

vacuum packaged and stored at -7 C, then thawed in a refrigerator 20 to 24 h and cooked immediately prior to analysis. Bacon samples from pigs fed 4% SF were considered to have a sweeter flavor (4.07 .07) than those fed 0% SF (3.89 .07; $P < .04$). The intensity of salty flavor was higher in bacon samples from pigs fed CO (6.18 .09) compared to those fed CLA (5.86 .10; $P < .02$). The intensity of salty aftertaste was greater when CO was combined with YG (5.21 .14; $P < .07$) or T (5.44 .14; $P < .01$) than CO alone (4.85 .14) but SF combined with CLA was not different from CLA alone (SF * LA; $P < .02$). Sour flavor intensity tended to be lower in loin samples from pigs fed CLA than from those fed CO (1.60 vs 1.73 .06; $P < .09$). Samples from animals fed 4% T tended to have slightly lower ($P < .09$) notes of astringent aftertaste (1.42 .08) compared to those fed 0% SF (1.62 .09) or 4% YG (1.66 .09). In summary, minimal differences in flavor descriptors determined by the sensory panel were detected. Panel results indicate consumer acceptance of bacon and pork products from pigs fed CLA will not differ from commodity pork products.

Key Words: Conjugated Linoleic Acid, Pork flavor, Bacon

761 Effect of dietary betaine supplementation on energy partitioning in pigs. J.W. Schrama¹, P.H. Simmins², and W.J.J. Gerrits^{*1}, ¹Wageningen Institute of Animal Science, Wageningen University, Wageningen, The Netherlands, ²Finnfeeds International Ltd, Malborough, UK.

The effect of dietary betaine supplementation on energy partitioning in pigs was studied. Six groups of 14 group-housed barrows were assigned

to one of two dietary treatments: control or betaine supplemented (1.25 g Betafin[®] per kg of feed). The experimental diets were maize and soybean meal-based. Diets were aimed to be limiting in energy content and sufficient in protein. The experiment consisted of a 3-wk adaptation and a 3-wk experimental period. Initial BW was 46 kg during the experimental period, when each group of pigs was housed in a climate respiration chamber. During the experimental period, pigs were offered changed diets, which were diluted with 10% oat hulls. Pigs were fed at 2.5 times the energy requirements for maintenance. During the experimental period, heat production, energy and nitrogen balances were measured weekly. The metabolizable energy intake was unaffected by dietary betaine supplementation ($P > 0.10$). Averaged over the experimental period, betaine supplementation reduced heat production ($5 \text{ kJ} \cdot \text{kg}^{-0.75} \cdot \text{d}^{-1}$, $P < 0.05$). Moreover, this difference between diets increased with time within the experimental period ($P < 0.05$). Averaged over the 3-wk period, energy retention was increased ($P < 0.10$) and energy requirements for maintenance were decreased ($P < 0.10$) in pigs fed the betaine supplemented diet. However, the effect of betaine on the energy requirements for maintenance changed with time ($P < 0.05$). Maintenance requirements were similar in Week 1 and were reduced by betaine supplementation by 5.5% during Week 3 (477 vs. 452 $\text{kJ} \cdot \text{kg}^{-0.75} \cdot \text{d}^{-1}$). The current results showed that betaine supplementation affected energy partitioning of growing pigs. This effect was not due to a methionine sparing effect of betaine, because diets were formulated to be sufficient in amino acid as well as choline.

Key Words: Pigs, Betaine, Energy metabolism

ASAS Swine Species

762 ECG-gated dynamic MR examination of pig heart. Robert Romvari¹, Imre Repa¹, Zsolt Petras¹, Gabor Bajzik¹, Bela Fenyves², and Peter Horn^{*1}, ¹Kaposvar University, Faculty of Animal Science, Diagnostic Institute, ²Szent Istvan University, Faculty of Veterinary Science, Department and Clinic of Surgery.

The selection of pigs for high lean meat production plays an important role in the disadvantageous changes of the circulatory system. In pork production cardiovascular disorders mean serious problems during fattening, namely 14 to 18 % of the total deaths have a circulatory background.

For in vivo examination of the porcine heart, dynamic MR imaging methodology was developed. Measurements were carried out on 15 meat type pigs (22 or 106 kg) using a Siemens Magnetom Vision Plus type equipment of 1.5 T magnetic-field strength.

