
Three hundred and fifty three lactating sows were used to determine the effects of increased dietary lysine on sow and litter performance. At farrowing, sows were assigned to corn-soybean meal lactation diets (no crystalline amino acids) consisting of either 1.0 or 1.3% total lysine. Average sow parity was 2.85 and lactation length was 17 d. Both parity and lactation length were used as covariates in the analysis. Litters were standardized to 10.5 pigs on d 2 of lactation. A treatment by parity interaction was observed with first parity sows fed 1.3% lysine having heavier litter weaning weights than sows fed 1.0% lysine (48.4 vs 44.8 kg respectively; P < .03). Surprisingly, third and fourth parity sows fed 1.3% lysine had decreased litter weaning weights than those fed 1.0% lysine (48.6 vs 52.3 kg respectively; P < .06). No other treatment by parity interactions existed. No differences were observed in the number of pigs weaned (9.7 vs 9.8; P = .35), or number of pigs born or born alive (10.5 vs 10.5; P = .77). Sows fed 1.0% lysine consumed less feed the first week of lactation than sows fed 1.3% lysine (4.35 vs 4.54 kg/d; P = .31). No differences were observed in subsequent reproductive performance for days to estrus (6.0 vs 5.9 d; P = .80), farrowing rate (71.5 vs 76.7%; P = .35), or number of pigs born or born alive (10.5 vs 10.5; P = .84) for sows fed either 1.0% or 1.3% lysine. This experiment observed that increasing dietary lysine from 1.0 to 1.3% increased litter weaning weights for parity one sows, but not for older sows. Increasing dietary lysine from 1.0 to 1.3% did not influence subsequent reproductive performance.

Key Words: Lysine, Lactation, Weaning weight

Valine is a Limiting Amino Acid in Low-Protein Nursery Diets. I. Mavromichalis*, D. M. Weibel, J. L. Emmert, R. L. Moser2, and D. H. Baker1, 1University of Illinois, Urbana, IL, 2United Feeds, Inc., Sheridan, IN.

Three trials were carried out with pigs between 5 and 8 wk of age to determine the limiting order of amino acids in a 13.5% CP corn-soybean meal-based diet containing 8% dried whey. Amino acid additions to the low-protein, negative-control diet increased (P < .05) performance in a similar but lesser magnitude than single deletion of any single amino acid. Single deletions of Lys, Trp, Met, Ile, and Val to the low-protein diet decreased (P < .05) performance more than backfat depth numerically increased for the .30% L-lysine HCl treatment, indicating that dietary L-lysine HCl increased the lysine provided by soybean meal. Dietary treatments fed in a grower (60 to 80 kg) and a finisher (80 to 110 kg) phase were formulated to contain .70 and .55% total lysine, respectively. During the grower phase increasing L-lysine HCl from 0 to .15% increased ADG by 17.8% (P < .05), feed efficiency (G:F) by 12.8% (P < .05), and reduced (P < .05) ADG. Feed efficiency was reduced (P < .05) when L-lysine HCl increased from 0 or .15% to .225 or .30% L-lysine HCl replacing the lysine provided by soybean meal. Dietary treatments fed in a grower (60 to 80 kg) and a finisher (80 to 110 kg) phase were formulated to contain .70 and .55% total lysine, respectively. During the grower phase increasing L-lysine HCl from 0 to .15% increased ADG by 17.8% (P < .05), feed efficiency (G:F) by 12.8% (P < .05), and reduced (P < .05) ADG. Feed efficiency was reduced (P < .05) when L-lysine HCl increased from 0 or .15% to .225 or .30% L-lysine HCl replacing the lysine provided by soybean meal. Dietary treatments fed in a grower (60 to 80 kg) and a finisher (80 to 110 kg) phase were formulated to contain .70 and .55% total lysine, respectively. During the grower phase increasing L-lysine HCl from 0 to .15% increased ADG by 17.8% (P < .05), feed efficiency (G:F) by 12.8% (P < .05), and reduced (P < .05) ADG. Feed efficiency was reduced (P < .05) when L-lysine HCl increased from 0 or .15% to .225 or .30%. For the overall experiment increasing L-lysine HCl treatment (0 or .15% to .225 or .30% L-lysine HCl) had feed efficiency (G:F) and reduced gain/feed efficiency (G:F) by 12.8% (P < .05), and reduced (P < .05) ADG. Feed efficiency was reduced (P < .05) when L-lysine HCl increased from 0 or .15% to .225 or .30%. For the overall experiment increasing L-lysine HCl treatment (0 or .15% to .225 or .30%) had feed efficiency (G:F) and reduced gain (P < .05). Carcass characteristics were not affected by dietary treatment, however, backfat depth numerically increased for the .30% L-lysine HCl treatment (15.5, 15.0, 15.0 and 17.1 mm, respectively). Based on the results of this experiment, no more than .15% L-lysine HCl should be added to replace lysine from soybean meal in a corn-soybean meal based diet to avoid deficiencies of other amino acids that limit the growth performance of finishing pigs.

Key Words: Lysine, Corn, Finishing pigs


A total of 156 high-lean-growth gilts were used in two experiments to evaluate the effect of reducing dietary CP level and adding synthetic amino acids (AA) on growth performance and carcass characteristics of finishing pigs. In Exp. 1, 96 pigs (initially 52.3 kg) were used in a 35 d growth trial to evaluate the effect of reducing CP and adding AA on early-finishing performance. There were 4 treatments in a RCBD design with six replicate pens/treatment containing 4 pigs/pen. The control diet was formulated with corn and soybean meal and 3% added fat to contain .76% true ideal digestible lysine (TDL) and 16.8% CP with no AA added. All the other diets were formulated to contain the same levels of TDL and NE as the control diet by adding variable levels of lys and fat. Protein levels in trt 2 and 3 were reduced by 3% and 4%, respectively, with trh, trp, and met added to the ideal ratio. Trt 4 was similar to trt 3, except ile and val were added to meet the ideal ratio.