

down the NE value of low-oil corn DDGS, 1008 pigs (32 kg) housed in 48 pens by gender (barrows or gilts) were fed diets with 30% corn DDGS assuming NE values of 1.70, 1.85, 2.00, 2.15, 2.30, and 2.45 Mcal/kg over 5 feeding phases. Diets were formulated to equal g SID Lys:Mcal NE within phase. Canola oil was added at assumed low NE values and greater inclusions of barley replaced wheat grain as the assumed NE value of corn DDGS increased. For the entire trial (0 to 106 days), daily weight gain was not different ( $P = 0.27$ ), but daily feed intake increased ( $P < 0.01$ ) and feed efficiency decreased ( $P < 0.01$ ) reaching a plateau between 2.00 and 2.15 and 2.15 and 2.30 Mcal NE, respectively. Carcass weight was heavier ( $P < 0.05$ ) for the pigs fed diets with assumed lower (1.70 and 1.85 Mcal/kg) corn DDGS NE values. Backfat showed a trend ( $P < 0.07$ ) to decrease and reached a plateau between 2.00 and 2.30 Mcal NE. Loin depth and estimated lean yield ( $P < 0.05$ ) increased as the assumed NE value increased reaching a plateau between 2.15 and 2.30 Mcal NE. Days from the first to the last pig shipped to slaughter were different ( $P < 0.01$ ) among NE values reaching a plateau above 2.00 Mcal NE. The results of this study suggest that the NE value of low-oil (7.8%) corn DDGS is between 2.15 and 2.30 Mcal/kg, lower than the 2.34 Mcal NE value referenced by the new swine NRC 2012 for corn DDGS with 6–9% oil.

**Key Words:** corn DDGS, net energy, pigs

**O077 Evaluation of various inclusion rates of dried distillers grain with solubles in sow lactation diets.** L. Greiner<sup>1,\*</sup>, Z. Jiang<sup>2</sup>, C. Neill<sup>3</sup>, J. Connor<sup>1</sup>, G. Allee<sup>4</sup>, <sup>1</sup>*Innovative Swine Solutions, LLC, Carthage*, <sup>2</sup>*Ajinomoto Heartland, Chicago*, <sup>3</sup>*PIC, Hendersonville*, <sup>4</sup>*Porktech, LLC, Columbia*.

Two experiments were conducted to evaluate the feeding of different levels of corn dried distillers grain with solubles (DDGS) in sow lactation diets. Lactation diets consisted of corn, soybean meal and either 20, 30, 40, and 50% DDGS. Diets were formulated to have 3.25 Mcal ME/kg, 1.05% SID lysine and all other nutrients to exceed NRC recommendations (NRC, 1998). Experiment one was conducted in the fall/winter (September–December) and experiment two was conducted during the summer (August) to evaluate the role of season in relationship to the experimental diets. In both experiments, sows (PIC, Camborough 1050) were fed 40% DDGS in gestation, allocated to a randomized complete block at the time of entry into the farrowing house, and fed ad libitum using a computerized Howema feed system that provided up to 13.6 kg of feed per day from day 3 post-farrow until weaning ( $20.7 \pm 3$  d). In experiment one, 256 gilts and multiparous sows were fed the randomly assigned diets. As DDGS inclusion increased from 20–50%, sow feed intake (6.68, 6.83, 6.26, 6.25 kg/d,  $P < 0.01$ ) and sow weight gain (13.63, 13.90, 12.19, 9.62 kg,  $P < 0.09$ ) decreased linearly. Litter gain decreased linearly (2.62, 2.67, 2.53, 2.55 kg/d,  $P < 0.06$ ) as DDGS inclusion increased. In experiment two conducted in the summer, 98 multiparous sows were

randomly allotted to one of the four experimental diets. Sow feed intake was not influenced by DDGS inclusion (5.91, 6.29, 5.99, 5.86 kg/d,  $P > 0.43$ ). In addition, there were no differences in sow weight gain or litter gain (2.47, 2.67, 2.46, 2.65,  $P > 0.13$ ). This lack of response in experiment two could be related to the reduced intake associated with the high temperatures and humidity. These data suggest that feeding high levels of DDGS (40–50%) may reduce sow feed intake and litter performance. These results confirm our earlier studies that feeding 30% DDGS can be fed in lactation diets without influencing sow or litter performance.

