561 Digestible energy and metabolizable energy in distillers dried grains with solubles (DDGS) and enhanced DDGS. J. A. Soares*, H. H. Stein, V. Singh, and J. E. Pettigrew, *University of Illinois*, *Urbana*.

Distillers dried grains with solubles (DDGS) have a high fiber concentration. The elusieve process removes approximately 10% of the material, mostly fiber, yielding a product called enhanced DDGS (E-DDGS) that has a total dietary fiber concentration that is approximately 3.5 percentage units lower than DDGS. The objective of the experiment was to determine DE and ME in 2 sources of DDGS and in E-DDGS produced from each source of DDGS. Thirty growing pigs (average BW: 23kg) and 30 finishing pigs (average BW: 73kg) were used. Pigs were placed in metabolism cages and allotted to a randomized complete block design. Five diets were used at each stage of growth. The basal diet was based on corn and soybean meal and 4 additional diets were formulated by replacing 40% of the basal diet with 40% of each source of DDGS and E-DDGS. Pigs were fed their experimental diets for 14d, and urine and feces were collected during the final 5d. Overall, E-DDGS has greater DE ($P < 0.05$) and ME ($P < 0.05$) than DDGS. The DE and ME values were not different between growing and finishing pigs. In conclusion, removal of some of the fiber from DDGS by the elusieve process increases the energy concentration in the product. Overall, E-DDGS contains approximately 242 and 185 kcal/kg more DE and ME than DDGS.

Table 1. Daily energy balance for DDGS and E-DDGS

Item	Ingredient				SEM	*P*-value
	DDGS-1	DDGS-2	E-DDGS-1	E-DDGS-2		
Growing pigs						
DE, kcal/kg of DM	3,391^{x}	3,483^{xy}	3,703^{y}	3,670^{y}	147	0.001
ME, kcal/kg of DM	3,047	3,159	3,225	3,339	226	0.187
Finishing pigs						
DE, kcal/kg of DM	3,303^{x}	3,436^{x}	3,518^{xy}	3,691^{y}	209	0.027
ME, kcal/kg of DM	3,128^{x}	3,239^{xy}	3,293^{xy}	3,453^{y}	203	0.075

x,y Values within a row without a common superscript letter are different ($P < 0.05$).

Key Words: Pigs, Energy, Enhanced Distillers Dried Grain with Solubles

562 Effect of deoiled corn dried distillers grains with solubles (solvent extracted) on growth performance and carcass characteristics of growing and finishing pigs. J. Y. Jacela*[1], J. M. DeRouchey[1], S. S. Dritz[1], M. D. Tokach[1], R. D. Goodband[1], J. L. Nelssen[1], J. M. Benz[1], K. Prusa[2], R. C. Thaler[3], and D. E. Little[4], [1]*Kansas State University*, *Manhattan*, [2]*Iowa State University*, *Ames*, [3]*South Dakota State University*, *Brookings*, [4]*DairyNet Inc.*, *Brookings, SD*.

A total of 1,215 pigs (BW=29.6 kg) were used in a 99–d trial to determine the effect of deoiled corn dried distillers grains with solubles, solvent extracted, (dDGS) on growth and carcass characteristics. This product is dried distillers grains with a majority of the oil removed. Pigs were blocked on pen weight and randomly allotted to 1 of 5 dietary treatments (0, 5, 10, 20, or 30% dDGS). Diets had equal ME and standardized ileal digestible (SID) lysine content based on a previous study at Kansas State University. Pen weights were obtained every 2 wk from d 0 to 99 and ADFI was recorded on a pen basis. Increasing dDGS reduced (linear; $P < 0.01$) ADG and ADFI. The greatest reduction was in pigs fed over 20% dDGS. Carcass weight and percent yield were reduced (linear; $P < 0.01$), loin depth tended to decrease ($P < 0.09$), and jowl and belly IV increased (linear; $P < 0.01$) as dDGS was increased. There was no difference in backfat ($P > 0.26$), percent lean ($P > 0.16$), or FFLI ($P > 0.20$). In summary, feeding increasing levels of dDGS reduced ADG, ADFI, yield, and carcass weight and increased IV, but did not affect G:F. These data confirm the accuracy of the previously determined ME (2,506 kcal/kg) and SID values for dDGS; however, reasons for the reduced ADFI need further investigation.

