

kinetics were analyzed using PROC NLIN in SAS the resulting data was analyzed as a Latin-square design using PROC MIXED in SAS. Forage quality was analyzed as a completely random design using PROC GLM in SAS. The BMR varieties were lower ($P < 0.01$) in ADF and NDF at all harvest dates, while N concentrations were not affected ($P > 0.41$) by variety. The A fraction of DM and NDF was higher ($P < 0.01$) and the C fraction of DM, NDF, and ADF was lower ($P < 0.01$) for BMR than non-BMR. The B fraction of DM was not affected ($P = 0.15$) by variety, while the B fraction of ADF was higher ($P < 0.01$) in BMR than non-BMR. The B fraction of NDF was not different ($P = 0.28$) on d 34, but was higher ($P < 0.01$) on d 48 and 63 for BMR than non-BMR. The A fraction of DM and ADF was higher ($P < 0.01$) and B fraction of ADF was lower ($P < 0.01$) for MS505 DS compared to Nutri + Plus BMR. Rates of DM and NDF disappearance were higher for BMR than non-BMR for all harvest dates ($P < 0.01$). Disappearance of ADF was faster ($P < 0.01$) with BMR than non-BMR on d 48 and 63. Effective degradability of DM, NDF, and ADF was higher ($P < 0.02$) for BMR than non-BMR at all harvest dates.

Key Words: Sorghum x Sudangrass Hybrids, Forage, In Situ Disappearance

395 Effect of genotype and maturity on ensiling characteristics and chemical composition of millet forage. F. Hassanat*, A. Mustafa, and P. Seguin, *McGill University, Ste-Anne-de-Bellevue, QC, Canada.*

A study was conducted to determine the effects of genotype and stage of maturity at harvest on ensiling characteristics, microbial population, and chemical composition of forage millet. Regular (RM) and brown midrib (BM) millet were harvested at vegetative (VS) or heading stage (HS), then ensiled in mini-silos for 0, 2, 4, 8, 16, and 45d in triplicates. Both millet types were well ensiled and had a pH less than 4.2 after 45d of ensiling. Both RM and BM millet harvested at HS had more ($P < 0.05$) water soluble carbohydrates (16.08 and 17.82%) than when harvested at VS (11.13 and 12.25% respectively). This was reflected in lower pH in BM silage harvested at HS compared with those harvested at VS ($P < 0.05$) at any day of ensiling. Most proteolysis occurred between 0d and 8d of ensiling, where 40-50% of true protein (TP) was lost to non-protein nitrogen (NPN) for the two millet types at any stage of maturity. Changes in the microbial population during ensiling were similar for the four treatments. There was an increase in the lactic acid bacteria population in the first 2d of ensiling. Enterobacteria population decreased as ensiling progressed and were not detected after d 8 of ensiling. Yeast and mold populations followed the same trend, but stayed at detectable level up to 45d post-ensiling. Silage made from millet harvested at VS had more yeast at d45 (2.9 log cfu/g) than that harvested at HS (< 2.0 log cfu/g). Silage (45d) made from BM contained less NDF, (55.0 vs 59.2%), ADF (29.1 vs. 31.3%), ADL (1.1 vs. 1.6%) and more CP (8.5% vs. 7.2%) than silage made from RM ($P < 0.05$). For the two millet genotypes, silages harvested at HS contained more ADF and ADL and less CP than silages harvested at VS ($P < 0.05$). It was concluded that silages produced from RM and BM millet at VS and HS of maturity were well preserved as indicated by low pH. Genotype and stage of maturity had significant effects on the chemical composition of forage millet silage. It is concluded that brown midrib millet provides better quality forage than regular millet.