**Key Words:** DDGS, lactation, sow

**O078 The effects of soybean hulls in corn-soybean meal and corn-soybean meal-DDGS diets on nursery pig performance.** D. Goehring<sup>1,\*</sup>, J. M. DeRouchey<sup>1</sup>, M. D. Tokach<sup>1</sup>, S. S. Dritz<sup>1</sup>, R. D. Goodband<sup>1</sup>, J. L. Nelssen<sup>1</sup>, B. W. James<sup>2</sup>, <sup>1</sup>*Kansas State University, Manhattan*, <sup>2</sup>*Kalmbach Feeds, Inc., Upper Sandusky*.

Two experiments were conducted to evaluate the effects of soybean hulls in diets with and without corn dried distillers grains with solubles (DDGS) on nursery pig growth performance. In Exp. 1, 600 pigs (BW 6.7 kg) were used in a 42-d study. Treatments were arranged in a 2×5 factorial with 0, 3, 6, 9, or 12% soybean hulls in corn-soybean meal diets without or with DDGS (15% from d 0 to 21, 30% from d 15 to 42). Pigs were blocked by initial pen weight, gender, and room location with 10 pigs/pen (6 replicate pens). Adding soybean hulls did not influence ( $P > 0.21$ ) ADG or ADFI, but adding DDGS reduced ( $P < 0.04$ ) ADG and ADFI, and tended to increase ( $P < 0.06$ ) G:F. There was a soybean hull × DDGS interaction ( $P < 0.05$ ) for G:F. Increasing soybean hulls worsened G:F quadratically ( $P < 0.03$ ) when added to diets without DDGS but linearly ( $P < 0.01$ ) when added to diets with DDGS. In Exp. 2, 304 barrows (BW 11.7 kg) were used in a 21-d study. Diets were arranged in a 2×4 factorial with 0, 5, 10, or 15% soybean hulls in either corn-soybean meal or corn-soybean meal-DDGS (20%) diets. Pigs were balanced by initial BW and randomly allotted to treatments with 9 replicate pens (4 pigs/pen). No soybean hull × DDGS interactions were observed. Increasing soybean hulls tended to worsen (linear,  $P < 0.07$ ) G:F but improved (linear,  $P < 0.008$ ) caloric efficiency on a ME and NE basis. The largest negative effect on G:F (linear,  $P < 0.04$ ) came from adding soybean hulls to diets without DDGS. In summary, feeding nursery pigs up to 15% soybean hulls did not affect ADG or ADFI, worsened G:F and improved caloric efficiency, indicating published energy values (INRA, 2004) undervalue the energy content of soybean hulls. (See table below.)

**Key Words:** DDGS, nursery pig, soybean hulls

**O078 Table**

Exp. 1	DDGS:	-	-	-	-	-	+	+	+	+	+	SEM
	Soybean hulls, %:	0	3	6	9	12	0	3	6	9	12	
ADG, g		568	544	548	553	563	538	544	554	535	496	16.4
G:F		0.662	0.650	0.641	0.631	0.661	0.678	0.680	0.654	0.644	0.655	0.01
Exp. 2	DDGS:	-	-	-	-	+	+	+	+	SEM		
	Soybean hulls, %:	0	5	10	15	0	5	10	15			
ADG, g		531	537	525	512	514	520	518	499	14.5		
G:F		0.649	0.651	0.632	0.623	0.638	0.636	0.640	0.630	0.01		
Caloric efficiency, Mcal/kg												
ME		5.11	4.99	5.01	4.97	5.21	5.11	4.96	4.92	0.08		
NE		3.65	3.53	3.51	3.44	3.76	3.65	3.51	3.44	0.06		