Kansas Agricultural Experiment Station Research Reports

Volume 8
Issue 10 *Swine Day*

Article 28

2022

Effects of Feeding Increasing Standardized Ileal Digestible Lysine on Growth Performance of 26- to 300-lb PIC Line 800-Sired Pigs

Katelyn N. Gaffield
Kansas State University, gaffield@k-state.edu

Mike D. Tokach
Kansas State University, mtokach@k-state.edu

Jason C. Woodworth
Kansas State University, jwoodworth@k-state.edu

See next page for additional authors

Recommended Citation

Gaffield, Katelyn N.; Tokach, Mike D.; Woodworth, Jason C.; DeRouchey, Joel M.; Goodband, Robert D.; Gebhardt, Jordan T.; Vier, Carine M.; Spindler, Matthew; Orlando, Uislei; Zargoza, Luis; Lu, Ning; Cast, Wayne; Wilson-Wells, Danielle F.; Holen, Julia P.; and Betlach, Alyssa M. (2022) "Effects of Feeding Increasing Standardized Ileal Digestible Lysine on Growth Performance of 26- to 300-lb PIC Line 800-Sired Pigs," *Kansas Agricultural Experiment Station Research Reports*: Vol. 8: Iss. 10. https://doi.org/10.4148/2378-5977.8381

Effects of Feeding Increasing Standardized Ileal Digestible Lysine on Growth Performance of 26- to 300-lb PIC Line 800-Sired Pigs

Abstract

The objective of this study was to evaluate the growth performance and economic returns of PIC 800 × 1050 pigs fed increasing SID Lys from approximately 26 to 300 lb. Pens of pigs were blocked by BW and randomly assigned to 1 of 5 dietary treatments in a randomized complete block design with 26 pigs per pen and 16 pens per treatment. Pens were provided 1 of 5 dietary treatments with increasing SID Lys at 85, 93, 100, 107, and 115% of current PIC recommendations within 6 different phases. Two base diets containing low Lys and high Lys were blended to meet target SID Lys levels for each treatment diet within phase. For the overall experimental period (d 0 to 143), feeding increasing SID Lys improved (linear, $P \leq 0.007$) ADG and F/G, but did not impact ADFI ($P > 0.10$). For carcass characteristics, a tendency (linear, $P = 0.067$) for increased HCW of pigs that were provided increasing SID Lys was observed. However, there was no evidence for differences ($P > 0.10$) across treatments in carcass yield, backfat depth, loin depth, or carcass lean percentage. Increasing SID Lys of the diets increased (linear, $P < 0.001$) feed cost and feed cost per lb of gain. There was no evidence of difference ($P > 0.10$) in revenue for either ingredient price scenario, thus, feeding increasing levels of SID Lys reduced (linear, $P < 0.001$) income over feed cost (IOFC) in both scenarios. The linear model (LM) served as the best fit for both growth and economic parameters. The LM model predicted maximum ADG and minimal F/G at levels greater than 115% of PIC's current SID Lys recommendations. For IOFC, the LM model predicted maximum profitability at or below 85% of PIC's current Lys recommendations. In conclusion, the optimal SID Lys level for PIC 800 × 1050 pigs from 26- to 300-lb depends upon the response criteria, with growth performance maximized at levels at or above 115% of PIC's recommendation for SID Lys; however, economic responses were maximized at or below 85% of PIC's current SID Lys recommendations.

Keywords

amino acid, grow-finish pig, lysine, requirement

Authors

Katelyn N. Gaffield, Mike D. Tokach, Jason C. Woodworth, Joel M. DeRouchey, Robert D. Goodband, Jordan T. Gebhardt, Carine M. Vier, Matthew Spindler, Uislei Orlando, Luis Zargoza, Ning Lu, Wayne Cast, Danielle F. Wilson-Wells, Julia P. Holen, and Alyssa M. Betlach

K·STATE
Research and Extension

SWINE DAY
2022

KANSAS STATE UNIVERSITY SWINE INDUSTRY DAY 2022

Effects of Feeding Increasing Standardized Ileal Digestible Lysine on Growth Performance of 26- to 300-lb PIC Line 800-Sired Pigs

Katelyn N. Gaffield, Mike D. Tokach, Jason C. Woodworth, Joel M. DeRouchey, Robert D. Goodband, Jordan T. Gebhardt,[1] Carine M. Vier,[2] Matthew Spindler,[2] Uislei Orlando,[2] Luis Zaragoza,[2] Ning Lu,[2] Wayne Cast,[2] Danielle F. Wilson-Wells,[2] Julia P. Holen,[3] and Alyssa M. Betlach[3]