Regarding the motion sensitiveness, inhalation anaesthesia was applied, then ECG-gating synchronised the data acquisition with the pulsation of the heart. At first quick images were made to locate the heart according to the co-ordinate system of the body. Following in the sagittal, coronal and transversal planes localisation images were taken to allocate the longitudinal axis of the heart. Finally, depending on the heart frequency and on the size of the heart, in each case 8 to 10 slices and in each slice 8 to 14 cine images were acquired prospectively according to one heart cycle.

The means of traits measured in ml at 22 and 106 kg liveweight, respectively were; left ventricular end-diastolic volume: 51.4 vs. 125.7, left ventricular end-systolic volume: 24.4 vs. 60.1, left ventricular stroke volume: 27.0 vs. 65.6, right ventricular end-diastolic volume: 55.7 vs. 118.4, right ventricular end-systolic volume: 28.6 vs. 52.5, right ventricular stroke volume: 27.1 vs. 65.9. The left ventricular ejection fraction: 52.5 vs. 52.2 and the right ventricular ejection fraction: 48.7 vs. 55.7 were given in percentage. The cardiac output values were 3.5 l (22 kg, 132 beat/min.), and 6.0 l (106 kg, 91 beat/min.), respectively. The contraction values were also determined by the septum (70%), and by the anterior (61%), posterior (41%) and lateral (54%) walls.

Based on the investigation, the preconditioning, the narcotic procedure, the specific details of ECG measuring (i.e. proper signal transmission) and the correct MR imaging were worked out. After our results we declare this methodology as a well applicable one in the quantitative measurement of the heart, where each investigation takes 30 to 40 minutes.

Key Words: pig, heart, magnetic resonance imaging

763 A comparison of methods of editing and adjusting feed intake data from electronic swine feeders. D.S. Casey^{*} and J.C.M. Dekkers, Iowa State University, Ames, Iowa.

Data from electronic swine feeders contain errors that must be identified, edited, and replaced. The objective of this study was to compare the accuracy of six methods of editing and replacing missing data to estimate daily (DFI) and average daily feed intake (ADFI) in short and long test periods. Data from FIRE[™] feeders on 591 pigs from the National Pork Producers Council's Maternal Line Genetic Evaluation Program were used. Errors in each visit were identified using 16 criteria. To create an error-free data set as a basis for comparison, data from 124 pigs with few errors were selected and visits with errors were replaced by error-free visits from the same pig. Resulting DFI and ADFI were assumed to be the true trait values. Error visits were then introduced to create long test period data (average 12 weeks), representative of real data. The last 4 weeks per pig were used to create short test period data. Data were edited using 6 methods (EM1-6). For EM1, a DFI record was deleted if $\text{DFI} < 1000\text{g}$ or $> 4500\text{g}$. For EM2-6, the 16 criteria were used to identify errors in each visit. For EM2 and 3, all DFI records with ≥ 1 and ≥ 2 error visits were deleted. For EM4-6, DFI was obtained by summing feed intake over error-free visits. For EM5 and 6, DFI records were then adjusted for the effects of presence of error visits on unadjusted DFI, which were estimated from a linear model analysis of the complete data set (591 pigs) for EM5 or from the data sets being edited (124 pigs) for EM6. For EM1-4, missing DFI records were replaced by linear or quadratic regression estimates of DFI on test day for each pig. DFI and ADFI from the edited data sets were correlated to true values. Correlations were high (.89 to .99) for both traits for all editing methods except EM1. EM6 had the highest correlations for DFI in both test periods ($\geq .96$). EM2 and EM6 had the highest correlations for ADFI (.98 to .99). EM1 had the lowest correlations for both traits and test periods (.76 to .94). Results indicate that editing methods affect the accuracy of data from electronic feeders. EM6 is recommended for maximum accuracy.

Key Words: Swine, Feed Intake, Editing Methods

764 Effects of piglet birth weight and liquid milk replacer feeding during lactation on pig performance to slaughter weight. B. F. Wolter^{*}, M. Ellis, B. P. Corrigan, and J. M. DeDecker, University of Illinois, Urbana, IL.

