

**145 Digestible tryptophan:lysine ratio in diets for finishing pigs.** G.J.M.M. de Lima<sup>\*1,2</sup>, C. H. Klein<sup>1</sup>, and L. Hackenhaar<sup>3</sup>, <sup>1</sup>EMBRAPA - Swine and Poultry National Research Center, Brazil, <sup>2</sup>CNPq, Brazil, <sup>3</sup>Ajinomoto Biolatina, Brazil.

This study was carried out to identify the best true ileal digestible tryptophan (DigTrp):lysine (DigLys) ratio for finishing swine fed diets based on corn, soybean meal and 10% animal byproducts, where tryptophan is the second limiting amino acid. Sixty barrows and sixty gilts, progeny of Embrapa MS60 terminal sire line and Large White x Landrace females, were used in a randomized block design according to a 2 X 5 factorial arrangement of treatments (sex X DigTrp:DigLys ratios). Five DigTrp:DigLys ratios were studied: 0.16, 0.17, 0.18, 0.19 and 0.20. Diets were calculated to provide 0.80% DigLys and meet or exceed NRC nutrient requirements. Different DigTrp:DigLys ratios were obtained by adding synthetic tryptophan in the place of caulin in the diet. Average initial and final weights were  $76.24 \pm 1.15$  and  $96.59 \pm 1.33$  kg, respectively. Interactions between sex and DigTrp:DigLys ratios were not significant ( $P > 0.10$ ) for all studied variables. There were sex differences for all variables. Barrows showed the best growth performance ( $P < 0.10$ ) and gilts had the best carcass quality ( $P < 0.008$ ). DigTrp:DigLys ratios did not affect daily weight gain ( $P = 0.53$ ), daily feed consumption ( $P = 0.61$ ), feed conversion ( $P = 0.90$ ) and all carcass variables ( $P > 0.10$ ), according to F test. It was concluded that the best DigTrp:DigLys ratio for pigs fed diets based on corn, soybean meal and animal byproducts is 0.16 for the finishing phase.

**Key Words:** Tryptophan, Lysine, Swine

**146 Growth performance and carcass quality of pigs housed in hoop barns fed diets containing alternative grains.** L. J. Johnston<sup>\*</sup> and R. Morrison, *University of Minnesota*.

Dietary manipulation may be a useful tool for controlling increased carcass fat often observed in pigs raised in hoop barns (H). Our objective was to determine if a diet based on alternative grains (AG; barley, oats, buckwheat, field peas, and expeller soybean meal) would decrease carcass fatness and support growth performance of pigs housed in H similar to pigs fed diets based on corn and soybean meal (CS) housed in an environmentally-controlled confinement barn (C). To achieve this objective, pigs ( $33.6 \pm .08$  kg) were housed in pens in H (6.1 m x 24.4 m; 80 mixed sex pigs/pen) or C (2.3 m x 4.6 m; 15 mixed sex pigs/pen). Pigs housed in H were fed CS or isolysin diets containing AG in a three-phase feeding program. Pigs housed in C only received CS diets. Housing and dietary treatments were replicated over winter and summer seasons for a total of 4, 4, and 14 pens/treatment for HCS, HAG, and CCS treatments, respectively. Pigs were marketed individually when they reached 113 kg BW. No season by treatment interactions were observed for any response criteria. Average daily gain (.88, .79, .87 kg; MSE = .0005) and feed/gain (3.16, 3.51, 2.97; MSE = .026) to the date when the first pigs were marketed for HCS, HAG, and CCS, respectively, were depressed ( $P < 0.03$ ) by HAG compared with HCS while ADFI (2.77, 2.78, 2.58 kg; MSE = .016) was greater ( $P < 0.05$ ) for HCS compared with CCS pigs. Last rib fat depth (2.60, 2.35, 2.35 cm; MSE = .012) was greatest ( $P < 0.05$ ) for HCS pigs, while percentage carcass lean (54.42, 55.16, 55.48; MSE = .63) tended to be less ( $P < 0.07$ ) in HCS vs CCS pigs. A trained sensory taste panel detected no differences in tenderness, juiciness, or overall desirability of pork loins ( $n = 20$ /treatment) harvested from pigs during the winter season. Inclusion of alternative grains in diets for pigs housed in hoop barns depressed growth performance and elicited minor improvements in carcass quality. Eating quality of pork was not influenced by housing system or inclusion of alternative grains in the diet. Pork Checkoff funds provided financial support for this project.

**Key Words:** Hoop Barn, Carcass Traits, Swine

**147 Effect of space allowance in rearing on feet and leg score and age at puberty of replacement gilts.** M. G. Young<sup>\*1</sup>, M. D. Tokach<sup>1</sup>, F. X. Aherne<sup>2</sup>, S. S. Dritz<sup>1</sup>, R. D. Goodband<sup>1</sup>, and J. L. Nelssen<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Alberta Pig Company, Canada.