Summary

The objective of this study was to evaluate the growth performance and economic returns of PIC 800 × 1050 pigs fed increasing SID Lys from approximately 26 to 300 lb. Pens of pigs were blocked by BW and randomly assigned to 1 of 5 dietary treatments in a randomized complete block design with 26 pigs per pen and 16 pens per treatment. Pens were provided 1 of 5 dietary treatments with increasing SID Lys at 85, 93, 100, 107, and 115% of current PIC recommendations within 6 different phases. Two base diets containing low Lys and high Lys were blended to meet target SID Lys levels for each treatment diet within phase. For the overall experimental period (d 0 to 143), feeding increasing SID Lys improved (linear, $P \leq 0.007$) ADG and F/G, but did not impact ADFI ($P > 0.10$). For carcass characteristics, a tendency (linear, $P = 0.067$) for increased HCW of pigs that were provided increasing SID Lys was observed. However, there was no evidence for differences ($P > 0.10$) across treatments in carcass yield, backfat depth, loin depth, or carcass lean percentage. Increasing SID Lys of the diets increased (linear, $P < 0.001$) feed cost and feed cost per lb of gain. There was no evidence of difference ($P > 0.10$) in revenue for either ingredient price scenario, thus, feeding increasing levels of SID Lys reduced (linear, $P < 0.001$) income over feed cost (IOFC) in both scenarios. The linear model (LM) served as the best fit for both growth and economic parameters. The LM model predicted maximum ADG and minimal F/G at levels greater than 115% of PIC's current SID Lys recommendations. For IOFC, the LM model predicted maximum profitability at or below 85% of PIC's current Lys recommendations. In conclusion, the optimal SID Lys level for PIC 800 × 1050 pigs from 26- to 300-lb depends upon the response criteria, with growth performance maximized at levels at or above 115% of PIC's recommendation for SID Lys; however,

[1] Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University.
[2] Genus PIC, Hendersonville, TN.
[3] Swine Vet Center, St. Peter, MN.

economic responses were maximized at or below 85% of PIC's current SID Lys recommendations.

Introduction

Lysine is considered the first limiting amino acid in diets for swine. It is important to supply pigs with sufficient lysine to support muscle growth and development while minimizing excess that will be excreted into the environment. Lysine requirements can be influenced by many factors including growth potential, genetics, gender, and health status. With rapid advancements in swine genetics, it is crucial to frequently evaluate Lys requirements. By optimizing SID Lys recommendations, the industry can maximize both lean muscle deposition and economic returns as growth performance and meat quality attributes improve.

Recently, PIC updated their SID Lys recommendations in the 2021 PIC Nutrition and Feeding Guidelines manual;[4] however, these recommendations were based on PIC 337 × 1050 pigs.[5] Currently, there is limited research available outlining the SID Lys recommendations for the PIC 800 sire line. Therefore, the objective of this study was to evaluate the growth performance and economic returns of PIC 800 × 1050 pigs fed SID Lys at 85, 93, 100, 107, and 115% of PIC Lys recommendations from approximately 26- to 300-lb.

Procedures

The protocol for this experiment was approved by the Kansas State University Institutional Animal Care and Use Committee. A commercial research barn located in south-central Minnesota was used to conduct the study. The barn had slatted concrete flooring, deep pits for manure storage, and was naturally ventilated. Pens contained a 3-hole stainless steel dry self-feeder (Thorp Equipment, Thorp, WI) to provide *ad libitum* access to feed.

Animals and diets

A total of 2,080 pigs (PIC 800 × 1050, Hendersonville, TN; initially 26.1 lb) were used in the experiment. Pens of pigs were blocked by BW and randomly assigned to 1 of 5 dietary treatments in a randomized complete block design. There were 26 pigs per pen with equal numbers of barrows and gilts and 16 replicates per treatment. Treatments consisted of 5 increasing SID Lys levels fed throughout 6 different phases as follows: phase 1 (1.09, 1.19, 1.28, 1.36, and 1.47%); phase 2 (0.97, 1.06, 1.14, 1.22, and 1.32%); phase 3 (0.87, 0.95, 1.02, 1.09, and 1.17%); phase 4 (0.75, 0.82, 0.88, 0.94, and 1.01%); phase 5 (0.66, 0.72, 0.77, 0.82, and 0.89%); and phase 6 (0.59, 0.64, 0.69, 0.74, and 0.79%). The approximate weight of pigs for each phase was 25 to 50, 50 to 90, 90 to 130, 130 to 180, 180 to 230, and 230 to 300 lb, respectively. The increasing SID Lys treatments represent 85, 93, 100, 107, and 115% of PIC recommendations within each phase of growth. Two base diets containing low Lys and high Lys were blended to meet the target SID Lys level for each treatment diet (Table 1). Lysine was the first

[4] PIC Nutrition and Feeding Guidelines. 2021. Biological and economic models for optimum SID Lys concentration. Available: https://www.pic.com/wp-content/uploads/sites/3/2021/03/PIC-Nutrition-Manual_English-Imperial.pdf.