Key Words: Forage Millet, Brown Midrib, Chemical Composition

396 Effect of inoculation on ensiling characteristics and chemical composition of regular and brown midrib millet. F. Hassanat*, A. Mustafa, and P. Seguin, *McGill University, Ste-Anne-de-Bellevue, QC, Canada.*

A study was conducted to determine the effects of inoculation and genotype on ensiling characteristics and chemical composition of two millet types in a 2x2 factorial design. Regular (RM) and brown midrib (BM) millet were treated with commercial inoculum (PIONEER[®] 1129) or left untreated. Forages were ensiled in mini silos for d 0, 2, 4, 8, 16, and 45 in triplicates. For the two millet types, pH at d 2, 4 and 8 was lower ($P < 0.05$) for inoculated than untreated ensiled forages. Lactic acid concentration was higher ($P < 0.05$) in inoculated silage compared to the untreated one at any day of ensiling. At d 45, inoculated BM millet silage had a lower ($P < 0.05$) pH (3.5) than untreated BM (3.7). However, pH of RM silage at 45d was not affected by inoculation. Level of non protein nitrogen at each ensiling time was similar for inoculated and untreated ensiled forage, suggesting minimal effect of inoculation on proteolysis. Inoculation had no effect on the chemical composition of the d 45 silage made from any millet type, except in RM TP% level which was higher ($P < 0.05$) in inoculated (42.42%) than the untreated silage (39.70%). Levels of NPN% and TP% were similar between inoculated treated and untreated BM silage. The RM silage contained lower NPN (54.5 vs. 57.3% CP) and higher true protein (41.1 vs. 38.4 %CP), acid detergent fiber (30.8 vs. 27.8%), and acid detergent lignin (2.1 vs. 1.0%) than BM silage ($P < 0.05$). Both silages had similar CP%. We concluded that inoculation produced a rapid decline in pH and an increase in lactic acid of ensiled forage millet. The d 45 silages were not affected by inoculation, and were all well preserved. Inoculation had minimal effect on chemical composition RM and BM silages.

Key Words: Millet, Brown Midrib, Inoculation

397 Lignin concentration of whole plants and stems of Bt corn hybrids. H. G. Jung*^{1,2} and C. C. Sheaffer², ¹USDA - Agricultural Research Service, ²University of Minnesota, St. Paul.

There have been inconsistent reports regarding whether corn (*Zea mays*) hybrids with the *Bacillus thuringiensis* (Bt) *cry1 Ab* transgene contain more lignin than non-Bt hybrids of similar genetic background. Our objective was to evaluate the potential impact of the *cry1 Ab* transgene on lignin concentration (using three different assays), yield, and forage quality traits of corn silage. Replicated trials were conducted at four locations in Minnesota with 12 commercial hybrids (three MON810 and three Bt11 *cry1 Ab* transgene event hybrids, and respective near-isogenic controls). Whole plants and the fourth elongated, above-ground internodes were harvested at silage maturity. Samples were analyzed for crude protein, starch, neutral detergent fiber (NDF), acid detergent fiber, 24- and 96-h in vitro ruminal NDF digestibility, and lignin (acid detergent, Klason, and acetyl bromide). European corn borers (*Ostrinia nubilalis*) were not controlled and plant damage from this source was limited to the non-Bt hybrids, averaging 1.5 internodes per plant with tunnels. Growth environment impacted all measures of corn hybrid performance and quality, as evidenced by significant location effects. Comparisons of non-Bt/Bt hybrid pairs, for both whole plants and internodes, found no consistent differences in yield, nutrient content, in vitro ruminal NDF digestibility, or lignin concentration. Differences in lignin concentration (for all three analysis methods) were infrequent, small in magnitude, and limited to a few non-Bt/Bt hybrid pairs at individual locations. Bt hybrids were both higher and lower in lignin concentration than their non-Bt counterparts. Two non-Bt/Bt hybrid pairs did not differ in lignin concentration at any location. Contrary to some earlier reports, presence of the *cry1 Ab* transgene did not alter lignin concentration or other forage quality traits of corn stover in commercial maize hybrids.