The effects of piglet birth weight and liquid milk replacer feeding during lactation on growth performance to slaughter was evaluated in a study

carried out with thirty-two sows (PIC C-22) and their piglets (n=384, PIC Line 337 sires). A randomized block design with a 2 × 2 factorial arrangement of treatments was used. Treatments were birth weight (Heavy and Light) and liquid milk replacer (Supplemented or Unsupplemented). The study was divided into 2 periods. In period 1 (birth to weaning), pigs were assigned at birth to either a heavy or light (1.83 vs 1.32, SE = 0.01 kg; P < 0.001) litter of 12 pigs and one-half the litters were given ad libitum access to supplemental milk replacer (Land O'Lakes, Inc., Fort Dodge, IA) from d 3 of lactation to weaning. In period 2 (from weaning at 21 d of age to slaughter at 110 kg), a total of 308 randomly selected pigs were allocated at weaning within previous treatment group and sex to pens of 4 pigs. Pigs were given ad libitum access to feed, and diets were formulated to meet or exceeded NRC recommendations. Heavy litters were heavier at weaning (6.58 vs. 5.72, SE = 0.14 kg; P < 0.001), tended to have more pigs weaned (11.4 vs. 10.9, SE = 0.21 pigs; P = 0.10), had greater post-weaning ADG (850 vs. 800, SE = 6.7 g; P < 0.001) and ADFI (1866 vs. 1783, SE = 17.6 g; P < 0.001), similar G:F (0.46 vs. 0.45, SE = 0.003; P > 0.10), and required 7 fewer d (P < 0.001) to reach slaughter. Feeding supplemental milk replacer during lactation produced heavier pigs at weaning (6.60 vs. 5.69, SE = 0.14 kg; P < 0.001), tended to increase pigs weaned (11.4 vs. 10.9, SE = 0.21 pigs; P = 0.10), but had no effect (P > 0.10) on growth performance from weaning to slaughter; however, milk replacer fed pigs required 3 fewer d (P < 0.01) to reach slaughter weight. Sow feed intake and BW loss during lactation was not affected (P > 0.10) by either birth weight or milk replacer treatment. In conclusion, pigs with heavier weaning weights resulting from increased birth weight or from feeding of milk replacer required less time to reach market weight.

Key Words: Pigs, Weaning Weight, Milk Replacer

765 Effect of initial stocking rate and weighing frequency on pig performance in wean-to-finish pens. B.F. Wolter*¹, M. Ellis¹, S.E. Curtis¹, G.R. Hollis¹, R.D. Shanks¹, E.N. Parr², and D.M. Webel², ¹University of Illinois, Urbana, IL/USA, ²United Feeds, Inc., Sheridan, IN/USA.

Crossbred pigs (n = 1,560) were used in a randomized-block design with a 2 × 2 factorial arrangement of treatments to determine the effects of initial stocking rate (Single [52 pigs/pen] vs. Double [104 pigs/pen]) and weighing frequency (High [every 2 wk during the study] vs. Low [3 times during the study]) on pig performance from weaning (5.8 ± 0.43 kg BW; 17 d of age) to slaughter (114 kg BW). Floor and feeder space allowances per pig were 0.650 m² and 4 cm and 0.325 m² and 2 cm for Single- and Double-stocked pens, respectively. Drinker allocation (13 pigs/drinker) was the same for all treatments. At the end of wk 10 post-weaning, Double-stocked pens were divided into 2 equal-sized groups with similar mean BW and CV of BW, and pigs in one of the groups were moved to a different location in the same house. Pigs had free access to feed and water throughout. In the first 10 wk post-weaning, Double compared to Single stocking resulted in lighter pigs (39.7 vs. 42.6 kg; P < 0.001) and lower ADG (8%; P < 0.001) and ADFI (7%; P < 0.001), but similar G:F (P > 0.10). From wk 10 to slaughter, pigs that previously had been on the Double- compared to the Single-stocking-rate treatment had similar ADG and ADFI (P > 0.10), but greater G:F (4%, P < 0.01). Double-stocked pigs required 2 additional days to reach slaughter BW (P < 0.05), but had similar (P > 0.10) carcass backfat and loin depths. Double-stocked pigs moved at the end of 10 wk had similar (P > 0.10) growth performance to those that stayed in the original pen. Growth rate was not affected (P > 0.10) by frequency of weighing. Mortality and morbidity were similar (P > 0.10) for all treatments. In summary, Double stocking reduced growth rate to 10 wk post-weaning and increased days to reach slaughter BW, but increased subsequent feed efficiency.

Key Words: Pigs, Stocking Rate, Wean-to-Finish

766 Effect of feeder-trough space on pig growth performance in double-stocked wean-to-finish pens. B.F. Wolter*¹, M. Ellis¹, S.E. Curtis¹, E.N. Parr², and D.M. Webel², ¹University of Illinois, Urbana, IL/USA, ²United Feeds, Inc., Sheridan, IN/USA.