[5] Orlando, U. A. D., C. M. Vier, W. R. Cast, N. Lu, R. Navales, and S. S. Dritz. 2021. Meta-analysis to determine the standardized ileal digestible lysine requirements of growing-finishing pigs from 11- to 150-kg. J. Anim. Sci. 99:62-63. doi:10.1093/jas/skab054.104.

limiting AA while all other AA ratios were maintained above requirement estimates. Experimental diets were fed from d 0 to 18, 18 to 41, 41 to 60, 60 to 82, 82 to 105, and 105 to 143 for phase 1 to 6, respectively. To determine ADG, ADFI, and F/G, pens of pigs were weighed, and feed disappearance was recorded throughout the trial. On d 116 and 123, the 4 heaviest pigs from each pen were marketed. The remaining pigs were marketed approximately 17 days later at the conclusion of the study.

At the conclusion of the study, individual pigs were weighed and tattooed with a pen identification number prior to transportation to a commercial abattoir for carcass data collection. Measurements including HCW, loin depth, backfat depth, and percentage lean were collected. The calculation for carcass yield was individual pig HCW at the plant divided by individual final pig weight on the farm. Individual carcass data were used in the analysis with pen serving as the experimental unit. Hot carcass weight served as a covariate for loin depth, backfat depth, and percentage lean in the statistical analysis.

Economic analysis

For the economic analysis, high- and low-priced ingredients were used to calculate total feed cost, feed cost per lb of gain, total revenue, and IOFC per pig. Low-priced diets were determined using the following ingredient costs: corn = \$3.00/bushel (\$107/ton); soybean meal = \$300/ton; L-Lys HCl = \$0.65/lb; DL-Met = \$1.70/lb; L-Thr = \$0.85/lb; L-Val = \$2.50/lb; and L-Trp = \$3.00/lb. High-priced diets were determined using the following ingredient costs: corn = \$6.00/bushel (\$214/ton); soybean meal = \$400/ton; L-Lys HCl = \$0.80/lb; DL-Met = \$2.50/lb; L-Thr = \$1.20/lb; L-Val = \$4.00/lb; and L-Trp = \$5.00/lb. Feed cost per pig was determined by total feed intake × diet cost (\$/lb). Feed cost per lb of gain was determined as the total feed cost divided by total gain per pig. Revenue per pig was calculated for both low- and high-priced diets as total gain × carcass yield × \$0.60/lb carcass price, or total gain × carcass yield × \$0.88/lb carcass price, respectively. Finally, income over feed cost was determined as total revenue minus total feed cost per pig.

Statistical analysis

Data were analyzed as a randomized complete block design for a one-way ANOVA using the GLIMMIX procedure of SAS v. 9.4 (SAS Institute, Inc., Cary, NC). Pen was considered the experimental unit, initial body weight served as a blocking factor, and treatment served as the fixed effect. Results were considered significant with $P \leq 0.05$ and marginally significant with $P \leq 0.10$. Dose response curves were evaluated using linear (LM), quadratic polynomial (QP), and broken-line linear (BLL) models. The best-fitting model was selected using the Bayesian Information Criterion (BIC) with improved model fits accepted when BIC decreased at least 2.0.

Results and Discussion

Increasing SID Lys increased (quadratic, $P = 0.043$) BW on d 41 and continued to increase (linear, $P < 0.05$) BW during all subsequent periods. From d 0 to 41, increasing SID Lys improved (linear, $P < 0.001$) F/G and increased (linear, $P < 0.001$) ADG; however, there was no evidence for differences ($P > 0.10$) in ADFI. From d 41 to 82, increasing SID Lys decreased ADFI and improved F/G (quadratic, $P \leq 0.01$) when dietary Lys was provided at 93 or 100% of the 2021 PIC recommendation. Furthermore, from d 82 to marketing (d 143), there were no differences ($P > 0.10$) in ADG or ADFI, but F/G tended to improve (linear, $P = 0.078$) as SID Lys increased. For the overall experimental period (d 0 to 143), feeding increasing SID Lys improved (linear, $P \leq 0.007$) ADG and F/G, but did not impact ADFI ($P > 0.10$). As expected, overall Lys intake/d and Lys intake/kg of gain increased (linear, $P < 0.001$) as SID Lys increased.