Key Words: Corn Hybrids, Lignin, Fiber Digestibility

ASAS Growth and Development I

398 Muscle fiber characteristics are important in the relationship between birth weight and carcass quality in pigs. C. Rehfeldt*, G. Kuhn, I. Fiedler, and K. Ender, *Dept Muscle Biology and Growth, Research Institute for the Biology of Farm Animals, Dummerstorf, Germany.*

It is commonly recognized that low birth weight in piglets correlates with decreased survival and lower postnatal growth rates. The aim of this

study was to investigate the relationships between birth weight, carcass quality and skeletal muscle fiber characteristics. At birth, three piglets (lightest, but > 800 g; middle-weight; heaviest) were selected from each of 16 litters. The lightest piglets exhibited the smallest percentages of

meat, total protein, total fat, the lowest *Semitendinosus* muscle (ST) weight and total fiber number, whereas the percentages of internal organs, skin, bone, and total water were highest. The remaining piglets were grown up at *ad libitum* feeding. Differences in daily gains paralleled the differences in birth weights ($P=0.07$). At day 182 of age 58 pigs were randomly selected for slaughter. They were assigned to one of three birth weight classes (25% low; 50% middle; 25% heavy). The pigs of low birth weight had lower live weights ($P<0.05$), smaller meat percentages ($P=0.09$) and loin areas ($P=0.08$) compared to pigs of high birth weight, whereas the percentage of internal adipose tissue tended to be higher ($P=0.11$). In addition, pigs of low birth weight exhibited lower relative heart weights ($P=0.02$) and a higher drip loss ($P=0.08$) in *Longissimus* muscle (LD). The pigs of low birth weight exhibited the lowest muscle fiber numbers, the largest fiber size, the highest myonuclear number per fiber, and the highest percentages of abnormal giant fibers in ST and LD muscles ($P<0.05$). The results suggest that the deficiency in muscle fibers by genetic or maternal reasons in low birth weight piglets cannot be equalized by accelerated fibre hypertrophy and that in these pigs extremely large fibers may be one of the reasons for poor carcass quality at slaughter.

Key Words: Growth, Body Composition, Intrauterine Growth Retardation

399 Nutrition of Wagyu- and Piedmontese-sired fetuses alters newborn *longissimus* muscle cellular characteristics. P. L. Greenwood^{1,2}, H. Hearnshaw^{1,4}, G. Kelly^{1,3}, and D. W. Hennessy^{1,4}, ¹CRC for Cattle and Beef Quality, Armidale, NSW, Australia, ²NSW Agriculture, Armidale, NSW, Australia, ³University of New England, Armidale, NSW, Australia, ⁴NSW Agriculture, Grafton, NSW, Australia.

Longissimus lumborum muscle was studied in low and high birth weight Wagyu- (mean \pm SEM birth weights 27.3 ± 1.1 kg, $n=8$ [WL] vs 33.4 ± 1.4 kg, $n=8$ [WH]) and Piedmontese-sired (27.4 ± 1.9 , $n=7$ [PL] vs 40.2 ± 1.5 kg, $n=8$ [PH]) female calves following low or high nutrition of their Hereford dams during pregnancy. Muscle weight was greater ($P<0.05$) in Piedmontese-sired and high birth weight newborns (WL, WH, PL, PH means; pooled SE: 84, 101, 91, 150; 7g, respectively). Number of satellite cells relative to myofibre-related nuclei (6.7, 8.8, 8.3, 9.1; 0.8%) and myofibres (29.9, 36.8, 35.6, 41.8; 3.6 per 1,000 myofibres) tended ($P<0.10$) to be greater in high birth weight calves. Mass of muscle DNA (53.9, 52.5, 63.5, 78.8; 4.1 mg), RNA (229, 259, 267, 390; 26 mg) and protein (13.0, 16.1, 14.0, 23.7; 1.4 g) were greater in Piedmontese-sired calves, and mass of protein was greater in high birth weight calves who also tended to have more RNA. Apparent number of myofibres (29.8, 29.8, 32.2, 30.4; 2.5×10^5 myofibres) did not differ ($P>0.10$) due to genotype or prenatal nutrition. Percentage of type 1 myofibres was higher in Wagyu-sired and high birth weight calves (19.5, 25.0, 14.9, 21.6; 1.6%), and percentage type 2A myofibres (28.5, 23.1, 27.8, 23.9; 2.1%) and the ratio of fast to slow myofibres (4.4, 3.0, 6.9, 3.9; 0.8) increased with lower prenatal nutrition and tended to be greater in Piedmontese-sired calves. Cross-sectional area of type 2B myofibres was reduced by low birth weight (666, 751, 679, 910; $74 \mu\text{m}^2$) which also tended to influence average cross-sectional area of myofibres (507, 573, 505, 668; $56 \mu\text{m}^2$). The results demonstrate that maternal nutrition and low birth weight can impact on size, contractile and metabolic properties of myofibres in newborn cattle and may affect relative numbers of myosatellite cells. It remains to be established whether nutritionally altered cellular characteristics in muscle of newborn heifers with high muscle growth (Piedmontese-sired) or high marbling (Wagyu-sired) potentially have long-term consequences for growth, body composition and eating quality.

