282 Differential response from feeding high levels of vitamin E on quality of stored pork from two genotypes. J. L. Hasty*, E. van Heugten, and M. T. See, *North Carolina State University, Raleigh*.

This study examined the effects of feeding high levels of vitamin E on the quality of stored pork from different genotypes. Pigs (n=240; initial BW=87 kg) were allotted by weight to one of ten treatments (8 pens/trt, 3 pigs/pen) in a 2 x 5 factorial arrangement. Factors included: 1) genotype (Berkshire sired and Hampshire sired) and 2) supplemental levels of vitamin E (0, 75, 150, 300 and 600 mg/kg). Corn-SBM basal diets containing 2.5% added fat, 0.83% lysine and 15 mg/kg vitamin E were fed for 6 weeks. Drip loss, color, and TBARS were measured in loin chops displayed for 0, 2, 4, 6, and 8 d at 4C. Drip loss from Hampshire crosses was greater (3.16 vs. 1.77%; $P < 0.001$) compared to Berkshire crosses, but was not affected by vitamin E level ($P > 0.10$). Chops from Berkshire crosses were darker (L*: 52.4 vs. 54.3; $P < 0.05$), less red (a*: 7.87 vs. 8.94; $P < 0.001$), and less yellow (b*: 7.87 vs. 8.71; $P < 0.05$) compared to Hampshire crosses, but were not affected by vitamin E level ($P > 0.10$). Greater oxidation (TBARS) occurred in Hampshire cross display chops (day x genotype; $P < 0.01$) on d 0 (0.77 vs. 0.65; $P < 0.02$), d 4 (1.09 vs. 0.83; $P < 0.001$), d 6 (0.62 vs. 0.47; $P < 0.002$) and d 8 (1.31 vs. 1.17 mg MDA/kg sample; $P < 0.01$). TBARS (day x vitamin E; $P < 0.06$) decreased linearly on d 4 (1.13 to 0.79; $P < 0.001$), d 6 (0.76 to 0.48; $P < 0.02$) and d 8 (1.40 to 1.04 mg MDA/kg sample; $P < 0.001$) with increasing levels of vitamin E. TBARS in display chops from Hampshire cross (genotype x vitamin E; $P < 0.02$) decreased linearly (from 1.02 to 0.66 mg MDA/kg sample; $P < 0.001$) with increasing vitamin E level. These data reinforce that Hampshire crosses produce paler, more exudative pork that is more susceptible to oxidation than Berkshire crosses. However, increasing supplemental vitamin E levels will improve storage as indicated by reduced oxidation of lower quality pork, but will not impact oxidation in higher quality pork.

Key Words: Vitamin E, Pork, Quality

283 The effects of niacin on growth performance and meat quality in grow-finish pigs. D. E. Real*[1], J. L. Nelssen[1], M. D. Tokach[1], R. D. Goodband[1], S. S. Dritz[1], J. A. Unruh[1], and E. Alonso[2], [1]*Kansas State University, Manhattan,* [2]*Lonza Inc., Fair Lawn, NJ*.

Two experiments were conducted to determine the effects of additional dietary niacin on growth performance and meat quality in finishing pigs. All pigs were blocked on weight and assigned to one of six dietary treatments. Pigs were housed with 2 pigs per pen (6 pens/treatment/sex) in Exp. 1 and approximately 26 pigs per pen (4 pens/treatment/sex) in a commercial research barn in Exp. 2. In both trials, dietary treatments consisted of a corn-soybean meal-based control diet or the control diet with 27, 55, 83, 110, or 550 mg/kg additional niacin. In Exp. 1, 144 pigs (initially 51.2 kg) were fed diets in two phases from d 0 to 25 and d 25 to 62 that were formulated to 1.00 and 0.75% lysine, respectively. In Exp. 2, 1243 pigs (initially 35.9 kg) were fed diets in four phases (d 0 to 28, d 29 to 56, d 57 to 84, and d 85 to 117). Diets were formulated to 1.25, 1.10, 0.90, and 0.65% lysine in the respective phases and contained 6.0% added fat in the first three phases. In both trials, gilts grew slower ($P<0.001$), were leaner at the tenth rib ($P<0.03$), and had higher fat-free lean percentages ($P<0.01$) than barrows. Overall, in Exp. 1, feeding additional niacin had minimal effects on growth performance. However, niacin tended to increase ($P<0.06$) 24 hr pH (5.44, 5.49, 5.49, 5.46, 5.49, and 5.48). In the commercial environment in Exp. 2, increasing niacin increased (quadratic, $P<0.05$) ADG (760, 775, 762, 775, 754, and 753 g/d) and improved (quadratic, $P<0.01$) G/F (.352, .362, .357, .375, .367, and .366). Niacin supplementation also decreased (linear, $P<0.04$) carcass shrink and drip loss percent (2.00, 1.90, 1.93, 1.90, 1.23, and 0.80) and increased (linear, $P<0.01$) subjective color scores, L* values, and ultimate pH (5.67, 5.73, 5.77, 5.76, 5.85, and 5.94). Results from these two studies show that additional dietary niacin can be fed to pigs to improve pork quality as measured by drip loss, pH, and color.