For carcass characteristics, there was a tendency (linear, $P = 0.067$) for an increase in HCW as SID Lys increased. However, there was no evidence for differences ($P > 0.10$) in any of the other carcass characteristics.

For economics, increasing levels of SID Lys increased (linear, $P < 0.001$) feed cost and feed cost per lb of gain in both the low- and high-priced ingredient scenarios. However, there was no evidence of differences ($P > 0.10$) for revenue in either of the price scenarios due to increasing SID Lys. Thus, IOFC decreased (linear, $P < 0.001$) as SID Lys increased, regardless of the ingredient price scenario.

The LM model served as the best fit for both growth and economic criteria. The LM model predicted maximum ADG and minimal F/G at levels at or greater than 115% of PIC's current recommendations. For IOFC, the LM model predicted maximum profitability at or below 85% of PIC's current Lys recommendations.

In the current study, the optimal SID Lys level for PIC 800 × 1050 pigs from 26 to 300 lb depends upon the response criteria, with growth performance maximized at levels above 115% of PIC's current SID Lys recommendation; however, economic responses were maximized at or below 85% of PIC's current SID Lys recommendations. Therefore, despite an increase in growth performance, feeding greater than 85% of PIC Lys recommendation is not economically justified.

Table 1. Diet composition (as-fed basis)[1,2]

	Phase 1		Phase 2		Phase 3		Phase 4		Phase 5		Phase 6	
Item	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Ingredient, %												
Corn	63.73	60.70	65.34	62.83	74.35	71.53	75.03	73.48	82.36	80.85	83.18	82.05
Soybean meal	33.00	34.95	32.00	33.60	22.90	24.85	22.75	23.70	15.30	16.25	14.75	15.50
Choice white grease	---	---	---	---	---	0.05	---	---	---	---	---	---
Limestone	1.22	1.22	1.23	1.23	1.14	1.14	1.09	1.09	1.13	1.13	1.08	1.08
Monocalcium P, 21% P	0.76	0.74	0.59	0.58	0.54	0.52	0.32	0.31	0.31	0.29	0.17	0.15
Sodium chloride	0.60	0.60	0.53	0.53	0.55	0.55	0.55	0.55	0.55	0.55	0.57	0.56
L-Lys-HCl	0.13	0.55	0.01	0.40	0.16	0.49	0.01	0.32	0.13	0.39	0.06	0.30
DL-Met	0.06	0.28	---	0.19	0.02	0.19	---	0.10	---	0.09	---	0.04
L-Thr	0.06	0.29	---	0.21	0.05	0.23	---	0.14	0.02	0.16	---	0.10
L-Trp	---	0.07	---	0.07	---	0.05	---	0.06	---	0.04	---	0.04
L-Val	---	0.16	---	0.08	---	0.12	---	0.02	---	0.06	---	---
Copper sulfate	0.06	0.06	---	---	---	---	---	---	---	---	---	---
Vitamin premix	0.25	0.25	0.15	0.15	0.15	0.15	0.13	0.13	0.10	0.10	0.10	0.10
Trace mineral premix	0.15	0.15	0.15	0.15	0.15	0.15	0.13	0.13	0.10	0.10	0.10	0.10
Total	100	100	100	100	100	100	100	100	100	100	100	100
Calculated analysis[1]												
SID AA, %												
Lys, %	1.09	1.47	0.97	1.32	0.87	1.17	0.75	1.01	0.66	0.89	0.59	0.79
Ile:Lys	71	55	78	60	70	55	81	61	73	56	81	61
Leu:Lys	146	110	161	121	156	119	181	136	179	135	199	149
Met:Lys	32	39	30	37	30	37	33	34	33	35	36	31
Met and Cys:Lys	59	59	59	59	59	59	66	59	65	59	73	59
Thr:Lys	66	66	67	66	66	66	70	66	66	66	70	66
Trp:Lys	21.1	21.0	23.0	22.8	20.0	19.9	23.1	23.0	20.0	19.8	21.9	21.7
Val:Lys	77	70	85	70	78	70	91	70	84	70	93	70
His:Lys	47	36	51	39	48	37	55	42	52	39	57	43
NE, kcal/lb	1,089	1,088	1,095	1,095	1,121	1,121	1,125	1,125	1,145	1,145	1,149	1,148
SID Lys:NE, g/Mcal	4.52	6.12	4.03	5.45	3.50	4.73	3.01	4.07	2.60	3.51	2.32	3.13
CP, %	21.2	22.8	20.7	22.0	17.2	18.6	17.1	17.9	14.2	15.0	14.0	14.6
Ca, %	0.77	0.77	0.72	0.72	0.65	0.65	0.58	0.59	0.57	0.57	0.52	0.52
STTD P, %	0.44	0.44	0.41	0.41	0.38	0.38	0.33	0.33	0.31	0.31	0.29	0.28