Key Words: Cattle, Nutrition, Muscle

400 High energetic costs of stereotyped behaviour in preruminant calves. J. J. G. C. van den Borne*, S. J. F. M. van der Heijden, H. Oorsprong, E. A. M. Bokkers, J. E. Bolhuis, and W. J. J. Gerrits, *Animal Sciences Group, Wageningen University and Research Centre, Wageningen, The Netherlands.*

High energetic costs for standing versus lying ($130 \text{ kJ/kg}^{0.75}/\text{d}$) in preruminant calves were mentioned in several experiments. Behaviour, and particularly stereotyped behaviour, can be an important reason for these high estimations. It was hypothesized that calves spend a considerable part of their time on stereotyped behaviour and that energetic costs of

stereotyped behaviour are high. In this study (originally not designed to study behaviour) energy expenditure related to stereotyped behaviour was quantified in individually housed preruminant calves. Eighteen preruminant calves (on average 120 kg BW) were used, in two experimental periods of 9 days each. Heat production was measured by indirect calorimetry in 6-min intervals. Physical activity was recorded by a radar-Doppler device and posture was recorded by infrared beam interruption. Energy expenditure related to activity was estimated. Behavioural observations were made of each calf for two days per period, 13 hours per day, using 6-min scan-sampling. Five and 47% of the time spent standing and lying, respectively, was spent idling. Main activities during standing were manipulating bucket (37%) and (other) objects (24%), and tongue playing (10%). Main activities during lying were tongue playing (15%) and self-licking (8%). The sum of these repetitive activities, except self-licking, was considered total stereotyped behaviour. Stereotyped behaviour during standing increased energy expenditure almost threefold ($+74 \text{ kJ/kg}^{0.75}/\text{d}$) compared to standing idle ($39 \text{ kJ/kg}^{0.75}/\text{d}$), while tongue playing during lying was energetically more expensive ($+25 \text{ kJ/kg}^{0.75}/\text{d}$) than lying idle ($1 \text{ kJ/kg}^{0.75}/\text{d}$). It can be concluded, that energetic costs for stereotyped behaviour are considerable, and account for up to 8 (lying) and up to 15% (standing) of the energy expenditure for maintenance. As stereotyped behaviour is more frequently shown in standing as opposed to lying calves, this affects estimation of posture-related energy expenditure.

Key Words: Calves, Behaviour, Energy Expenditure

401 Relationships between serum constituents at weaning and subsequent carcass characteristics of beef calves. J. May¹, M. Looper², C. Golden¹, M. Nihsen¹, K. May³, and C. Rosenkrans Jr.*¹, ¹Department of Animal Science, University of Arkansas, Fayetteville, ²USDA-ARS, Dale Bumpers Small Farms Research Center, Booneville, AR, ³Caldwell Farms, Rosebud, AR.

