

## 214 Effects of Reducing Digestible Lysine and Tryptophan to Lysine Ratio on Growth Performance of Grow-finish Pigs.

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Due to packing plant closures or slow-downs, many producers needed to examine ways to reduce average daily gain (ADG) of finishing pigs. Therefore, a total of 1,080 pigs (L337 × 1050, PIC; initially 32.0 kg) were used in a 119-d trial to evaluate the effects of reducing dietary standardized ileal digestibility (SID) Lys and SID Trp:Lys ratio to slow growth of finishing pigs in a commercial setting. Pigs were randomly allotted in weight blocks to 1 of 4 dietary regimens with 27 pigs/pen and 10 replications/regimen. Pigs were fed a control regimen (100% of the estimated SID Lys requirement for pigs in this facility) formulated to contain 1.10, 1.01, 0.91, 0.83, 0.79, 0.71 and 0.67% SID Lys from 32 to 42, 42 to 51, 51 to 72, 72 to 85, 85 to 97, 97 to 112, and, 112 to 130 kg, respectively. Two other regimens contained 90 or 80% of the Lys estimate. These 3 regimes were formulated to a SID Trp:Lys ratio of 19% except for the last dietary phase that contained 17% SID Trp:Lys ratio. The fourth regimen contained 80% of the SID Lys estimate with 16% SID Trp:Lys in all phases. The statistical model included fixed effects of treatment, random effect of block, linear and quadratic effects of SID Lys and pairwise comparison of the two 80% treatments. Overall, decreasing SID Lys decreased (linear,  $P < 0.01$ ) ADG and final body weight (BW) and tended ( $P < 0.10$ ) to decrease gain:feed ratio (G:F). Reducing the Trp:Lys ratio decreased ( $P = 0.014$ ) ADG and final BW compared to pigs fed diets with 80% SID Lys with higher SID Trp:Lys. In summary, decreasing SID Lys reduced ADG and feeding a reduced SID Trp:Lys ratio resulted in a further decrease in ADG of grow-finish pigs.

**Table 1.** Effects of reducing SID Lys and Trp:Lys ratio on growth performance of grow-finish pigs<sup>1</sup>

Item	SID Lys, % <sup>2</sup>				Probability, $P <$		
	100	90	80	80 - 16% Trp:Lys	SEM <sup>5</sup>	Linear	Quadratic
d 0 to 119 (Overall)							
ADG, kg	0.85	0.82	0.78	0.75 <sup>3</sup>	0.013	0.001	0.887
ADFI, kg	2.45	2.43	2.37	2.36	0.109	0.176	0.786
G:F, g/kg	349	339	333	323 <sup>4</sup>	6.7	0.081	0.772
Final BW, kg	134.0	129.7	125.4	122.3 <sup>3</sup>	3.08	0.001	0.999

<sup>1</sup>BW = body weight; ADG = average daily gain; ADFI = average daily feed intake; G:F = gain-to-feed ratio.

<sup>2</sup>Standardized ileal digestible (SID) Lys of the estimated requirement (100, 90 or 80%) or 80% with an additional reduction of SID Trp:Lys ratio to 16%.

<sup>3</sup>Treatment: 80 vs 80 - 16% Trp:Lys differ ( $P \leq 0.05$ ) for final BW and ADG.

<sup>4</sup>Treatment: 80 vs 80 - 16% Trp:Lys differ ( $P \leq 0.10$ ) for G:F.

<sup>5</sup>Heterogenous residual variance.

**Keywords:** grow-finish pig, growth, SID Lys, SID Trp.