and $P < 0.06$, respectively) average (25, 22, 22, and 22 mm) and 10th rib (21, 17, 17, and 18 mm) backfat depth compared with control pigs. Pigs fed astaxanthin tended ($P < 0.10$) to have an increased percentage of fat-free lean (53.2, 55.6, 55.5, and 54.5%), and pigs fed 5 or 10 ppm were the leanest (quadratic, ($P < 0.10$). At 24 h postmortem, pigs fed astaxanthin tended ($P < 0.06$ and $P < 0.08$, respectively) to have lower L* (60.3, 55.3, 58.9, and 56.2) and b* (15.8, 14.8, 14.4, and 15.1) for the cut surface of the 10th rib loin muscle, indicating a darker color. At the time of the study, the improved carcass characteristics of pigs fed astaxanthin resulted in a numeric increase in the net profit per pig of $2.44 and $1.95 for those fed 5 and 10 ppm astaxanthin, respectively. In conclusion, growth performance of pigs fed 5, 10, or 20 ppm astaxanthin was not different from that of pigs fed the control diet. However, the improved carcass characteristics observed could be economically beneficial to pork producers. Additionally, the potential for improvements in pork color could result in improved consumer acceptance of fresh pork. These results warrant further research.

Key Words: astaxanthin, carcass characteristics, pork color

172 Effects of feeder design and changing the availability of water from a wet-dry feeder at 4 and 8 weeks prior to market on growth and carcass characteristics of finishing pigs. J. R. Bergstrom*, M. D. Tokach, S. S. Dritz, J. L. Nelssen, J. M. DeRouchey, and R. D. Goodband, *Kansas State University*, *Manhattan*.

A total of 1,296 pigs (PIC, 337 × 1050; initially 19 kg) were used to evaluate effects of conventional dry (CD) or wet-dry (WD) feeder designs and changing availability of water from a WD feeder at 4 and 8 wk prior to market on growth and carcass characteristics. There were 27 pigs per pen (14 barrows and 13 gilts) and 24 pens per feeder-type. Pigs were fed identical corn-soybean meal diets with 15% DDGS. Pens with a WD had a separate cup waterer, but the WD provided the sole water source until d 69. The water supply to the WD was shut off in 8 pens on d 69 (WD8) and another 8 pens on d 97 (WD4) and the cup waterer was turned on. For the remaining 8 WD, the WD provided the sole water source for the entire experiment (WD0). From d 0 to 69, pigs using the WD had improved ($P < 0.05$) ADG (824 vs. 787 g/d), ADFI (1.86 vs. 1.80 kg/d), G/F (0.45 vs. 0.44), and d 69 BW (76.7 vs. 74.1 kg). Overall (d 0 to 124), pigs using WD0 had greater ($P < 0.05$) ADG, ADFI, final BW, and HCW than all other treatments. Pigs using WD4 had greater ($P < 0.05$) ADG than CD, and WD8 was intermediate. Pigs using WD4 had greater ($P < 0.05$) ADFI than WD8, and CD was intermediate. Pigs using WD0 had poorer ($P < 0.05$) G/F than WD8, and CD and WD4 were intermediate. Backfat depth of pigs using WD8 was reduced ($P < 0.05$) compared to all other treatments, and their loin depth was greater ($P < 0.05$) than CD and WD4. Loin depth of pigs using WD0 was also greater ($P < 0.05$) than CD. Margin-over-feed cost was numerically greatest for pigs using WD8. In conclusion, pigs using WD0 had better growth rates than pigs using CD, WD4, or WD8. Although measures of carcass leanness were improved with WD8, the reduction in growth for this treatment during the last 8 wk indicates that further research is necessary to improve this technique of modifying growth.

Key Words: feeders, growth, pigs

173 Comparison of several dietary fats for finishing pigs. Y. Liu*, D. Y. Kil, V. G. Perez-Mendoza, and J. E. Pettigrew, *University of Illinois*, *Urbana*.

A recent report showed higher swine NE for choice white grease (CWG) than for soybean oil (SBO). The present study was conducted to determine whether practical responses confirm that difference and to extend the observations to other fat sources. Pigs (n = 144, 73.0 ± 4.0 kg BW) were randomly assigned to 6 dietary treatments: 1) a corn-soybean meal diet without added fat (C), 2) C + 6% SBO, 3) C + 6% CWG, 4) C + 6% palm oil (PO), 5) C + 6% animal-vegetable blend (AVB), and 6) C + 6% tallow (TA). The pigs were in 8 replications with 3 pigs/pen. There were 2 diet phases, d 1-19 for phase I and d 19-47 for phase II. Dietary treatments within each phase were formulated to contain equivalent standardized ileal digestible lysine/Mcal of ME. The ADG, ADFI and G:F were measured during each phase and overall. At the beginning and end of this experiment, ultrasound was used to measure backfat depth at the last rib (BFLR) and 10th rib (BFTR), and muscle depth at the last rib (MDLR) and 10th rib (MDTR). The changes of BFLR, BFTR, MDLR, and MDTR between initial and final measurements were calculated. The results showed that pigs fed fats (SBO, PO, AVB, CWG, and TA) had higher ($P < 0.01$) G:F in each phase and overall, higher ($P < 0.01$) ADG in phase I, and lower ($P < 0.01$) ADFI in phase II and overall than pigs fed the control diet. Pigs fed CWG had greater ($P < 0.05$) ADG than these fed SBO in phase I. In phase II and overall, pigs fed SBO had lower ($P < 0.05$) ADFI than pigs fed PO. The addition of fats had no effect on carcass measurements compared with the control diet, but pigs fed PO had greater ($P < 0.05$) increase in BFTR compared with SBO and AVB. In conclusion, different fats produced different practical results, consistent with different energy values. It is not clear from these data whether CWG has greater energy than SBO.

Key Words: dietary fats, growth performance, growing-finishing pigs

174 (National Pork Board Research Award) Soybean meal level modifies the impact of high immune stress on growth and feed efficiency in pigs. M. E. Johnston[1], R. D. Boyd*[1], C. E. Zier-Rush[1], and C. E. Fralick[2], [1]*The Hanor Company*, *Franklin, KY*, [2]*Swine-Tek Research*, *Van Wert, OH*.

This study was conducted to verify the SID lysine requirement of pigs fed Paylean (PLN) for 21 d, using carcass growth and G:F ratio as primary criteria. A second objective was to verify previous work from our lab that whole-body growth (WB) was promoted equally by low and high dietary SBM levels while carcass growth (Carc) was constrained by high SBM content. A total of 420 Camborough x TR-4 castrates (98.3 ± 3.8 kg) were allotted to diet in a 4 × 2 factorial arrangement (48 pens, 6 pens/diet). Four SID lysine levels were prepared (0.65, 0.75, 0.85, 0.95% SID) by summit blend; each having 5 PPM PLN. Diets were formulated with only (a) SBM (H-SBM) or (b) reduced SBM (L-SBM) plus lysine, threonine. Pigs were unexpectedly infected with diseases that trigger systemic inflammation. Diagnostic results confirmed pigs as PRRS and PCV2 (circovirus) positive; PCV2 tissue lesions were present. Mortality and morbidity was 6 times normal (12.7%) for 16 weeks. The inflammatory nature of these viruses is evident from the presence of circulating pro-inflammatory cytokines. The main effect of SID lysine was not significant ($P > 0.25$) for WB ADG or G:F, however, the effect of SBM level was ($P < 0.05$). H-SBM pigs grew faster (.99 vs