Fall born Brangus-crossbred calves ($n = 112$; $\text{BW} = 224 \pm 12$ kg) were used to determine the relationship between serum constituents at weaning and carcass characteristics. At weaning, calves were weighed, blood samples collected, and bull calves castrated two days later. After the stocker phase (145 d), calves were weighed and then finished in a commercial feedlot. Serum samples were analyzed for lactate dehydrogenase (LDH) activities, hemoglobin, protein, creatinine, prolactin, triiodothyronine (T_3), thyroxine, cortisol, testosterone, and insulin-like growth factor-I (IGF-I). After harvest, *longissimus* muscle and ribfat thickness were measured. In addition, USDA quality and yield grades were assigned to each carcass. A retrospective ANOVA was conducted with quality grade, yield grade, and calf gender in the model as independent variables and serum constituents as dependent variables. At harvest, 65% of the carcasses were assigned USDA Choice grade. Carcass distributions among USDA yield grade were 22, 48, and 29%, respectively for yield grade 1, 2, and 3. Heifers had higher ($P < 0.05$) concentrations of cortisol and T_3 than bulls at weaning (32 vs 20 ng/mL cortisol; 4.0 vs 3.5 ng/mL T_3), and less ($P < 0.001$) testosterone (0.5 vs 3.2 ng/mL). Serum LDH activity, when corrected for hemoglobin concentration, was lower ($P < 0.05$) in calves that ultimately graded USDA Choice when compared with animals that resulted in USDA Select carcasses. Serum concentrations of IGF-I and cortisol at weaning were associated with an interaction ($P < 0.1$) of quality grade and yield grade. Yield grade was associated ($P < 0.1$) with weaning LDH activity, and testosterone concentrations. These data support previous studies indicating that serum LDH activity could be used as an early indicator of a calf's probability to grade USDA Choice or better.

Key Words: Cattle, Lactate Dehydrogenase

402 Physiological indicators of growth are influenced by supplementation and steroid implantation in steers. M. L. Looper*¹, C. F. Rosenkrans, Jr.², R. Flores², G. E. Aiken³, and S. E. Duke⁴, ¹USDA-ARS, Dale Bumpers Small Farms Research Center, Booneville, AR, ²University of Arkansas, Fayetteville, ³USDA-ARS, Forage-Animal Production Research Unit, Lexington, KY, ⁴USDA-SPA, College Station, TX.

Forty-five crossbred steers ($\text{BW} = 246 \pm 5.4$ kg) were utilized to determine the effects of timing of steroid implantation and supplementation on average daily gain, prolactin, triiodothyronine (T_3), thyroxine (T_4), cortisol, and insulin-like growth factor-I (IGF-I). All steers grazed bermudagrass paddocks (1 steer/0.8 ha). Each steer received either no

supplementation (n = 30) or 1.4 kg/d per steer of a corn-soybean meal supplement (n = 15; 12% crude protein). Within supplementation strategy, steers were assigned to either no implant, one implant at d 0 and one implant at d 56 (EI), or one implant at d 56 (LI). Steers were weighed at the initiation and termination of experiment to determine average daily gain (ADG). Blood samples were collected on d 0, 62, and 108, and blood metabolites were quantified. Supplemented steers had greater (P < 0.0001) ADG than non-supplemented steers (0.93 ± 0.05 vs 0.57 ± 0.04 kg/d, respectively). Implanted steers (EI and LI) tended to have increased (P = 0.13) ADG compared with non-implanted steers. Concentrations of prolactin and T₄ were decreased (implant x time; P < 0.05) in control and LI (one steroid implant) steers but not EI (two steroid implants) steers at 108 d compared to d-62 concentrations. Cortisol was influenced by a supplement x implant interaction (P < 0.05). Supplemented EI steers had increased cortisol compared to supplemented LI steers (58.8 ± 10.0 vs 35.3 ± 9.2 ng/mL for EI and LI steers, respectively). However, non-supplemented LI steers had increased concentrations of cortisol compared with non-supplemented EI steers (56.8 ± 6.6 vs 42.2 ± 6.4 ng/mL for LI and EI steers, respectively). Supplemented steers, independent of timing of implantation, had increased (P < 0.001) concentrations of IGF-I compared with non-supplemented steers (211.5 ± 19.9 vs 122.7 ± 11.8 ng/mL, respectively). Concentrations of T₄ at d-0 were positively correlated (P < 0.05; r = 0.33) with ADG of steers. Management strategies may alter animal physiology, and those strategies should be considered when using physiological markers for the prediction or selection of animal growth.