Previous research has shown that double-stocking compared to single-stocking pigs in wean-to-finish pens reduced growth performance from weaning to 10 wk post-weaning. The objective of the current experiment was to evaluate the effect of doubling feeder-trough space (4 cm/pig

[Double] vs. 2 cm/pig [Control/Standard]) on pig performance from weaning to 8 wk after weaning. In a randomized-block design, crossbred pigs (n = 1,728) were randomly allocated at weaning (5.4 ± 0.23 kg BW; 16 d of age) to mixed-sex pens of 108 pigs/pen on the basis of weight and sex. Floor-space allowance (0.30 m²/pig) and drinker allocation (14 pigs/drinker) were the same for both treatments. Two six-place (35 cm/place) feeders (Jumbo Wean-to-Finish, Farmweld, Teutopolis, IL) positioned together in the center of each pen were accessible from both sides. However, only one feeder contained feed in pens on the Control trough-space treatment. Pigs had free access to feed and water. Pigs were weighed and feed disappearance was recorded every 2 wk throughout. Doubling feeder-trough space did not affect (P > 0.10) pig growth rate from weaning to the end of wk 6 after weaning. Pigs on the Double compared to those on the Control trough-space treatment had higher ADG (669 vs. 633 g; P < 0.05) from wk 6 to 8 and were heavier (31.7 vs 30.9 kg; P < 0.05) at the end of wk 8, although, ADFI and G:F did not differ (P > 0.10). These results suggest that pigs double-stocked in wean-to-finish pens for longer than 6 wk post-weaning need additional feeder-trough space to maintain growth performance.

Key Words: Pigs, Feeder Space, Wean-to-Finish

767 Carcass and meat quality of halothane gene carriers and negative pigs. Jorge Galindo-Garcia*, Daniel A. Villagomez, and David R. Sanchez-Chipres, *Centro Universitario de Ciencias Biológicas y Agropecuarias, Universidad de Guadalajara, Mexico.*

Among the major genes identified in swine, the halothane gene, perhaps, is the most economically relevant due to its detrimental effects on technological meat quality parameters (Enfalt, 1997). Because differences in gene penetrance are expected when the same genotypes are exposed to different environments, (Falconer, 1989) we carried out this investigation to evaluate the halothane gene effects on carcass quality and technological traits of pork from commercial hybrids pigs (F₁ York/Landrace X synthetic hybrids), which were carriers (Nn) or negative (NN) for the Hal mutation. A total of forty three (22 females and 21 castrates) pigs, fattened in conventional housing and management, were slaughtered at 100 Kg of live weight. PCR and restriction enzyme analysis allowed Hal genotyping of pigs. For statistical analysis, the animals were grouped according to sex and halothane genotype in a 2X2 factorial array, the size of each group being nearly equal (11 animals). Carriers had shorter carcass length (P ≤ 0.05) than negative pigs. However, % carcass yield, as primary cuts, was higher for pigs carrying the major gene (P ≤ 0.05). There were no differences between groups for back fat, nor for rib eye area. Muscle pH at 45 min (*longissimus dorsi*) was significantly lower (P ≤ 0.05) in carriers than negative pigs, 6.02 vs. 6.32, respectively. Water-holding capacity was similar between groups. Nevertheless, the occurrence of pale, soft and exudative pork was higher (P ≤ 0.05) in pigs carrying the Hal gene.

Key Words: Carcass and meat quality, Halothane gene, Pig

768 Test performance of halothane gene homozygous and heterozygous pigs under no controlled climate. D. R. Sanchez-Chipres, D.A.F. Villagomez*, and J. Galindo-Garcia, *Centro Universitario de Ciencias Biológicas y Agropecuarias, Universidad de Guadalajara.*

Porcine Stress Syndrome (PSS) is a genetic disorder that mainly affects fast growing. Sudden death or pale, soft, and exudative (PSE) pork at slaughter may occur. At present, it is well known that PSS, PSE and Malignant Hyperthermia (MH) are associated with the same mutation of a ryanodine receptor gene (O'Brien, et. al.,1990; Fujii, et. al.,1991). The halothane gene (after challenging to halothane anesthesia; Archibald and Imlah, 1985) genotype of an animal is identifiable by PCR and restriction enzyme analysis. The present investigation was conducted to evaluate the productive performance of halothane negative (NN) and carrier (Nn) pigs reared individually at a test station without climate manipulation. Forty four pigs (22 females; 22 males) from commercial genetic lines (F₁ York/Landrace X synthetic hybrids) were evaluated. The test started when the animals weighted an average of 25 Kg and finished when they reached 100 Kg. The feed consumption, body weight, back fat and loin area (ultrasound) was measured during the time of the test. A frequency of 61.4 % (27 animals) and 38.6 % (17 animals) of the pigs were either NN or Nn, respectively. Better daily live weight gain was shown (P ≤ 0.05) by homozygous (NN) pigs than

