ad-libitum access to feed 2 days after they had completed farrowing. Litters were standardized to average 11.4 pigs within 48 h after farrowing, and sows had free access to feed throughout lactation (17.4 ± 1.4 d). Sows were fed with a computerized feeding system that assured free ad libitum feed intake and allowed the determination of daily individual sow feed intake during the lactation period. During the study, the 2% added fat diet had moderate difficulty flowing from the feed bin. All other diets flowed well from the feed bin. Sow ADFI averaged 6.4, 6.4, and 6.3 kg/d for 0, 1, and 2% fat, respectively, with no differences (P ≥ 0.7) between fat levels. Increasing fat did not alter sow weight loss (–2.1, –1.8, and –2.3 kg, P≥.8) or wean to first service interval (6.5, 6.5, and 5.6 days, respectively, P≥.4). In addition, piglet average daily gain (.27, .28, and .27 kg/day, respectively) and piglet pre-wean mortality (8, 8.9, and 7.7%) was not affected (P≥.8) by the inclusion of fat. In conclusion, the addition of up to 2% fat with 20% DDGs did not provide any additional benefit to the nursing piglet or the sow.

Key Words: DDG, sow, lactation

145 Digestibility of dietary fiber in distillers co-products fed to growing pigs. P. E. Urriola*[1], G. C. Shurson[2], and H. H. Stein[1], [1]*University of Illinois, Urbana*, [2]*Universty of Minnesota, St. Paul*.

The objective of this research was to measure the apparent ileal (AID) and the apparent total tract digestibility (ATTD) of fiber in different sources of distillers dried grains with solubles (DDGS) and to calculate the fermentability of fiber in DDGS. Ileal digesta and fecal samples from pigs fed diets that each contained 1 of 25 sources of corn DDGS (C-DDGS), 1 source of sorghum DDGS (S-DDGS), 1 source of DDGS produced from a blend of sorghum and corn (SC-DDGS), and 1 source of corn distillers dried grains (DDG) were used. All diets were formulated by mixing DDGS or DDG with sugar, cornstarch, oil, vitamins, and minerals, and DDGS or DDG were the only ingredients that contributed fiber to the diets. Chromic oxide was included in all diets as an indigestible marker. Values for AID and ATTD of fiber were calculated using conventional procedures and fermentation of fiber was calculated by subtracting values for AID from values for ATTD. Fiber was analyzed as total dietary fiber (TDF) in all samples. In a subset of 10 samples, fiber was also analyzed as crude fiber, ADF, NDF, insoluble dietary fiber (IDF), and soluble dietary fiber (SDF). Samples were also analyzed for ether extract, DM, CP, and ash, and the organic residue (OR) was then calculated by subtracting CP, ether extract, ash, and moisture from 100%. Results showed that the AID (23.2 ± 7.3% %), ATTD (45.9 ± 9.0%), and fermentation (32.6 ± 12.9%) of TDF differ (P ≤ 0.05) among sources of corn DDGS. The AID of TDF in DDG (0.73%) was lower (P ≤ 0.01) than in DDGS, but there were no differences in the ATTD of TDF between DDG (43.8%) and DDGS. The AID (64.4 ± 8.3%) and ATTD (91.3 ±2.8%) of SDF in DDGS were greater than the AID (20.0 ± 9.8 %) and ATTD (31.9 ± 15.4%) of IDF. The ATTD of OR in S-DDGS (72.5%) and in SC-DDGS (68.4%) was greater (P ≤ 0.05) than the ATTD of OR in C-DDGS (64.3 ± 12.6%). In conclusion, AID and ATTD of fiber differ among sources of DDGS and those differences may result in differences in the digestibility of energy. The reasons for the differences in digestibility of fiber among DDGS sources are not known.

