90% of all nucleotides, regardless of d of lactation. The results of this experiment indicate that the concentration of 5' monophosphate nucleotides in sows milk decline as lactation advances. In addition, 5' UMP is the most abundant nucleotide in colostrum and milk from lactating sows.

Item	Day of lactation						P-values		
	0	3	7	14	21	28	Linear	Quadratic	Cubic
CP	16.6	7.8	6.2	5.5	5.7	6.3	<0.0001	<0.0001	<0.0001
5'AMP	4.0	11.3	12.8	6.8	4.3	3.0	0.0181	0.0435	0.0152
5'CMP	1.5	7.2	7.1	3.5	2.3	2.5	0.1245	0.1312	0.0041
5'GMP	5.4	14.7	14.0	10.2	6.0	7.1	0.0818	0.0675	0.0024
5'IMP	1.1	1.8	2.6	1.4	0.9	0.4	0.0217	0.0526	0.0439
5'UMP	555.6	305.5	263.1	144.0	122.8	104.0	<0.0001	<0.0001	0.0002

Key Words: Nucleotides, Sow, Milk

67 Impact of milk supplementation on primiparous and multiparous females' performance and piglets' growth during pre and post-weaning periods. M. E. Johnston¹, R. Cabrera^{*2}, R. D. Boyd¹, and J. Vignes³, ¹The Hanor Company, ²Ralco-Mix Products, Inc., ³Advanced Birthright Nutrition, Inc.

This study was conducted to determine the impact of milk supplementation on gilts, sows, and their progeny's performance during lactation and post-weaning. A total of 112 females (56 gilts, 56 sows) were allotted to one of two treatments: milk supplemented (MS) or non-supplemented (NS) with 28 gilts and 28 sows in each treatment. All litters were standardized to 11.1 pigs/litter. Milk supplementation of litters started 12-24 h after farrowing with acidified, medicated milk replacer fed ad libitum. Gilts and sows' BW and backfat depth were measured 24 h after farrowing and at weaning. ADFI was recorded. Lactation length was 18.2 d for gilt litters and 19.2 d for sow litters. Pigs were weighed 24 h after birth and at weaning. Pre-wean mortality and ADG were recorded. MS and NS gilts weight change, backfat depth change, and ADFI did not differ between treatments ($P > 0.05$). The number of pigs weaned did not differ ($P > 0.05$) between MS and NS gilt litters (10.1 vs. 10.0, respectively). Birth and weaning weights (5.62 vs. 5.35 kg) were 0.09 and 0.27 kg heavier, respectively ($P < 0.05$) for MS compared to NS gilt litters. MS and NS sows' BW change and ADFI did not differ between treatments ($P > 0.05$). However, MS sows lost 1.3 mm more backfat than NS sows ($P < 0.05$) during lactation. The number of pigs weaned for MS sow litters was 0.9 pig/litter higher ($P < 0.05$) than NS sow litters (10.6 vs. 9.7 pigs/litter, respectively). Birth and weaning weights (6.58 vs. 5.99 kg) were 0.09 and 0.59 kg heavier, respectively ($P < 0.05$) for MS sow litters when compared to NS sow litters. After a 42-d nursery period, MS pigs were 0.8 kg heavier ($P < 0.001$) than NS pigs (23.4 vs. 22.6 kg, respectively). These data suggest milk supplementation during lactation reduces piglet loss and increases piglet weaning weight. The advantage in weaning weight for milk supplemented pigs is maintained through the nursery period.

Key Words: Milk supplementation, Pig wean weight, Pre-wean mortality

68 Effects of reducing particle size of corn in lactation diets on performance and nutrient utilization in multiparous sows. E. C. Baudon*, J. D. Hancock, M. D. Tokach, and J. F. Gabarrou, Kansas State University, Manhattan.

Eighty multiparous sows (parities one to four) were used to determine the effects of particle size of corn in lactation diets on sow and litter performance. The sows were fed corn-soybean meal-based diets with targeted corn particle sizes of 1,500, 900, and 600 m (actual mean particle sizes during the experiment were 1,609, 849, and 630 m). Particle size did not affect BW gain and survivability in piglets and BW loss, weaning to estrus interval, and fecal moisture in sows ($P > 0.10$). However, loss of backfat (quadratic effect, $P < 0.001$) was lowest in sows fed the diet of intermediate particle size. Average daily water intake increased as particle size was decreased from 1,500 to 600 m (linear effect, $P < 0.03$). Also, intakes of DM, N, and GE were increased by 11, 8, and 12% and apparent digestibilities of DM, N, and GE were increased by 5, 4, and 5%, respectively, as particle size of corn was decreased (linear effects, P

< 0.007). There was greater feed intake (linear effect, $P < 0.04$) and daily absorption of DM, N, and GE were increased by 16, 12, and 17% (linear effects, $P < 0.001$) as corn particle size was reduced from 1,500 to 600 m. Finally, excretion of DM in the feces was decreased (linear effect, $P < 0.09$) by 84 g/d as particle size was reduced. In conclusion, reducing particle size of corn did not affect sow and litter performance but increased digestibility of nutrients and reduced nutrient excretion.