heterozygous (Nn), 1.06 vs. 1.01 Kg, respectively. However, there were not statistical differences between groups on days to 100 Kg, back fat and loin area. Nevertheless, contrary to the current literature, a tendency of best performance for homozygous (NN) pigs was observed in our experimental conditions. There was no genotype X sex interaction, both sexes having similar performance.

Key Words: Test performance, Halothane gene, Pig

769 Performance Levels, Genetic Parameters and Genotype-Health Interactions for Production Traits in Pigs. R. Bergsma^{*1}, E.F. Knol¹, J.W.M. Merks¹, and G.J. Van Groenland², ¹IPG, Institute for Pig Genetics, Beuningen, ²TOPIGS, Vught, The Netherlands.

Replacement boars and gilts are potential carriers of infectious agents for pig production farms. Demand for healthy breeding stock is increasing. Consequently, production facilities of these animals should be of high health. However, from a genetic point of view questions should be raised whether 1) genetic trend realized under high health conditions (SPF) will be expressed in the same magnitude under conventional conditions, and 2) selection under SPF will, in the long term, decrease genetic disease resistance. SPF in the current analysis was defined as controlled free of Pseudorabies, PRRS, TGE, *Mycoplasma hyopneumoniae*, *Actinobacillus pleuropneumoniae*, *Brachispira hyodysenteriae*, *Pasteurella multocida* (DNT), *Streptococcus suis* (Type II), endoparasites and ectoparasites. On the conventional farms used, some, but not all, of the pathogens were present. Data analysis of a genetically linked structure of 2 SPF farms and 3 conventional farms for fertility traits, and 3 SPF- and 2 conventional farms for finishing traits yielded different performance levels under SPF for: Total Number Born (TNB, +0.7), Gestation Length (GL, -0.5 d), Nurse sow PreWeaning Mortality (PWM, -1.4 %), Test Growth (25-80 kg; TG, +143 g/d), and Ultrasonic Backfat (USB, +0.58 mm). Heritability tended to be higher only for TNB (0.13 vs. 0.10) under SPF. Genetic correlations between traits measured under SPF and under conventional conditions were positive and high ($r_g > 0.8$) for Stillborn, TNB, and TG and moderate ($0.5 < r_g < 0.8$) for GL, PWM, and USB. It is concluded that selection under the defined SPF conditions will not markedly reduce genetic trend on farms with a conventional health status. A genetic decrease in resistance is difficult to detect. Using health and performance data of SPF sired offspring in a conventional environment will help to control this potential risk.

Key Words: Pigs, Genotype Health Interaction, SPF

770 Sustainable Outdoor Pork Production. W. P. Tynan^{*}, J. G. Gentry, A. K. Johnson, H. A. Rachunonyo, J. F. Smith, and J. J. McGlone, Texas Tech University, Lubbock, Texas/USA.

A Sustainable Pork (SP) Research and Demonstration Farm was developed based on past research and the following conditions. The objectives of the SP Farm were to develop a precisely defined production technology. Acceptable criteria include that the farm does not use waste lagoons; uses no more land than a conventional indoor production system and should have no negative impact on the land. The farm may use no more labor than a conventional system and must be economically competitive. Neither may the farm have an offensive odor. It must be viewed as a positive member of the rural community. Plants used as groundcover must uptake the nutrients the animals add to the soil and

ASAS/ADSA Animal Health: Dairy, Beef Cattle, and Other Species

772 Parenteral vitamin E for prevention of retained placenta in dairy cows. S. LeBlanc, K. Leslie^{*}, T. Duffield, K. Bateman, J. Ten Hag, and J. Wallace, University of Guelph, Guelph, Ontario, Canada.