Key Words: distillers dried grains with solubles, fiber, digestibility

146 Effects of commercial enzymes in diets containing dried distillers' grains with solubles (DDGS) on nursery pig performance. C. K. Jones*, J. R. Bergstrom, M. D. Tokach, J. M. DeRouchey, J. L. Nelssen, S. S. Dritz, and R. D. Goodband, *Kansas State University, Manhattan*.

Two experiments were conducted to evaluate the effects of adding commercial carbohydrases to diets containing DDGS on pig performance. In both trials, pig were blocked by weight in a complete randomized-block design. In Exp. 1, 180 pigs (PIC, 9.0 kg BW) were fed a corn-soybean meal-based control diet, diet containing 30% corn DDGS, or the 30% DDGS diet with 0.05% added Easyzyme, Hemicell-W, or Porzyme. There were 6 pigs/pen and 6 pens/treatment. Overall (d 0 to 27), ADG and G/F were 531, 512, 500, 475, and 521 g/d; and 0.69, 0.67, 0.69, 0.68, and 0.66, respectively. Adding 30% DDGS to the diet did not influence (P>0.20) performance. Enzyme additions did not improve (P>0.10) ADG or G/F. In Exp. 2, 350 pigs (11.0 kg BW) were fed one of 10 dietary treatments. Either 15 or 30% DDGS from one of three sources (corn, sorghum A, sorghum B) were added to a corn-soybean meal control diet. For treatments 8, 9, and 10, 0.05% Easyzyme was added to the 30% DDGS diets. There were 5 pigs/pen and 7 pens/treatment. Overall (d 0 to 21), there were no (P>0.10) enzyme × DDGS source interactions. Corn DDGS did not influence (P>0.10) pig performance. Sorghum DDGS tended to increase (P=0.06) ADFI and reduced (P=0.04) G:F with no difference between sorghum DDGS sources. Adding enzymes to the 30% DDGS diets did not improve (P>0.17) performance. In summary, feeding diets with sorghum DDGS resulted in poorer G:F. Adding enzymes to diets containing 30% DDGS did not improve growth performance.

Table 1. Effects of DDGS with enzymes on nursery pig performance (Exp. 2)

Grain	DDGS Level	Enzyme	ADG, g	ADFI, g	G:F
Corn	0%	No	476	727	0.66
Corn DDGS	15%	No	461	725	0.64
	30%	No	467	726	0.64
	30%	Yes	467	734	0.64
Sorghum DDGS Source A	15%	No	487	761	0.64
	30%	No	458	747	0.61
	30%	Yes	445	713	0.62
Sorghum DDGS Source B	15%	No	478	762	0.63
	30%	No	462	763	0.61
	30%	Yes	472	765	0.62

Key Words: distillers, enzyme, nursery pig

147 Amino acid fortified diets for weanling pigs replacing the use of fish meal and whey protein. S. W. Kim*[1], C. M. Ballou[1], B. J. Min[1], and R. L. Payne[2], [1]*North Carolina State University, Raleigh*, [2]*Evonik-Degussa Corp., Kennesaw, GA*.

A total of 160 newly weaned pigs at 21 d of age was used in a randomized block design with 4 treatments, 8 replicates (4 barrow pens and 4 gilt pens) per treatment, and 5 pigs per pen. All diets contained the same amounts of SBM and plasma protein as common protein sources. Treatments with different protein sources were CON (fish meal, and whey protein), FA (supplemental amino acids, and fish meal), WA (supplemental amino acids, and whey protein), and AA (supplemental amino acids). Pigs were fed the assigned experimental diets for 4 wks based on a 2-phase-feeding (Phase 1: wk 1 postwean; Phase 2: wk 2-4 postwean). Supplemental amino acids were Lys, Thr, Trp, Met, Val, and Ile and these amino acids were used to match amounts of standardized ileal digestible Lys (1.34 and 1.19%), Thr (0.93 and 0.80%), Trp (0.26 and 0.24%), Met+Cys (0.68 and 0.64%), Val (0.99 and 0.91%), and Ile (0.78