Key Words: Niacin, Meat quality, Finishing pigs

284 Role of pantothenic acid as a modifier of body composition in pigs. T. S. Stahly and T. R. Lutz*, *Iowa State University, Ames, IA*.

Fifteen sets (7 barrows, 8 gilts) of four individually penned, littermate pigs were utilized to determine the effect of pantothenic acid (PA) additions on growth, body composition and meat quality in pigs fed from 10 to 118 kg BW. Pigs from a high lean strain were reared via a SEW scheme and self-fed a diet containing 19 ppm PA from weaning to 10 kg BW. Pigs were then fed a basal diet (analyzed 6 ppm PA) and allotted within litter to one of four dietary additions of PA (0, 30, 60, 120 ppm) from d-calcium pantothenate. The basal diet consisted of a corn-SBM-3% choice white grease mixture and contained 1.5, 1.2, and .95% lysine for pigs fed from BW of 10 to 46, 46 to 80 and 80 to 118 kg, respectively. All vitamins except PA were fortified to 600% of NRC (1998) for each stage of growth. As dietary PA concentration increased, longissimus muscle area increased quadratically (43.9, 48.0, 45.4, 47.5 cm^2, $P<.06$) and tenth rib backfat decreased quadratically (2.25, 2.04, 2.07, 1.95 cm, $P<.05$) resulting in a quadratic increase in fat-free lean (51.4, 53.4, 52.5, 53.6%, $P<.04$). The magnitude of these responses were larger ($P<.09$) for barrows than gilts. Daily body weight gain (933, 916, 940, 914 g) and gain:feed (429, 433, 428, 431 g/kg) were not altered by dietary PA. In addition, measures of meat (longissimus) quality including intramuscular fat content (4.4, 4.2, 4.6, 4.0%), Hunter L (54.5, 54.2, 54.3, 54.3) and Hunter a (8.7, 9.1, 8.9, 8.5) color values and water loss under retail storage (4.7, 4.9, 5.1, 4.7%) at 96 hours post-kill were not ($P>.10$) altered by dietary PA. Based on these data, dietary pantothenic acid at concentrations greater than that required to maximize body weight gain elicits reductions in subcutaneous fat thickness while increasing carcass lean content of market weight pigs without altering meat quality.

Key Words: Pigs, Pantothenic acid, Body composition

285 Impact of a targeted B-Vitamin regimen on rate and efficiency of growth on lean growth genotype pigs from 6 to 110 kilograms of body weight. M. Coelho, B. Cousins*, and W. McKnight, *BASF Corporation*.

Four hundred, four week old pigs (5.5 kg initial BW) were utilized in a 5x2 factorial design (10 reps/treatment) to determine the effects of five B-vitamin (riboflavin, pantothenic acid, niacin, B_{12} and folic acid) fortification levels (NRC, 2X, 4X, 8X, 16X NRC) and two levels of stress (low and moderate) on the performance of 5.5 kg to 110 kg pigs (128 trial days). Diets were formulated to be isocaloric and isonitrogenous. The diets were fed in pellet form. Pigs raised under moderate stress conditions during performance period 1(19 days, 12 kg bw) gained 506^{d}, 533^{cd}, 544^{bcd}, 559^{abc} and 569^{ab} g/day and had corrected feed efficiency of 1.929^{d}, 1.899^{cd}, 1.889^{bcd}, 1.871^{abc} and 1.828^{a} when supplemented with NRC, 2X, 4X, 8X and 16X NRC B-vitamins, respectively. For the overall performance at 128 days pigs raised under moderate stress, had an ADG of 814^{c}, 829^{bc}, 844^{abc}, 850^{ab} and 865^{a} g/day had corrected feed efficiency of 2.583^{c}, 2.499^{b}, 2.466^{ab}, 2.444^{ab} and 2.419^{a} when supplemented with NRC, 2X, 4X, 8X and 16X NRC B-vitamins, respectively. Across stress levels, increasing vitamin supplementation increased loin eye area (39.72^{c}, 40.25^{c}, 42.96^{b}, 44.06^{ab} and 44.96^{a} cm^2) and decreased backfat(16.65^{d}, 16.61^{c}, 16.41^{bc}, 16.06^{a} and 16.02^{a} mm)when supplemented with NRC, 2X, 4X, 8X and 16X, respectively. Pigs fed 16X NRC levels had a \$5.91/pig advantage and 500% return over 2X NRC and \$3.69/pig advantage and 400% return over 4X NRC.

Key Words: Swine, Vitamins, Performance

ASAS/ADSA Breeding and Genetics: Genetic Parameters of Swine and Sheep

286 Relationship between post-weaning performance and reproductive performance in first parity Landrace females. D. Newcom*, P. Chen, J Mabry, and T.J. Baas, *Iowa State University, Ames, Iowa*.

Data from the National Swine Registry STAGES program were used to examine the relationship between the post-weaning performance (growth, backfat, and loin muscle area) of Landrace females and their subsequent first parity reproductive performance. Genetic parameters were estimated from first parity Landrace females (n=5247) for which post-weaning performance had also been recorded. These records rep-