Key Words: Steers, Thyroxine, Insulin-like Growth Factor-I

403 A mechanistic nutrition model to evaluate beef cow efficiency. L. O. Tedeschi¹*, D. G. Fox¹, M. J. Baker¹, and K. L. Long², ¹Cornell University, Ithaca, NY, ²Bell Ranch, Solano, NM.

The beef cattle seedstock industry is searching for ways to select for improved beef cow efficiency. Most selection indexes for efficiency have a

Nonruminant Nutrition: Minerals

404 Mineral and chromium supplementation to diets of finishing pigs. B. V. Lawrence*, D. Overend, S. A. Hansen, J. D. Hahn, and J. Hedges, Hubbard Feeds Inc., Mankato, MN.

A total of 765 terminal Duroc cross barrows and gilts (Compart Boar Store Line 442 X D100; 29.8 ± 1.2 kg) were used to compare three treatments: corn-soybean meal control (CTRL), CTRL diet for 63 d with Yield Pak (a blend of vitamins and trace minerals) added from 63 to 91 d (CTRL/YPC), or CTRL/YPC diet supplemented with 200 ppb Cr from chromium propionate from d 0 to 63 (Cr/YPC). Pigs (12 pens/treatment) were weighed on d 0, 63 and 91. Growth performance was similar across treatments (P > 0.10) from d 0 - 63. Day 63 to 91 gain (P < 0.05) and gain:feed (P < 0.01) were lower for the CTRL pigs. At 111.6 ± 7.3 kg, 36 gilts per treatment were tagged, tattooed, and weighed. After 8 h transit to a commercial abattoir, hot carcass weights (HCW) were obtained (84.3 ± 1.8 kg). The HCW and yield [(HCW/liveweight)*100] were different (P < 0.01) between treatments. Fat or muscle depth, lean percentage, and ham and loin pH measured at 1 and 22 h post-mortem were not different (P > 0.10) across treatments. At 22 h, a 40 - 50 g loin core was taken between the 7th and 8th ribs and held for 7 d for drip loss determination. Although there was no difference in 22-h pH or rate of 22-h pH decline, the Cr/YPC pigs had a higher (P < 0.10) drip loss than other treatments (4.78 vs. 3.43%). The NPPC measures of loin color, and firmness, as well as ColorTec L*, A*, and B* values were not different (P > 0.10) across treatments. Loin marbling was higher (P < 0.05) for the CTRL/YPC pigs than for the CTRL or Cr/YPC pigs (2.80 vs. 2.46). Forty gilts per treatment (live weight of 115.6 ± 6.1 kg) fed the CTRL or CTRL/YPC diet at the commercial finisher were processed as described previously. There was a trend (P < 0.10) for the CTRL/YPC pigs to have a higher yield (75.5 vs. 74.9%). The higher yield corresponded with a trend (P < 0.10) toward a reduction in loin drip loss (4.03 vs. 5.30%) and a numerical (P < 0.20) reduction in rate of 22-h ham pH decline (0.55 vs. 0.67 units). These results indicate that addition of YPC in late finishing may improve some meat quality characteristics of fresh pork.