[1]Calculated analysis is based off nutrient profiles for ingredients listed in the NRC. National Research Council. 2012. Nutrient Requirements of Swine: Eleventh Revised Edition. Washington, DC: The National Academies Press. https://doi.org/10.17226/13298.

[2] Low and high Lys diets were blended to create treatment diets at SID Lys levels representative of 85, 93, 100, 107, and 115% of PIC's current recommendations. Treatments consisted of 5 increasing SID Lys levels fed throughout 6 different phases: phase 1 (1.09, 1.19, 1.28, 1.36, and 1.47%); phase 2 (0.97, 1.06, 1.14, 1.22, and 1.32%); phase 3 (0.87, 0.95, 1.02, 1.09, and 1.17%); phase 4 (0.75, 0.82, 0.88, 0.94, and 1.01%); phase 5 (0.66, 0.72, 0.77, 0.82, and 0.89%); and phase 6 (0.59, 0.64, 0.69, 0.74, and 0.79%).

Table 2. Effects of increasing SID Lys on growth performance of PIC 800-sired pigs[1]

	% PIC 2021 Recommendation[2]						*P* =	
Item	85	93	100	107	115	SEM	Linear	Quadratic
BW, lb								
d 0	26.1	26.1	26.2	26.2	26.1	0.45	0.892	0.046
d 41	90.7	92.0	93.0	94.4	93.6	1.19	< 0.001	0.043
d 82	184.7	182.9	186.1	188.0	188.0	1.29	< 0.001	0.473
d 143 (3rd cut)[3]	301.3	298.1	301.8	304.4	303.6	2.03	0.029	0.495
Marketing[3]								
1st Cut	292.2	278.5	282.6	283.8	286.3	2.51	0.378	0.002
2nd Cut	289.5	291.2	289.8	293.8	297.2	2.23	0.005	0.254
Average[4]	298.0	293.8	296.8	299.3	299.8	1.44	0.022	0.051
d 0 to 41								
ADG, lb	1.57	1.59	1.62	1.66	1.63	0.019	< 0.001	0.100
ADFI, lb	2.77	2.74	2.74	2.80	2.72	0.039	0.539	0.358
F/G	1.76	1.72	1.69	1.69	1.66	0.013	< 0.001	0.169
SID Lys g/d	12.60	13.67	14.70	16.06	16.79	0.215	< 0.001	0.260
SID Lys g/kg gain	17.69	18.89	20.03	21.37	22.63	0.167	< 0.001	0.476
d 41 to 82								
ADG, lb	2.27	2.23	2.26	2.26	2.30	0.022	0.157	0.045
ADFI, lb	5.53	5.38	5.44	5.53	5.65	0.049	0.007	< 0.001
F/G	2.44	2.42	2.41	2.45	2.46	0.021	0.031	0.014
SID Lys g/d	19.95	21.21	23.05	25.06	27.54	0.209	< 0.001	< 0.001
SID Lys g/kg gain	19.40	21.01	22.50	24.49	26.46	0.186	< 0.001	0.008
d 82 to Market								
ADG, lb	2.17	2.14	2.16	2.18	2.18	0.023	0.494	0.435
ADFI, lb	6.77	6.69	6.74	6.80	6.67	0.052	0.503	0.742
F/G	3.12	3.13	3.12	3.12	3.07	0.023	0.078	0.100
SID Lys g/d	18.96	20.48	22.16	23.86	25.21	0.177	< 0.001	0.596
SID Lys g/kg gain	19.24	21.13	22.62	24.18	25.54	0.173	< 0.001	0.083
Overall (d 0 to 143)								
ADG, lb	2.02	2.00	2.02	2.03	2.04	0.011	0.007	0.238
ADFI, lb	5.14	5.07	5.09	5.15	5.12	0.031	0.668	0.190
F/G	2.55	2.53	2.51	2.53	2.51	0.010	0.003	0.648
SID Lys g/d	17.29	18.64	20.11	21.78	23.28	0.144	< 0.001	0.228
SID Lys g/kg gain	18.90	20.54	21.92	23.64	25.12	0.107	< 0.001	0.993

continued

Table 2. Effects of increasing SID Lys on growth performance of PIC 800-sired pigs[1]

