

**656** Estimating the lysine requirements for growing and finishing halothane carrier and negative gilts using serum urea nitrogen concentrations, growth performance, and carcass characteristics. J. W. Frank<sup>1</sup>, B. T. Richert<sup>1\*</sup>, A. P. Schinckel<sup>1</sup>, and D. Fox<sup>2</sup>, <sup>1</sup>Purdue University, West Lafayette, IN and <sup>2</sup>DeKalb Swine Breeders, Inc., DeKalb, IL.

One hundred eighty gilts were used to estimate the lysine requirements of growing and finishing halothane carrier (CAR) and negative (NEG) gilts using serum urea nitrogen concentrations (SUN), growth performance, carcass characteristics, and growth curves. Treatments were arranged as a 2 x 4 factorial (two genotypes and four dietary lysine sequences). Gilts (initial BW = 23.1 kg), were housed 6 pig/pen. Diets were formulated on total lysine basis while maintaining an ideal amino acid ratio. The four lysine sequences were phase fed from 23.1 to 45.4 kg (P1), 45.4 to 68.0 kg (P2), 68.0 to 90.7 kg (P3), and 90.7 to market weight (P4). Lysine sequences by phases were as follows: A = 1.2, 1.075, 0.95, and 0.825%; B = 1.075, 0.95, 0.825, and 0.70%; C = 0.95, 0.825, 0.70, and 0.575%; and D = 0.825, 0.70, 0.575, and 0.450%. The same two pigs per pen were bled at the start of the trial and 2 weeks after diet changes to determine SUN. During P2 and P4 sequences B had the greatest ADG (P<.01 and P<.05, respectively) and ADG/ADFI (P<.05 and P<.001, respectively). During P3 A had the greatest ADG and ADG/ADFI (P<.05 and P<.001, respectively). Lysine intake increased linearly during each phase (P<.001). Halothane carriers had greater tenth rib BF (22.3 vs 20.7 mm; P<.05) than NEG. Gilts on diet sequence B had the greatest FFLI and lowest BF compared to other sequences (P<.05). Based on this data the total lysine intake requirements for halothane carrier and negative gilts is not greater than 16 g/d (P1), 21.7 g/d (P2), 25.3 g/d (P3), and 23.9 g/d (P4).

	Diet Sequence				SE	P<
	A	B	C	D		
ADG, g						
P1	711	722	685	686	11.7	.09
P2	859	894	879	796	16.5	.01
P3	935	924	925	850	26.2	.05
P4	921	975	928	838	29.5	.05
BF, mm	21.1	20.0	22.3	22.7	0.721	.05

Key Words: Pigs, Lysine, Growth

**657** Effects of increasing L-lysine HCl on finishing pig growth performance. M. De La Llata\*, M. D. Tokach, R. D. Goodband, J. L. Nelssen, and S. S. Dritz, Kansas State University, Manhattan.

We conducted a 68 d growth study to determine the effects of increasing L-lysine HCl in finishing pig diets. One hundred and sixty growing pigs (initially 56.5 kg, PIC L326 x C22) were blocked by weight and sex then allotted to one of four dietary treatments. Treatments included increasing L-lysine HCl (0, .15, .225, and .30% of the diet) replacing the lysine provided by soybean meal. Diets were formulated to contain .70 (grower, 55 to 85 kg) and .55% (finisher, 85 to 115 kg) total lysine. All diets were sorghum-soybean meal based. Increasing L-lysine HCl from 0 to .15% had no effect on ADG, feed efficiency (G:F), and percentage lean (P > .05); however, backfat depth was increased (P < .05). Increasing L-lysine HCl from 0 or .15% to .225 and .30% decreased ADG and G:F (P < .05). Backfat depth was not different between pigs fed .15 and .225% L-lysine HCl (P > .05), but was increased for pigs fed .30% L-lysine HCl (P < .05). Increasing L-lysine HCl from 0 to .225 and .30% decreased percentage lean (P < .05). Our data suggest that if replacing soybean meal with greater than .15% L-lysine HCl in sorghum-based finishing diets, other amino acids will be limiting growth performance.

Item	L-Lysine HCl, %				SEM
	0	.15	.225	.30	
ADG, g	913 <sup>a</sup>	911 <sup>a</sup>	803 <sup>b</sup>	786 <sup>b</sup>	18.7
G:F	.29 <sup>a</sup>	.28 <sup>a</sup>	.25 <sup>b</sup>	.24 <sup>b</sup>	.01
BF, mm	14.4 <sup>a</sup>	16.1 <sup>b</sup>	17.3 <sup>b</sup>	18.7 <sup>c</sup>	.50
Lean, %	56.6 <sup>a</sup>	55.7 <sup>ab</sup>	54.6 <sup>bc</sup>	53.5 <sup>c</sup>	.47

<sup>a, b, c</sup> (Means with different superscripts are different, P < .05)

Key Words: Lysine, Sorghum, Finishing Pig

**658** Effects of reducing net energy in low crude protein, amino acid supplemented diets for finishing pigs. S. Carter\*, K. Miller, R. Harrold, and R. Zimprich, North Dakota State Univ., Fargo.