Immune function is suppressed, and the risk of infectious and metabolic disease is increased in periparturient dairy cows. Several studies have shown improved immune function and decreased risk of RP or mastitis in transition cows supplemented with vitamin E in feed and/or parenterally. However, these benefits are not universally reproducible and may depend on baseline vitamin E and selenium status of animals, and other factors. Additionally, a fraction of animals will demonstrate hypersensitive reactions to parenterally administered vitamin E. The objective

recycle them by retaining carbon, nitrogen and other nutrients in a solid form. Finally, the farm should contribute healthy meat to the segment of consumers who wish to protect the environment, the animals and the workers. This niche market may be available in the United States now. Started "from scratch" on grassland that was in the Conservation Reserve Program for ten years, the farm shows the feasibility of successfully operating a 300-sow farrow-to-finish pig production outdoor sustainable farm. The farm has completed two years of operation. Production of piglets began in January 1999 and approximately 15,000 piglets have been weaned and finished outdoors. There were no health problems in the herd of 300 sows that received no sub-therapeutic antibiotics. Meat is sold to the public under the trademarked Sustainable Pork[®] label at the Texas Tech University Meats Laboratory. Visitors to the farm are impressed by the absence of odor due to the maintenance of ground cover and the manner in which the sows and piglets live a healthy, active life style. Consumers may consider their meat to be of better quality and taste panel results confirm the consumer perception of better taste in some trials. Soil analyses indicate that the farm's program of maintaining groundcover, which is being fertilized by the animals, has prevented a buildup of some nutrients in the soil. This production system works well in a dry, warm climate.

Key Words: Outdoors, Pigs, Environment

771 Evaluation of three genetic populations of pigs for response to four levels of ractopamine. A. P. Schinckel^{*1}, C. T. Herr¹, B. T. Richert¹, and M. E. Einstein¹, Purdue University.

Gilts (n = 300; BW = 83.5 kg) were allotted to pens (n = 60) by weight in a 3 x 4 factorial arrangement of treatments in a randomized complete block (n = 5) with three genotypes (G) and four ractopamine levels (RL): 1) control, 0 ppm; 2) 5 ppm; 3) 10 ppm; and 4) 20 ppm RAC to evaluate the effects of ractopamine (RAC) on growth performance in a four week trial. All pigs were fed an 18.6% CP, 1.1% lysine diet. The weekly pen data were fitted to numerous linear, nonlinear and biphasic equations of ractopamine level (RL), and either duration of time (DRAC, midweek days on RAC), or weight gain (WTGRAC, kg) on RAC. The values of DRAC and WTGRAC were set to zero for the control treatment. The RAC response was also divided into two phases: (1) RL1, 0 for control and 5 for all other RAC treatments, and (2) RL2, (RL-RL1) for RAC treatments 2, 3, and 4. For ADG (kg/d), the equations included the fixed effects of block, G and week on test ($p < .01$) and either a biphasic $[0.0186 RL1 + .0272 (RL2)^{.007}]$ or nonlinear function $\{.113 [1 - \exp (-.713 RL)]\}$ of RL level. For gain:feed (G:F), the models included the fixed effects of week ($p < .01$) and either a biphasic linear $(.0084 RL1 + .0013 RL2)$ or nonlinear function $\{.0513 [1 - \exp (-.717 RL)]\}$. The partial sums of squares accounted for by the biphasic functions were 4.4 and 8.9% greater than the nonlinear functions for ADG and G:F, respectively. For daily feed intake (ADFI, kg/d), the equation with the lowest RSD included the fixed effects of block, G, week, and $-.0068 RL2$ ($p < .01$). The change in the RAC response with WTGRAC were not significant ($p > .50$) for any variable. The predicted linear change in RAC response to DRAC were small for ADG ($-.0035$, $p = .19$), G:F ($-.0008$, $p = .49$), and ADFI ($-.0026$, $p = .31$). The regression analyses indicated that the three variables respond differently to increasing RL. The biphasic and nonlinear functions of RL resulted in different predicted RAC responses. The RAC response did not significantly change over the duration of the 28-day feeding trial.

Key Words: Ractopamine, Genetic, Finishing

of this study was to investigate the effect of vitamin E administered subcutaneously to prepartum cows on the incidence of periparturient health problems. A total of 1184 cows in 20 herds were randomly allocated to receive either a single SC injection of 3000 IU vitamin E (d- α -tocopherol) or placebo approximately one week prior to expected calving date. Incidence of periparturient disease (retained placenta, milk fever, metritis, ketosis, displaced abomasum, clinical mastitis, and lameness) was recorded. Data were analyzed in SAS using the GENMOD procedure including herd as a random effect. The risk factors for RP and the effect of vitamin E on RP were different between primiparous and multiparous cows. Therefore, these parity groups were modeled separately. Occurrence of dystocia was offered to the models but was not a signifi-