Table 1.

Item	dDGS, %					SEM
	0	5	10	20	30	
D 0 to 99						
Final wt, kg	121.4	119.3	118.8	118.2	116.2	0.9
ADG, g	909	893	887	887	873	8.2
ADFI, kg	2.16	2.17	2.10	2.11	2.04	0.03
G:F	2.38	2.43	2.37	2.38	2.33	0.03
Carcass wt, kg	91.1	89.0	89.1	87.7	86.3	1.8
Yield, %	75.5	75.0	75.0	74.7	74.3	0.3
Backfat, mm	16.46	16.54	16.54	16.38	16.97	0.25
Loin depth, mm	2.50	2.45	2.46	2.48	2.39	0.03
Lean, %	56.5	55.9	56.3	56.4	55.8	0.2
FFLI, %	50.4	50.4	50.4	50.5	50.2	0.1
Jowl iodine value, g/100g	67.5	68.1	69.0	71.1	73.3	0.5
Belly iodine value, g/100g	67.1	68.0	69.1	72.4	73.7	0.6

Key Words: Swine, Dried Distillers Grains, Growth

563 Effect of dried corn distillers grains with solubles (DDGS) on growth performance of growing-finishing gilts with previous exposure to DDGS in the nursery. T. E. Burkey*, R. Moreno, E. E. Carney, and P. S. Miller, *University of Nebraska*, *Lincoln*.

A study was conducted to evaluate the effects of DDGS on growth performance of gilts, during the growing-finishing phase, that were previously fed high concentrations of DDGS (30%) during the nursery phase. A total of 24 crossbred gilts (initial BW 28.09 ± 0.73 kg) were used in a 98-d experiment. Twelve gilts with no prior exposure to DDGS, and 12 gilts that were fed high concentrations of DDGS (30%) in the nursery phase, were used in the current experiment. Pigs were individually penned and had ad libitum access to feed and water. The pigs were randomly allotted to 1 of 4 dietary treatments: 1) 0% DDGS in the nursery + 0% DDGS during the growing-finishing period; 2) 0% DDGS in the nursery + 30% DDGS during the growing-finishing period; 3) 30% DDGS in the nursery + 0% DDGS during the growing-finishing period; and 4) 30% DDGS in the nursery + 30% DDGS during the

growing-finishing period. Body weight and feed disappearance were measured and ADG, ADFI, and G:F were calculated. Final BW were 122.6, 113.7, 112.6 and 106.9 ± 4.4 kg, respectively for treatments 1 through 4. There were no differences among treatments for final BW (P = 0.13). Overall, no treatment effects were observed for ADG and ADFI; however, among gilts that were fed DDGS in the nursery, the absence of DDGS in the growing-finishing period resulted in greater G:F compared to gilts that continued to receive DDGS (30%) during the growing-finishing period (P < 0.03). The results of this experiment indicate that the growth performance of gilts fed DDGS in the growing-finishing phase of production may not be affected by the feeding of high levels of DDGS during the nursery phase.

Key Words: DDGS, Gilts, Growth Performance

564 Alternating dietary inclusion of corn distillers' dried grains with solubles (DDGS) did not impact growth performance of finishing pigs. N. R. Augspurger*[1], G. I. Petersen[2], J. D. Spencer[1], and E. N. Parr[1], [1]*JBS United, Inc.*, *Sheridan, IN*, [2]*University of Illinois*, *Urbana*.

