The diets were fed 4 times/d for 14 d. On d 14, pigs were fasted 10 h and injected i.p. with saline or 25 ug LPS (*E. coli.* 0111:B4)/kg BW. Blood samples and temperature were collected at 0 h (before injection), and at 3, 6 and 24-h post injection (PI). Growth performance from d 0-14 was not affected (P>.10) by dietary Zn. On d 14 (prior to LPS), plasma Zn concentrations for the 4 dietary treatments were, respectively: .36, 1.09, 3.50, and 4.30 mg/L (linear, P<.01). Increasing dietary Zn decreased (linear, P<.01) C-reactive protein (CRP), albumin, and cortisol, but increased (linear, P<.01) triglycerides and urea nitrogen. A biphasic response was observed over time for temperature, white blood cells, neutrophil, and lymphocyte counts in pigs injected with LPS, but no response was noted in control pigs (LPS x time, P<.01). Body temperature and cortisol increased up to 6 h in LPS-injected pigs, and then decreased to baseline values by 24-hr PI (LPS x time, P<.01). Plasma Zn and CRP increased with increasing Zn at 0 and 24-h PI, but quadratic responses were noted at 6 h (Zn x time; P<.01). Increasing Zn decreased insulin in control pigs, but increased it in LPS-injected pigs (Zn x LPS, P<.01). These results suggest that endotoxin challenge has a marked effect on the acute phase response in weanling pigs. Dietary Zn affected some measures of the acute phase response independent of endotoxin challenge. This suggests that dietary Zn has minimal effects on the response of weanling pigs to endotoxin challenge.

Key Words: Weanling pigs, Zinc, Endotoxin

183 Effect of a mannan oligosaccharide on growth of nursery pigs. F. M. LeMieux*, L. L. Southern, and T. D. Bidner, *LSU Agricultural Center, Baton Rouge, LA.*

Four Exp. were conducted to determine the effect of a mannan oligosaccharide (Bio-Mos, BM) on growth of pigs. Treatments were replicated with five to six pens of four to five pigs each. Initial BW ranged from 4.7 to 5.4 kg, and pigs were weaned at 16 to 20 d of age. Experiments 1, 2, and 4, consisted of Phase 1 (7 to 8 d), Phase 2 (12 to 14 d), and Phase 3 (7 to 8 d) periods. Experiment 3 consisted only of Phase 1 (7 d) and 2 (14 d) periods. The diets for Phase 1, 2, and 3 contained 1.6, 1.5, and 1.1% Lys, respectively. In Exp. 1, pigs were fed 0, 0.20, or 0.30% BM in diets containing 3,000 ppm Zn and an antibiotic. Bio-Mos did not affect (P>0.10) growth performance. In Exp. 2, pigs were fed two levels of Zn (0 or 3,000 ppm) and(or) three levels of BM (0, 0.20, or 0.30%), and all diets contained an antibiotic. Growth performance was not affected (P>0.10) during Phase 1. During Phase 2, 3, and overall, excess Zn increased ADG (P<0.08) and ADFI (P<0.01). In the overall data, the 0.20% BM was as effective as excess Zn in increasing ADG and ADFI (Zn x BM, P<0.07). In Exp. 3, pigs were fed two levels of Zn (0 or 3,000 ppm) and(or) two levels of BM (0 or 0.20%), and all diets contained an antibiotic. Excess Zn decreased (P<0.07) ADG in Phase 1, but increased (P<0.09) ADG and ADFI in Phase 2. The BM addition increased ADG and gain:feed during Phase 2 and overall; the response to BM in gain:feed but not ADG was similar to that observed for Zn, and the effects due to Zn and BM were not additive (Zn X BM, P<0.06). In Exp. 4, pigs were fed 1) basal diet without excess Zn or antibiotic (B), 2) B+antibiotic, 3) B+0.20% BM, 4) B+3,000 ppm Zn, 5) B+antibiotic+BM, or 6) B+BM+Zn. In the overall data, pigs fed Diets 2, 4, or 5 had increased (P<0.10) ADG and ADFI compared with pigs fed Diet 1. Similarly, pigs fed Diets 2, 4, 5, or 6 had increased (P<0.10) ADG and ADFI compared with pigs fed Diet 3. Bio-Mos improved growth performance in some experiments but not others, and it seemed to be most effective during Phase 2 periods.

Key Words: Pig, Mannan Oligosaccharide, Zinc

184 Evaluation of differences in mean body surface temperature and radiant heat loss in growing pigs with infrared thermography. J. A. Loughmiller*, M. F. Spire, M. D. Tokach, S. S. Dritz, J. L. Nelssen, R. D. Goodband, and S. B. Hogge, *Kansas State University, Manhattan.*