Key Words: Minerals, Pigs, Meat Quality

goal of using less resource while obtaining the same outcome in a sustainable environment. However, the inputs required to determine individual beef cow feed efficiency are not readily available in practical conditions. A mathematical model was developed to use inputs readily available in each production situation to estimate the ratio of cow ME required to calf-weaning weight (WW) for computing an energy efficiency index (EEI). This model ranks EEI estimates and compares individual cow EEI with the range of expected EEI using Monte Carlo (MC) methods to identify the upper and lower cutoff values. It uses the 2000 Beef NRC recommendations as implemented in the Cornell Net Carbohydrate and Protein System for energy requirements for maintenance, lactation, and pregnancy. Data containing varying levels of milk and forage intake of individual calves during the first 200 d after birth was used to develop a submodel to estimate calf forage and peak milk intake (PKM) based on calf BW and forage composition. A database collected from the Bell Ranch, NM (N = 182) was used to evaluate the ranking from most to least efficient cows. The simulation indicated that as peak milk (PKM) increases, WW increases almost linearly, the difference in the calf WW between small and large cows tended to increase, and EEI estimates improve exponentially. As PKM increased, the EEI difference between small- and large-size cows decreased. The model-predicted least efficient cows were in agreement with culling decisions made prior to evaluating the EEI ranking. The MC simulation based on the distribution, mean, and variability of cow BW, PKM, and forage quality indicated that cows having EEI lower than 30.6 or higher than 38 Mcal/kg are within the 10% more and less efficient cows, respectively. Our analysis suggested this model could assist beef producers in identifying the most and least efficient cows for their resource, and can be used to simulate different production scenarios to identify the best match of cow type to alternative management systems.

Key Words: Modeling, Simulation, Production

405 Performance effects of potassium and chloride levels in swine finisher diets. B. V. Lawrence*, J. D. Hahn, and S. A. Hansen, Hubbard Feeds Inc., Mankato, MN.

Two trials with terminal cross Duroc sired pigs were conducted to evaluate the effect of K or Cl levels in corn-soya-synthetic amino acid diets on growth and carcass parameters. In Exp 1, 512 pigs (38.7 ± 1.1 kg) were assigned to either a Control diet (0.22% Na, 0.41% Cl, and 0.73% K), or the Control diet supplemented with 0.10% (Low), 0.20% (Med), or 0.30% (High) K supplied as KCl. Constant Na and Cl levels were maintained by altering the level of dietary NaCl and NaPO₄. Pens (n = 6) were weighed on d-0, 21, 42, 63, and 85. In Exp 2, 512 pigs (32.9 ± 0.8 kg) were fed one of four diets. The Control diet was similar to that in Exp 1. The remaining 3 treatments were formulated to 0.94% K and 0.22% Na and either 0.60% (High Cl), 0.47% (Med Cl) or 0.33% (Low Cl) chloride. The Cl levels were achieved by altering inclusion level of NaPO₄ and NaCl. Pens (n = 6) were weighed on d-0, 21, 42, 63, 85 and 96. At the end of both experiments, real-time ultrasound (RTU) measurements of tenth rib loineye area (LEA) and backfat (TRF) as well as last rib fat (LRF) were obtained on 40 barrows and 40 gilts per treatment. Yield, fat depth, loin depth, and lean percentage were obtained on 40 barrows and 40 gilts per treatment at a commercial abattoir. Data was analyzed using the GLM procedures of SAS with pen the experimental unit for gain, intake and feed conversion and individual pig the experimental unit for RTU and abattoir analysis. During Exp. 1, pigs fed the K supplemented diets had numerically higher gains, however, there were no significant (P>0.10) differences in gain, intake, or feed conversion. K supplementation had no influence on RTU or abattoir carcass parameters. In Exp. 2, pigs fed the Med Cl diets tended to have the highest (P<0.10) gain. There was no diet effect (P>0.10) on intake or feed conversion. RTU and abattoir carcass measurements were not different (P>0.10) across treatments. Yield was lowest (P<0.05) for the Low Cl fed pigs. These results suggest that K supplementation may improve growth, while the appropriate Cl level may influence gain and yield.

Key Words: Electrolytes, Growth, Pigs