more likely to occur after a DEV occurred the previous day than after a day with adequate intake for purebred and F1 sows, respectively. A DEV was 3.1 ($P < 0.05$) times more likely to occur during late lactation when a DEV had occurred previously in early lactation in F1 sows. Negative deviations from predicted LFI values significantly decreased reproductive performance, increased the likelihood of multiple DEV occurring during lactation, and had larger effect on performance when they occurred during late lactation.

Key Words: feed intake, lactation, studentized residual

O207 **Feed efficiency of swine—A survey of current knowledge.** J. Flohr [1,*], M. D. Tokach [1], J. L. Nelssen [1], S. S. Dritz [1], J. M. DeRouchey [1], R. D. Goodband [1], J. F. Patience [2], *[1]Kansas State University, Manhattan, [2]Iowa State University, Ames.*

Pork producers and advisers to the swine industry were surveyed about their knowledge of feed efficiency. The questionnaire had 3 objectives: 1) determine the knowledge level related to feed efficiency topics; 2) identify production practices being used that influence feed efficiency, and 3) identify information gaps or areas requiring more research to further improve feed efficiency. A web based survey with 32 knowledge, production, and discovery questions were asked. Demographic questions were used to categorize respondents by industry segment (producer, consultant, academia, or other), and years of experience (0 to 5, 5 to 10, 10 to 20, and 20 or more). Six knowledge questions about the effects of fat inclusion, particle size, pelleting, temperature, feed additives, and sow feed usage on feed efficiency were asked. Answers were categorized as correct (46%), incorrect (28%), or not sure (26%). Further categorizations of these responses are listed below. Overall, results suggest there are gaps in the knowledge about practices that affect feed efficiency. Consultants were the only industry segment who averaged more than 50% correct responses to knowledge questions. As years of industry experience increased correct answer percentage also increased. Knowledge needs varied by industry segment with producer responses indicating that they need more information on the effects of fat inclusion, particle size, feed additives, and temperature on feed efficiency. These results will help extension educators inform specific industry segments with current information and provide for more specific areas of future research where information gaps have now been identified.

Industry Segment	Producers	Consultants	Academia	Other
Correct	42%	58%	35%	32%
Incorrect	23%	30%	35%	32%
Not sure	35%	12%	30%	36%
Years of Experience	0 to 5	5 to 10	10 to 20	20 or more
Correct	37%	39%	41%	48%
Incorrect	17%	28%	29%	33%
Not sure	47%	34%	30%	19%

Key Words: feed efficiency, survey, swine

O208 **Production performance factor analysis of commercial swine operations.** C. Abell [1,*], J. Mabry [1], C. Hostetler [2], K. Stalder [1], *[1]Iowa State University, Ames, [2]National Pork Board, Clive.*

The objective of this study was to determine the factors that explain the variation in production performance between commercial swine operations. The data used for this study was collected from October 2005 through December 2011 from U.S. sow, nursery, and finishing farms. Monthly, averaged company-wide records from over 50 companies were included with an average of over 40 records per company. Different performance indicators were analyzed for each segment of the production system. A factor analysis was conducted to identify production indicators that explain greatest proportion of the variation in production performance between the different companies. The factors evaluated for sow farm production were measurements of sow feed intake, piglet and sow morality, litter size, and sow productivity. The nursery and finisher factors were mortality, exit weight, daily gain, feed conversion ratio, and days in the barn for the respective production system stage. The top three factors from the factor analysis for each production stagewere used to explain the overall variation in each production stage. These three factors explained 50% of the sow farm, 74% of nursery, and 72% of finisher variation. The first factor for the sow farm was dominated by number born alive, total born, and pigs/sow/year. Sow intake controlled the second factor. The third factor was not as dominated by a specific set of production indicators, but litters/sow/year was the indicator with the largest weighting. For the nursery data, exit age and nursery days were given the highest weighting in the first factor, daily gain and start age were given the highest weightings in the second and third factors, respectively. Total gain and exit weight were given moderately high weighting in both the first and second factors. A similar result was found for the finisher data. Finishing age and days at the finisher dominated the first factor, and total gain and finish weight controlled the second factor. Start age was the highest weighted production indicator in the third factor. Identifying production indicators that are most variable between swine operations can allow producers to focus on certain factors to improve their productivity.