Eighty barrows were used to evaluate the relationships among feed intake, diet composition, mean body surface temperature (MBST), and mean body surface heat loss (MBSL). In Exp. 1, pigs (initially 25 kg) were allotted in a randomized complete block design to one of four feed intake levels (0.75, 1.5, or 2.50 × $ME_{maintenance}$ and ad libitum). Restricted intake pigs were fed daily at 0730. Infrared (IR) thermographic images were collected at 0700, 1100, and 1900 h on d 4, 5, and 6 to measure changes in MBST and MBSL. For the respective treatments, ADG (-0.01, 0.64, 0.89, and 1.17 kg), ADFI (0.47, 0.86, 1.35, 1.64 kg), and G/F (-0.03, 0.75, 0.67, 0.70) increased as ME intake increased (quadratic, P < 0.01). Treatment × time interactions were observed for MBST and MBSL (P < 0.01). This was a result of linear (P < 0.05) increases in MBST and MBSL as daily ME intakes increased at 0700 and 1900 h and a quadratic response (P < 0.05) at 1100 h. In Exp. 2, pigs (initially 40 kg) were fed a common corn-soybean meal diet and IR images were collected daily at 0700 h. Regression analysis indicated ADG was best described by ADFI, MBSL, and natural log of MBST (r^2 = 0.38; P < 0.01). In Exp. 3, pigs (initially 59 kg) were allotted to one of four dietary energy levels (2.75, 3.0, 3.25, and 3.50 Mcal ME/kg) in a randomized complete block design. Increasing ME increased ADG (1.07, 1.14, 1.24, 1.28 kg), G/F (0.37, 0.35, 0.39, 0.41), ME intake (8.03, 9.88, 10.10, 10.96 Mcal/d), MBST (32.1, 32.5, 32.6, 32.8 C), and MBSL (-67.2, -70.7, -73.0, -74.8 kcal/h; linear, P < 0.05). These experiments indicate that IR thermography can detect MBST and MBSL changes in growing pigs due to changes in ADFI or dietary energy level.

Key Words: Infrared thermography, Body heat loss, Pigs

185 Sorting growing-finishing pigs by weight fails to improve growth performance or reduce variation. P. R. O'Quinn*, S. S. Dritz, R. D. Goodband, M. D. Tokach, J. C. Swanson, J. L. Nelssen, and R. E. Musser, *Kansas State University, Manhattan.*

Two trials were conducted, each using 192 crossbred barrows and gilts (initially 33.8 kg BW and 14 wk of age), to determine the effects of sorting growing-finishing pigs uniformly by weight on growth performance and variation. Pigs were balanced for sex and ancestry within and across replicates and allotted to one of four groups: heavy sorted (37.1 ± 1.4 kg), medium sorted (34.0 ± 0.8 kg), light sorted (30.2 ± 2.0 kg), or to an unsorted group (33.8 ± 3.2 kg) to provide 12 pigs per pen and eight replicate pens per experimental grouping. The unsorted pigs had similar starting weights but quadruple the within-pen standard deviation of the medium sorted pigs. As expected, initial variation among all groups of pigs was different (P < .05). Pigs were fed nutritionally adequate grain-sorghum-soybean meal-based diets in three phases with decreasing nutrient density as pig weight increased. Overall (d 0 to 91), ADG of unsorted pigs and heavy sorted pigs was similar, but greater (P < .05) than medium or light sorted pigs; ADFI was unaffected by grouping. All groupings were different (P < .05) in final body weight and ranked in the following descending order: heavy sorted (123.4 ± 7.4 kg), unsorted (119.9 ± 8.7 kg), medium sorted (117.8 ± 7.6 kg), and light sorted (113.2 ± 9.3 kg). Final weight of unsorted pigs was heavier (P < .05) than the average weight of all sorted pigs. Differences in body weight variation were not detectable (P > .05) by the end of the study. The increase in pig weight from not sorting was primarily due to the growth performance of the medium weight pigs in unsorted pens. Medium pigs in these pens grew faster (P < .05) than the medium weight pigs penned uniformly by weight (.97 versus .92 kg/d, respectively). These data suggest that sorting pigs by weight does not improve growth performance or reduce weight variation, and not sorting pigs may actually increase throughput (amount of pork produced) in a production system.

Key Words: Pigs, Sorting, Variation

186 The effects of graded levels of chromium propionate on growth, carcass traits, pork quality, and plasma NEFA concentrations of growing-finishing pigs. R. L. Payne*, S. L. Johnston, J. L. Shelton, J. O. Matthews, J. E. Pontif, T. D. Bidner, and L. L. Southern, *LSU Agricultural Center, Baton Rouge.*

Two Exp. were conducted with pigs to evaluate the effects of chromium propionate on growth, carcass traits, pork quality, and fasting NEFA concentrations. Average initial and final BW were 26 and 28 kg, and 111 and 112 kg for Exp. 1 and Exp. 2, respectively. In Exp. 1, the treatments were a corn-SBM diet with 0, 100, 200, or 300 ppb Cr. Each treatment was replicated six times with six barrows each. In the late-finishing period, ADFI was decreased (linear, P < 0.01) as Cr concentration increased. Carcass traits were not affected (P > 0.10) by Cr in Exp. 1. Plasma urea N (linear, P < 0.02) and NEFA (quadratic, P < 0.06) concentrations were decreased in pigs fed Cr. Total cholesterol (TC) and high-density lipoprotein (HDL) concentrations were increased (quadratic, P < 0.09) in pigs fed 100 or 200 ppb Cr. Low-density lipoproteins, triglycerides, and TC:HDL were not affected by diet (P > 0.10). In Exp. 2, the treatments were a corn-SBM diet with 0, 50, 100, or 200 ppb Cr. Each treatment was replicated six times with four gilts each.