Item	Particle size, μm			Probability		
	1,500	900	600	SE	Linear	Quadratic
No. of observations	29	23	28	-	-	-
ADFI, kg	5.30	5.33	5.84	0.17	0.04	NS
Daily water, L	33.9	40.4	50.6	5.1	0.03	NS
Sow BW loss, kg	9.8	3.2	6.6	2.5	NS	NS
Litter BW gain, kg	42.9	43.5	46.0	1.8	NS	NS
DM dig, %	80.0	82.5	83.6	0.7	0.001	NS
N dig, %	82.9	85.4	85.9	0.8	0.007	NS
DM excretion, g/d	931	821	847	35	0.08	NS
N excretion, g/d	27.2	24.4	24.7	1.2	NS	NS

Key Words: Particle size, Sows, Nutrient digestibility

69 The effect of canola on reproductive performance in sows. M. R. Smiricky-Tjardes*, H. H. Stein, and D. N. Peters, South Dakota State University.

Studies in Europe have reported increases in the litter size of sows when canola-based diets are fed. Therefore, it was the objective of this experiment to investigate the effects of including either full fat canola or canola meal in diets fed to gestating and lactating swine. A total of 60 gestating sows (avg. parity = 3) were randomly allotted to one of three treatment groups: 1) corn and soybean meal control diet; 2) corn and canola meal diet; and 3) corn and full fat canola diet. Gestation diets were formulated to contain 14% CP and lactation diets to contain 18% CP. During gestation, all sows were fed 7,000 kcal/d of their respective treatment diet. During lactation, all sows were allowed ad libitum access to their treatment diets. Feeding of the experimental diets began right after breeding and continued through two reproductive cycles. Reproductive performance parameters were collected through both reproductive cycles. There was no effect of reproductive cycle on any of the response criteria measured in this study. Sows consuming the full fat canola diet gained less weight ($P < 0.05$) during gestation than sows consuming the other two diets. However, they also lost less ($P < 0.05$) weight during lactation when compared to sows consuming the canola meal diet. The number of pigs born alive was higher ($P < 0.05$) for sows consuming either the corn-soybean meal or corn-full fat canola diet when compared to sows consuming the corn-canola meal diet. The number of stillborns, mummies, weight of pigs born alive, and litter birth weight did not differ ($P > 0.20$) between dietary treatments. The number of pigs weaned and the litter weaning weight was greater ($P < 0.05$) for sows consuming the corn-soybean meal than sows consuming the canola meal diet. Lactation feed intake was lower ($P < 0.05$) in wk 2, 3, and overall for sows consuming the corn-canola meal diet when compared to the other two diets. Finally, return to estrus interval was not affected ($P > 0.20$) by dietary treatment. In conclusion, full fat canola-based diets performed similarly to standard corn-soybean meal diets when fed to gestating and lactating sows. The deleterious effects of the corn-canola meal diet warrant further investigation prior to incorporation into sow gestation and lactation diets.

Key Words: Canola, Sows, Reproduction

70 Exogenous enzyme effects on the digestibility of gestation-lactation swine diets. A.L.P. de Souza*, M. D. Lindemann, and G. L. Cromwell, University of Kentucky, Lexington.

The effects of two commercial enzyme products on the ileal and total tract nutrient digestibilities in crossbred sows ($n=8$; BW=196 15 kg) fitted with ileal stainless steel T-cannula were evaluated. The enzyme products contained cellulase and protease activities (Enz 1; VegPro[®], Alltech) or xylanase activity (Enz 2; Fibrozyme[®], Alltech). A fortified corn-soybean meal control diet (0.81% lysine, 0.73% Ca, and 0.61% P) was fed during gestation and lactation. Trt 1 was the control diet; Trt 2 was the control plus Enz 1 (7,700 HUT of protease activity/kg diet, and 75 CMC of cellulase activity/kg diet), and Trt 3 was the control plus Enz