Key Words: factor analysis, performance, swine

NONRUMINANT NUTRITION: GROWING-FINISHING NUTRITION AND MANAGEMENT

O215 **Effects of pellet quality and feeder adjustment on growth performance of finishing pigs.** J. Nemechek [1,*], M. Tokach[1], E. Frugé [2], E. Hansen [2], S. Dritz [1], R. Goodband [1], J. DeRouchey [1], J. Nelssen [1], *[1]Animal Science and Industry, Kansas State University, Manhattan, [2]Hubbard Feeds, Inc, Mankato.*

A total of 252 pigs (PIC 327 × 1050, 56.8 kg BW) were used in a 69-d trial to determine the effects of pellet quality and feeder adjustment on growth performance of finishing pigs. There were 5 pens per treatment with 7 pigs and 1 replicate with 6 pigs per pen. Treatments were arranged in a 2 × 3 factorial with main effects of feeder adjustment and diet form. The conventional dry feeders had 2, 35.6-cm-wide by 11.4-cm-deep feeder holes. Feeder adjustments were narrow and wide (maximum gap opening of 1.27 and 2.54 cm). Diet forms were meal, poor-quality pellets (50% fines), and screened pellets with minimal fines. No interactions were observed ($P>0.14$). From d 0 to 22 and d 22 to 48, feeder adjustment did not influence ($P>0.28$) ADG, but ADFI tended to (d 0 to 22; $P<0.07$) or did decrease (d 22 to 48; $P<0.02$) while G:F increased ($P<0.05$)

O215 Table

		Maximum feeder opening						
		1.27 cm			2.54 cm			
	Diet form:	Meal	50% pellet + 50% fines	Screened pellet	Meal	50% pellet + 50% fines	Screened pellet	SEM
d 0 to 22:	ADG, kg	0.97	0.93	1.00	0.98	0.96	0.99	0.029
	G:F	0.422	0.441	0.462	0.407	0.420	0.451	0.007
d 22 to 48:	ADG, kg	0.98	1.05	1.01	1.03	1.05	1.02	0.021
	G:F	0.364	0.402	0.407	0.357	0.369	0.403	0.008
d 48 to 69:	ADG, kg	0.91	0.99	1.01	0.94	0.98	1.00	0.032
	G:F	0.279	0.300	0.324	0.266	0.288	0.323	0.009
d 0 to 69:	ADG, kg	0.95	1.00	1.00	0.98	1.00	1.00	0.019
	G:F	0.349	0.374	0.392	0.337	0.354	0.387	0.006

for pigs fed from the narrow adjusted feeders compared to the wide adjustment. From d 48 to 69, feeder adjustment had no effect on growth.Overall, ADG did not differ ($P>0.46$) between pigs fed from the 2 feeder adjustments, but ADFI decreased ($P<0.03$) and G:F increased ($P<0.03$) for pigs fed from the narrow adjusted feeders compared to the wide adjustment. The response to diet form was similar among phases. Overall, pigs fed meal diets tended to have decreased ($P<0.08$) ADG and had decreased ($P<0.001$) G:F compared with pigs fed screened pellets, with those fed poor-quality pellets intermediate. Feeding meal or poor-quality pellets increased ($P<0.02$) ADFI compared to pigs fed screened pellets. In conclusion, reducing feeder gap reduced feed wastage and improved G:F. Feeding pelleted diets improved G:F, but improvement was greatest when percentage of fines was minimized. (See table above.)

Key Words: feeder adjustment, pellet, pig

O216 **Effects of corn particle size, complete diet grinding, and diet form on pig growth performance, caloric efficiency, and carcass characteristics**. J. A. De Jong [1,*], J. M. DeRouchey [1], M. D. Tokach [1], R. D. Goodband [1], S. S. Dritz [1], J. L. Nelssen [1], C. Hastad [2], *[1]Animal Science, Kansas State University, Manhattan, [2]New Fashion Pork, Jackson.*