A total of 1,257 gilts (initially 38 kg) were used to determine the effect of space allowance during rearing on feet and leg score and age at puberty. Gilts were housed on totally-slatted floors and given a space

allowance of 1.1 or 0.8 m<sup>2</sup> in rearing. Gilts were weighed at entry and backfat depth, loin area and weight were recorded at approximately 200 d of age. From approximately 140 d of age, gilts were exposed to a vasectomized boar once per d to record age at puberty. At approximately 200 d of age, gilts were scored for feet and leg structure, movement, and toe evenness. For structure and movement, both the front and rear legs were scored separately on a scale of 1 to 5 by a trained specialist using NSIF guidelines. Toe evenness was scored on a scale of 1 to 3, with 1 equal to one very small and one normal toe or two small toes and 3 representing two even toes. Both the percentage of gilts with cracks on their hooves and the number of cracks per hoof were recorded. Space allowance in rearing had no effect ( $P > 0.28$ ) on ADG (772 vs 761 g/d) from 80 to 200 d of age, backfat depth (18.5 vs 18.0 mm) or loin eye area at 200 d of age. A greater ( $P < 0.05$ ) percentage of gilts attained puberty at the higher space allowance, but there was no difference in age at puberty for the gilts that attained puberty before leaving the rearing site. Front, rear, and overall structure, movement, and toe evenness scores were not different ( $P > 0.22$ ) between the two space allowances. Gilts given greater space allowance in rearing had a greater ( $P < 0.05$ ) percentage of cracks on their rear hooves and tended ( $P < 0.10$ ) to have a greater total percentage of cracks compared to those given the lower space allowance. There was no difference in the number of cracks per hoof. Space allowance in rearing had no effect on feet and leg score for structure, movement, or toe evenness, but a higher percentage of gilts attained puberty by 200 d of age when given the greater space allowance.

**Key Words:** Gilts, Space Allowance, Puberty

**148 Effects of lactation feeding strategy on gilt and litter performance.** B. A. Peterson<sup>\*1</sup>, M. Ellis<sup>1</sup>, B. F. Wolter<sup>2</sup>, and N. Williams<sup>3</sup>, <sup>1</sup>University of Illinois, <sup>2</sup>Maschhoff Pork, Inc., <sup>3</sup>PIC USA.

Two experiments were conducted to evaluate the effects of lactation feeding strategy on sow feed intake and piglet performance. Exp. 1 was conducted as a randomized complete block design and utilized 90 PIC C23 gilts allotted to one of three treatments: 1) Fixed amount fed four times daily according to an increasing scale, 2) Feeding to appetite four times daily, and 3) Increasing restricted feeding scale for the first 10 days of lactation followed by to appetite feeding. Gilts were weighed and backfat depth was measured (P2 location) upon entry to the farrowing house and at weaning. Cross-fostering was performed to equalize litter size and weight across treatments. Birth, 10d, and weaning weights were recorded. Daily feed additions and refusals were recorded. No significant treatment differences in sow body weight, backfat measures, or litter performance measures were observed. Gilts on Trt. 3 had lower ( $P < 0.05$ ) ADFI on days 1 through 7 ( $3.2, 2.8,$  and  $2.1 \pm 0.19$  kg for Trt. 1, 2, and 3, respectively), but ADFI was similar ( $P > 0.05$ ) on all other days, and for the overall lactation period ( $3.9, 3.7,$  and  $3.5 \pm 0.13$  kg for Trt. 1, 2, and 3, respectively). Exp. 2 was conducted as a randomized complete block design and utilized 96 PIC C23 gilts allotted to one of two treatments. The treatments were 1) Hand fed to appetite and 2) Ad libitum access to feed via a self-feeder. The same methodology was used in Exp. 2 as in Exp. 1. Gilts on self feeders had higher ( $P < 0.05$ ) ADFI ( $4.4$  vs.  $4.1 \pm 0.11$  kg) and lost significantly less ( $P < 0.05$ ) backfat ( $1.8$  vs.  $3.1 \pm 0.43$  mm) than hand fed gilts. All other performance measures were similar ( $P > 0.05$ ) for feeding strategy. This study suggests that the self-feeder used was effective at increasing feed intake and reducing backfat loss in sows during lactation.

**Key Words:** Backfat, Feed Intake, Sows

**149 Comparison of agar plate and real-time PCR on enumeration of *Lactobacillus* and total anaerobic bacteria in dog feces.** C. J. Fu<sup>\*1</sup>, J. N. Carter<sup>2</sup>, J. H. Porter<sup>1</sup>, and M. S. Kerley<sup>1</sup>, <sup>1</sup>University of Missouri-Columbia, <sup>2</sup>Nestle Purina PetCare PTC.

Thirty-two fecal specimens from Labrador Retriever dogs were used to compare agar plate and real-time PCR methods on enumeration of *Lactobacillus* (LACT) and total anaerobic bacteria (TOTA). Total anaerobic bacteria and LACT were counted (as cfu/g feces) by incubating 48 h at 37 C in an anaerobic gas chamber on species-selective media. Total genomic DNA from feces were extracted by the QIAamp DNA stool mini kit. The specific PCR primer sets for detecting LACT and the universal PCR primer sets for detecting TOTA were CGATGAGTGCTAG-GTGTGGA (forward); CAAGATGTCAAGACCTGGTAAG (reverse)