An experiment was conducted to evaluate the effects of reducing net energy (NE) in low CP, amino acid (AA) supplemented diets on the performance and carcass merit of finishing pigs. Crossbred pigs (n=100) initially weighing 39.7 kg were blocked by weight and sex and allotted randomly to four dietary treatments. The four dietary treatments were: (1) fortified corn-soybean meal (control), (2) as 1 with CP lowered by four percentage units and supplemented with Lys, Met, Thr, and Try, (3) as 2 with 10% wheat midds, and (4) as 2 with 20% wheat midds. Wheat midds analyzed 15.7% CP and .59% Lys and were added to the low CP, AA diet at the expense of corn and soybean meal to reduce NE. Lysine HCl was added to make all diets isolysininc, and Met, Thr, and Try were added to Diets 2-4 on an ideal basis. Diet 1 was formulated to 17, 15, and 14% CP (.90, .75, .67% Lys) for 39-59, 60-86, and 87-111 kg, respectively. Diets 2-4 were formulated to 13, 11, and 10% CP for the three phases, respectively. There were six pen replicates of 7 pigs/pen. ADG, ADFI, and G:F were respectively: 1.02, .95, .97 and 1.94 kg; 2.90, 2.78, 2.82, and 2.75 kg; .351, .341, .344, and .341. Lower CP and adding AA reduced (P<.10) ADG, ADFI, and G:F, but addition of 10 or 20% wheat midds to the low CP, AA diet did not affect (P>.10) these traits. At 111 kg, all pigs were killed and standard carcass measures were collected. LMA, 10th rib fat depth, and % lean were: 42.2, 41.9, and 42.4 cm<sup>2</sup>; 2.26, 2.26, 2.24, and 2.24 cm; 52.9, 52.4, 52.4, and 52.7. Pigs fed the low CP, AA diet had smaller (P<.06) LMA, but 10th rib fat depth and % lean did not differ (P>.10) from pigs fed the control diet. Addition of 10 or 20% wheat midds to the low CP, AA diet had no effect (P>.10) on carcass traits. These data suggest that lowering CP by four percentage units and adding AA results in a slight decrease in performance. Moreover, these results suggest that reducing NE via addition of wheat midds to low CP, AA supplemented diets does not affect pig performance or carcass traits.

Key Words: Pigs, Amino Acids, Net Energy

**659** Effect of dietary fiber or fat in low crude protein, crystalline amino acid-supplemented diets for finishing pigs. T. A. Knowles<sup>1\*</sup>, L. L. Southern<sup>1</sup>, T. D. Bidner<sup>1</sup>, B. J. Kerr<sup>2</sup>, and K. G. Friesen<sup>3</sup>, <sup>1</sup>LSU Agricultural Center, Baton Rouge, <sup>2</sup>Nutri-Quest, Inc., Chesterfield, MO, <sup>3</sup>Tyson Foods, Inc., Springdale, AR.

Three experiments were conducted to determine the effect of reducing the NE of low CP, crystalline amino acid (CAA)-supplemented diets for finishing pigs. Initial and final BW were 74 and 117 kg; 74 and 102 kg, and 70 and 110 kg in Exp. 1, 2, and 3. In Exp. 1 (barrows) and 2 (gilts) 64 pigs were allotted to four treatments with four pens of four pigs each in a RCB. Diets fed in Exp. 1 were: 1) corn-soybean meal (C-SBM), 2) low CP (-3.5%), with CAA, 3) CAA + rice hulls (CAA+RH; NE equal to C-SBM), and 4) CAA+RH+OIL (NE equal to CAA). Experiment 2 was similar to Exp. 1 except RH were replaced with wheat middlings. In both experiments, serum urea-N was higher (P<.10) for pigs fed C-SBM than for pigs fed any other diet. In Exp. 1, barrows fed CAA+RH had lower hot carcass weight, percentage muscle, fat-free lean, lean gain per day, retained energy (RE) in fat-free lean, and lean:fat than barrows fed C-SBM. Also, barrows fed CAA+RH had smaller longissimus muscle area than barrows fed any other diet; whereas, barrows fed C-SBM had higher dressing percentage and lower percentage total fat (TOFAT) than barrows fed any other diet. Barrows fed C-SBM had higher lean fat and lower TOFAT than barrows fed CAA. In Exp. 3, 702 gilts were allotted to six treatments with nine replicates of 13 gilts each in a RCB. Gilts were fed two levels of CP (15.5% or 11.7%) and three levels of NE (2,650, 2,617, or 2,584 kcal/kg) in a 2 x 3 factorial arrangement. Gilts fed 15.5% CP had higher (P<.01) gain:feed and greater (P<.09) longissimus depth than gilts fed 11.7% CP. Gilts fed the diet with 2,617 kcal NE had lighter carcasses and less TOFAT, fat gain per day, RE as fat, and RE than gilts fed 2,650 or 2,584 kcal NE/kg (NE quadratic, P<.001). The reduction of NE in low CP, CAA-supplemented diets did not affect growth performance and was not an effective means of reducing fat in finishing pigs.

Key Words: Crystalline Amino Acids, Net Energy, Pigs