ileal and jejunal crypt depths, and ileal villi height. However, jejunal villi height was greater (P = 0.01) in cSBM diet. Concentration of BUN was higher (P = 0.01) in pigs fed LOSBM diet than in pigs fed diets containing SBM. Replacing cSBM with LOSBM reduced (P = 0.01) the viscosity of intestinal content. In conclusion, LOSBM was shown to be a suitable substitute for cSBM, with no negative effects and improved digesta viscosity.

Key Words: blood urea nitrogen, low oligosaccharide soybean meal, swine, viscosity

P075 **The effects of dietary soybean hulls, particle size, and diet form on nursery pig performance.** D. Goehring [1,*], J. M. DeRouchey [1], M. D. Tokach [1], S. S. Dritz [1], R. D. Goodband [1], J. L. Nelssen [1], B. W. James [2], *[1]Kansas State University, Manhattan, [2]Kalmbach Feeds, Inc., Upper Sandusky.*

A total of 1,100 nursery pigs (6.8 kg BW) were used in a 42-d study to determine the effect of increasing soybean hulls (10 or 20%) and soybean hull particle size (unground = 671 µ or ground = 398 µ) in nursery pig diets fed in both meal and pelleted form. Pens of pigs (5 barrows and 5 gilts) were balanced by initial BW and randomly allotted to treatments with 11 replicates per treatment. Treatments were arranged in a 2×2×2 factorial with main effects of 10 or 20% unground or finely ground soybean hulls with diets in pelleted or meal form. No 3-way or particle size × soybean hull interactions (P>0.37 and P>0.17) were observed. Diet form × particle size interactions were observed for G:F (P<0.05) and a tendency for ADFI (P<0.10). Grinding soybean hulls improved G:F and reduced ADFI in meal diets but did not change G:F and had less effect on ADFI when pelleted. There were diet form × particle size interactions (P<0.05) for caloric efficiency on an ME and NE basis. Grinding soybean hulls slightly improved caloric efficiency in meal diets, but not in pelleted diets. There was a tendency for diet form × soybean hull level interactions (P<0.06) for ADFI, G:F, and caloric efficiency. Increasing soybean hulls from 10 to 20% increased ADFI and worsened G:F in meal diets but were not changed in pelleted diets leading to a greater improvement in caloric efficiency in pelleted diets than meal. For main effects, grinding soybean hulls below 617 µ decreased (P<0.01 and P<0.08) ADG and ADFI and tended (P<0.08) to reduce final weight. Pelleting provided the expected improvement in ADG and eliminated the negative effect of increasing soybean hulls on G:F. Regrinding soybean hulls below 617 µ reduced growth performance. (See table below.)

Key Words: nursery pig, particle size, soybean hulls

P076 **Energy value of a low oligosaccharide soybean meal in pigs.** V. Perez [1,*], N. Bajjalieh [2], T. Radke [1], D. Holzgraefe [1], *[1]ADM Alliance Nutrition, Quincy, IL, [2]Integrative Nutrition, Inc., Decatur, IL.*

The objective was to measure DE and ME in a soybean meal (SBM) low in oligosaccharides (SBM-LO), and compare it against a conventional SBM (SBM-C). The following concentrations were measured in SBM-C vs. SBM-LO (DM basis): GE, 4,564 vs. 4,639 kcal/kg; sucrose, 8.02 vs. 15.73%; raffinose, 1.01 vs. 0.35%; stachyose, 5.16 vs. 0.40%, respectively. The DE and ME were measured in grower (51±0.6 kg BW) and finisher (95±0.4 kg BW) barrows; the same procedures were followed in each period. The experiment had a randomized complete block design; blocks were categories of BW. The 3 treatments were a basal diet (97.28% corn), and the basal diet with 30% of either SBM-C or SBM-LO added at expense of corn. Each treatment had 8 block replicates. All diets included a phytase (500 FTU/kg of diet) without consideration of energy or nutrient contribution. Feed offer was set to provide 2.5 times their energy maintenance requirement; that calculation assumed SBM-LO to have 10% more energy than SBM-C, reducing feed offer by 3% as compared to pigs fed SBM-C. Pigs were placed in metabolic cages and allowed 14 d of adaptation, followed by 4 d of total collection of feces and urine. The DE and ME values in ingredients were calculated by the difference procedure. Both DE and ME values measured in corn (Table 1) were less than 3% smaller than book values (Nutrient Requirements of Swine, 2012). The ME measured value in SBM-C was 13 and 6% less in grower and finisher pigs, respectively, than its book value (Nutrient Requirements of Swine, 2012). In grower pigs, SBM-LO had 550 kcal of either DE or ME/kg of DM more (P<0.05) than SBM-C. In finisher pigs, SBM-LO had 399 kcal of DE and 293 kcal of ME/kg of DM more (P<0.05) than SBM-C. In conclusion, SBM-LO had about 16.5% more energy in grower pigs and about 9.6% more energy in finisher pigs than SBM-C.

Table 1. Energy value (kcal/kg DM) of corn and soybean meals conventional (SBM-C) or low oligosaccharides (SBM-LO) in pigs

Item	Corn	SBM-C	SBM-LO	SEM
DE in growers	3,889[b]	3,436[c]	3,986[a]	12
ME in growers	3,799[a]	3,250[b]	3,800[a]	17
DE in finishers	3,849[b]	3,685[c]	4,084[a]	9
ME in finishers	3,739[a]	3,454[b]	3,747[a]	14

[a,b,c] Within rows, means with different superscript differ (P<0.05)

Key Words: energy, pigs, soybean meal

P075 Table

Diet Form:		Meal				Pellet				
	Grind type:	Unground		Ground		Unground		Ground		
Item	Soybean hulls, %:	10%	20%	10%	20%	10%	20%	10%	20%	SEM
ADG, g		475	477	460	467	502	494	478	490	17.8
ADFI, g		708	735	677	708	746	736	722	743	29
G:F		0.672	0.649	0.679	0.66	0.673	0.672	0.662	0.661	0.007
Caloric efficiency, Mcal/kg										
ME		4.7	4.64	4.65	4.56	4.69	4.47	4.77	4.56	0.05
NE		3.29	3.17	3.26	3.12	3.29	3.06	3.34	3.12	0.04