156 Effects of Standardized Ileal Digestible Lysine Level on Growth Performance in 35 to 80 Kg DNA Finishing Pigs.

Rafe Q. Royall[1], Robert D. Goodband[1], Mike D. Tokach[1], Joel M. DeRouchey[1], Jordan T. Gebhardt[1], Jason C. Woodworth[1], [1]*Kansas State University*

Abstract: Two studies were conducted to estimate the SID Lys requirement for growth and feed efficiency of 35-80-kg DNA finishing pigs. In Exp. 1, 608 pigs (600 × 241, DNA; initially 36.3±0.91kg) were used to estimate the SID Lys requirement from 35-55-kg. In Exp. 2, 700 pigs (DNA 600×241; initial BW of 53.2±0.86kg) were used to estimate the SID Lys requirement form 50-80-kg. Pens of pigs were blocked by BW and randomly allotted to 1 of 6 dietary treatments with 7-10 pigs/pen in a randomized complete block design with 12 replications per treatment. Diets were corn-soybean meal-based and SID Lys increased by increasing soybean meal and feed-grade amino acids while maintaining minimum ratios for other amino acids. Increasing SID Lys increased (linear, $P < 0.05$) ADG in both studies. From 50-80-kg, ADFI decreased, then increased (quadratic, $P = 0.004$) with increasing SID Lys. Feed efficiency improved, while Lys intake/d, and Lys intake/kg of gain increased (linear, $P < 0.05$, 35-55-kg; quadratic, $P < 0.05$, 50-80-kg) with increasing SID Lys. At current ingredient and pig prices, there were no statistical differences in income over feed cost (IOFC) from 35-55 kg. From 50-80-kg, increasing SID Lys increased (linear, $P < 0.001$) IOFC. Linear models resulted in the best fit for ADG, G:F and IOFC from 35-55-kg, with optimum performance at 1.20% SID Lys or greater. A quadratic polynomial model predicted a requirement of 0.97% SID Lys for optimum G:F from 50-80-kg. Meanwhile, a broken-line linear model predicted optimal IOFC at 0.76% SID Lys from 50-80-kg. In summary, these results suggest that the optimal SID Lys level for 35-55-kg DNA finishing pigs is at least 1.20%. The optimal SID Lys level for 50-80-kg DNA finishing pigs depends on the response criteria, with growth performance optimized at or above 0.97% SID Lys and IOFC maximized at 0.76% SID Lys.

Table 1. Effects of increasing lysine on growth performance in DNA finishing pigs from 35-80 kg[1]

	SID Lys, %						
35 to 55 kg	0.80	0.88	0.96	1.04	1.12	1.20	SEM
ADG, kg[2]	0.99	0.99	1.01	1.02	1.01	1.03	0.019
ADFI, kg	2.03	1.96	1.98	2.01	1.95	1.98	0.032
G:F[2]	0.490	0.507	0.512	0.508	0.521	0.522	0.0108
SID Lys g/kg gain[2]	16.2	17.2	18.6	20.7	21.7	22.9	0.62
	SID Lys, %						
50 to 80 kg	0.65	0.72	0.79	0.86	0.93	1.00	SEM
ADG, kg[2]	0.94	0.96	1.00	1.01	1.03	1.06	0.017
ADFI, kg	2.42	2.33	2.33	2.32	2.32	2.38	0.048
G:F[3]	0.389	0.413	0.429	0.434	0.444	0.447	0.0050
SID Lys g/kg gain[3]	16.8	17.5	18.4	19.8	21.0	22.6	0.22

[1] If response has no footnote indicated, response was $P > 0.05$ for both linear and quadratic contrasts.
[2]Linear response observed ($P<0.05$).
[3]Quadratic response observed ($P<0.05$).

Keywords: amino acid, grow-finish pig, lysine requirement

157 Effects of Standardized Ileal Digestible Lysine Level on Growth Performance in 75 to 130 Kg DNA Finishing Pigs.

Rafe Q. Royall[1], Robert D. Goodband[1], Mike D. Tokach[1], Joel M. DeRouchey[1], Jordan T. Gebhardt[1], Jason C. Woodworth[1], [1] *Kansas State University*

Abstract: Two studies were conducted to estimate the SID Lys requirement for growth and feed efficiency of 70-130-kg DNA finishing pigs. In Exp. 1, 616 pigs (600×241, DNA; initially 76.4±1.25 kg) were used from 70-100-kg and in Exp. 2, 679 pigs (600×241, DNA; initially 103.8±1.32 kg) were used from 100-130 kg. Pens of pigs were blocked by BW and randomly allotted to dietary treatments with 8-10 pigs/pen in a randomized complete block design. Diets were corn-soybean meal based and SID Lys increased by increasing soybean meal and feed-grade amino acids while maintaining minimum ratios for other amino acids. From 70-100 kg, ADG, G:F, Lys intake/d, and Lys intake/kg of gain all increased, (linear, $P < 0.05$) with increasing SID Lys. From 100-130 kg, ADG, Lys intake/d, and Lys intake/kg of gain increased (linear, $P < 0.05$) with increasing SID Lys, while G:F increased (quadratic, $P = 0.032$). At current ingredient and pig prices, there were no statistical differences in income over feed cost (IOFC) from 70-100 kg. From 100-130 kg, increasing SID Lys increased (quadratic, $P = 0.001$) IOFC. A broken-line linear (BLL) model predicted optimal ADG at 0.83% SID Lys, while a quadratic polynomial (QP) model predicted a requirement of 0.90% for G:F from 75-100 kg. A QP model predicted maximum IOFC at 0.78% SID Lys from 75-100 kg. From 100-130 kg, BLL models predicted optimal ADG and G:F at 0.64 and 0.59% SID Lys, respectively. A QP model predicted maximum IOFC at 0.64% SID Lys. In summary, these results suggest the optimal SID Lys level for 75-100 kg DNA finishing pigs for growth performance is between 0.83 and 0.90% SID Lys, and 0.78% SID Lys for maximum IOFC. The optimal SID Lys level in 100-130 kg DNA finishing pigs depends upon the response criteria, with growth performance and IOFC maximized between 0.59 and 0.64% SID Lys.