An experiment was done to compare continuous *vs* alternating inclusion of corn dried distiller's grains with solubles (DDGS) in growing-finishing swine diets. A total of 480 pigs (52.2 ± 2.9 kg, Monsanto EBX Ultra × GPK 35) were weighed by pen, blocked by weight and sex, and randomly allotted to one of six treatments. Pigs were allowed ad libitum access to their respective diet for a period of 88 d. A total of five dietary phases were fed with body weights and feed intakes recorded at the beginning and end of each phase (the first three phases lasted 3 wk each; the last two phases lasted 2 wk each). Following the final weigh date, pigs were shipped to a commercial packing plant (Tyson Fresh Meats, Columbus Junction, IA) for collection of carcass data. Dietary treatments consisted of 1) corn-SBM diet without added fat; 2) as 1 + 3 (phase 1-4) or 4% (phase 5) added fat (choice white grease); 3) corn-SBM + 15% DDGS; 4) corn-SBM + 30 (phase 1-3)/15 (phase 4)/7.5% (phase 5) DDGS; 5) corn-SBM + 15% DDGS alternated by phase with 4% added fat; and 6) corn-SBM with 0 and 4% added fat alternated by phase. Fat was added at 4% during the last phase for treatments 2-6. Diets were not formulated to be isocaloric. Neither growth rate (g/d) or feed intake (g/d) were affected ($P > 0.39$) by dietary treatment. Gain/feed ratio, however, was increased ($P = 0.008$) through addition of fat (treatments 2, 5, and 6), while DDGS supplementation (treatments 3-5) had no impact ($P = 0.268$). Constant fat supplementation (treatment 2) resulted in the greatest ($P < 0.05$) carcass yield and carcass weight responses, with an advantage of approximately 3.2 kg over pigs in the other five treatments. Neither backfat depth (mm) or carcass lean (%) were affected ($P > 0.20$) by dietary treatment, but loin depth (mm) tended to be lower ($P = 0.067$) for pigs fed diets containing DDGS relative to the corn-SBM control. These data show that alternating the presence and absence of DDGS in diets for finishing pigs was not detrimental to growth performance.

Key Words: DDGS, Pigs, Fat

565 Effects of excess dietary crude protein from soybean meal and distillers dried grains with solubles in diets for finishing pigs. S. C. Williams*, J. D. Hancock, C. Feoli, S. Issa, and T. L. Gugle, *Kansas State University*, *Manhattan*.

A total of 180 pigs (90 barrows and 90 gilts with an average initial BW of 67 kg) were used in a 67-d experiment to determine the effects of excess CP from soybean meal (SBM) and distillers dried grains with soluble (DDGS) on growth performance and carcass measurements in finishing pigs. The pigs were sorted by gender and ancestry and blocked by BW with 12 pigs/pen and five pens/treatment. Treatments were a control diet (corn-SBM with 12% CP), a corn-SBM diet formulated to 16% CP, and a corn-SBM-based diet with 40% DDGS that had 16% CP. Feed and water were consumed on an ad libitum basis until the pigs were slaughtered (average final BW of 128 kg) at a commercial abattoir. Pigs fed diets with excess CP had lower (P < 0.001) ADG and ADFI compared to those fed the control. However, the reduced ADG and ADFI were apparent only for pigs fed excess CP from DDGS (SBM vs DDGS, P < 0.001) and G:F for pigs fed the excess CP treatments was similar to that of pigs fed the control (P > 0. 18). Final BW and hot carcass weight were lower (P < 0.001) for pigs fed excess CP but as with growth performance, the negative effects were apparent only for pigs fed the diet with DDGS (P < 0.001). Also, there was a trend (P < 0.08) for pigs fed the DDGS treatment to have reduced dressing percentage compared to pigs fed the diet with excess CP from SBM. Means for the control, SBM, and DDGS treatments were 0.96, 0.96, and 0.85 kg/d for ADG, 2.97, 2.91, and 2.64 kg/d for ADFI, 323, 329, and 324 g/kg for G:F, 97.6, 97.0, and 91.1 kg for hot carcass weight, 74.2, 74.2, and 73.3% for dressing percentage, and 54.3, 55.6, and 54.8 for percentage carcass lean. In conclusion, reductions in growth performance, carcass weight, and dressing percentage for pigs fed a diet with 40% DDGS could not be explained by the excess CP for that diet.

Key Words: Pig, Distillers Dried Grains, Excess Crude Protein