	% PIC 2021 Recommendation[2]						*P* =	
Item	**85**	**93**	**100**	**107**	**115**	**SEM**	**Linear**	**Quadratic**
Carcass characteristics[5]								
HCW, lb	221.6	218.4	220.5	222.9	222.7	1.469	0.067	0.144
Carcass yield, %	76.9	76.9	76.7	77.5	77.1	0.383	0.346	0.933
Backfat depth, in.[6]	0.68	0.67	0.66	0.68	0.66	0.009	0.478	0.926
Loin depth, in.[6]	2.62	2.61	2.61	2.61	2.64	0.016	0.434	0.290
Lean, %[6]	56.4	56.5	56.5	56.3	56.7	0.150	0.334	0.610
Removals, %	2.21	1.94	1.47	4.65	1.72	1.087	0.762	0.775
Mortality, %	3.14	1.95	3.12	2.21	3.34	1.006	0.782	0.329
Total, %	5.52	3.99	4.77	6.92	5.25	1.411	0.522	0.728
Economics								
Low ingredient prices[7]								
Feed cost, $/pig	50.85	52.02	52.91	54.28	55.68	0.572	< 0.001	0.570
Feed cost/lb gain, $/lb[8]	0.194	0.198	0.202	0.208	0.212	0.001	< 0.001	0.769
Revenue, $/pig[9]	121.26	121.28	120.81	121.46	121.92	1.702	0.678	0.652
IOFC, $/pig[10]	70.41	69.27	67.91	67.18	66.23	1.256	< 0.001	0.759
High ingredient prices[11]								
Feed cost, $/pig	85.56	87.09	88.19	90.04	91.97	0.975	< 0.001	0.572
Feed cost/lb gain, $/lb[8]	0.326	0.331	0.336	0.345	0.349	0.001	< 0.001	0.735
Revenue, $/pig[9]	177.85	177.87	177.19	178.13	178.81	2.496	0.678	0.652
IOFC, $/pig[10]	92.29	90.81	89.02	88.09	86.84	1.740	< 0.001	0.783

[1]A total of 2,080 pigs (PIC 800 × 1050, Hendersonville, TN) were used with 26 pigs per pen and 16 replications per treatment.
[2]Treatments consisted of 5 increasing SID Lys levels fed throughout 6 different phases: phase 1 (1.09, 1.19, 1.28, 1.36, and 1.47%); phase 2 (0.97, 1.06, 1.14, 1.22, and 1.32%); phase 3 (0.87, 0.95, 1.02, 1.09, and 1.17%); phase 4 (0.75, 0.82, 0.88, 0.94, and 1.01%); phase 5 (0.66, 0.72, 0.77, 0.82, and 0.89%); and phase 6 (0.59, 0.64, 0.69, 0.74, and 0.79%).
[3]First cut marketed 4 pigs on d 116, second cut marketed 4 pigs on d 123, and third cut marketed remaining pigs (between 12 and 18 pigs) on d 143.
[4]Average final BW for all market events (d 116, 123, and 143).
[5]Carcass data collected from pigs marketed at the conclusion of the study (d 143).
[6]Adjusted using HCW as a covariate.
[7]Prices for feed cost calculation: corn = $3.00/bushel ($107/ton); soybean meal = $300/ton; L-Lys HCl = $0.65/lb; DL-Met = $1.70/lb; L-Thr = $0.85/lb; L-Val = $2.50/lb; and L-Trp = $3.00/lb.
[8]Feed cost/lb gain = total feed cost per pig divided by total gain per pig.
[9]Revenue = (total gain × carcass yield) × carcass price. Revenue is based on a $0.60/lb or $0.88/lb carcass price for low- or high-priced scenarios, respectively.
[10]Income over feed cost = revenue – feed cost.
[11]Prices for the feed cost calculation: corn = $6.00/bushel ($214/ton); soybean meal = $400/ton; L-Lys HCl = $0.80/lb; DL-Met = $2.50/lb; L-Thr = $1.20/lb; L-Val = $4.00/lb; and L-Trp = $5.00/lb.