A total of 855 pigs (25.6 kg BW) were used in a 111-d trial to determine the effects of corn particle size, complete diet grinding, and diet form (meal or pellet) on finishing pig growth performance, caloric efficiency, and carcass characteristics. Pigs were allotted to 1 of 5 dietary treatments (8 or 9 pens/treatment with 19 pigs/pen). The same corn-soybean meal–based diets containing 30% dried distillers grains with solubles and 20% wheat middlings were used for all treatments. The 5 treatments were: 1) roller ground corn (650 µ) and fed in meal form (596 µ); 2) hammer-mill ground corn (320 µ) and fed in meal form (487 µ); 3) treatment 2 pelleted; 4) complete mixed diet reground through a hammer mill to approximately 360 µ and fed in meal form; and 5) treatment 4 pelleted. Overall (d 0 to 111), reducing corn particle size improved ($P<0.03$) G:F and caloric efficiency on a ME and NE basis. Grinding the complete diet decreased ADG, ADFI, and final BW when fed in meal form, but increased performance when pelleted resulting in diet form × portion ground interactions ($P < 0.02$). Pelleting improved ($P<0.02$) ADG, G:F, ME and NE caloric efficiencies, final BW, HCW, and loin depth. Reducing corn particle size and pelleting complete diets improved performance and carcass characteristics. Fine-grinding the entire diet was detrimental when fed in meal form but improved performance when pelleted.

Treatment:	1	2	3	4	5	
Portion ground:		Corn	Corn	Diet	Diet	
Item, Diet form:	Meal	Meal	Pellet	Meal	Pellet	SEM
ADG, kg	0.92	0.93	0.96	0.90	0.98	0.01
ADFI, kg	2.58	2.53	2.48	2.48	2.55	0.03
G:F	0.36	0.37	0.39	0.37	0.39	0.003
Caloric Efficiency, mcal/kg						
ME	9.15	8.80	8.43	8.89	8.44	0.08
NE	4.41	4.23	4.06	4.28	4.06	0.04
Final BW, kg	122.8	125.0	125.5	121.8	129.4	1.11
HCW, kg	90.9	91.2	93.1	89.3	94.7	0.75
Loin depth, mm	60.1	59.5	61.5	59.4	60.2	0.54

Key Words: finishing pig, particle size, pellet

O217 **Interaction between feeder space availability and corn DDGS on grow-finish pig performance and total tract digestibility in a commercial setting.** E. K. Weber[*], K. J. Stalder, J. F. Patience, *Animal Science, Iowa State University, Ames.*

There is a need to re-evaluate feeder space allowance as the industry moves to diets with higher fiber levels. Our objective was to evaluate three linear feeder space allowances (4.1, 4.9, or 5.7 cm/pig) at two levels of DDGS inclusion (D30 or D60) on grow-finish pig performance, carcass characteristics, and diet digestibility. Treatments were arranged as a 3 X 2 factorial. Diets were formulated to be isolysogenous and isocaloric based on ME. Phases 1, 2, and 3, contained approximately 30% (D30) or 60% (D60) DDGS. Phase 4 diets contained 26% (D30) or 30% (D60) DDGS. Sixty pens fitted with double sided feeders; thus 30 feeders (n = 1,860 pigs; 62 pigs/feeder; initial BW 29.8 kg ± 0.7 kg; final BW 122.6 ± 4.5 kg) were assigned randomly to one of 6 treatments using a completely randomized design. Feeder space allowance was adjusted by covering 1 or 2 feeder sections. Fecal grab samples were collected during dietary phases 2 and 3 and stored at -20ºC for later assay for dry matter, energy, and titanium dioxide content. Data were analyzed using the MIXED procedure of SAS with feeder as the experimental unit and fixed effects of feeder space treatment, diet treatment, and sex. Feeder space allowance and DDGS inclusion level did not affect ADG, ADFI, or G:F ($P>0.10$) from d 57 post-weaning to market. However, for the last 30 d on test, pigs provided with 5.7 cm/pig feeder space had a greater ADG when compared to pigs provided with 4.1 cm/pig ($P<0.05$), and tended ($P<0.10$) to have a greater G:F. Pigs fed the D30 diet had greater HCW, percent yield, and loin depth than pigs fed the D60 diet ($P<0.05$). ATTD for DM and GE was greater ($P<0.05$) for the D30 pigs for both collection periods. When ADG was based on carcass instead of live weight,