

Additionally, carcass quality, based on marbling and firmness scores and pHu, was improved slightly with PL treatment.

Key Words: Pork, β -Agonist, Composition

106 Ractopamine may improve meat quality by altering postmortem metabolism. Q. Guo*¹, A.L. Grant¹, B.T. Richert¹, A.P. Schinckel¹, and D.E. Gerrard¹, ¹*Purdue University, West Lafayette, IN.*

Variation in pork quality represents one of the most important issues impeding increased export of US pork. Of particular concern is the incidence of pale, soft, exudative pork, which further exacerbates the normal variation in pork color. Pork quality development essentially is a consequence of the rate and extent of carbohydrate metabolism in muscle postmortem. Curiously, increased muscle growth has a negative impact on pork quality, yet numerous researchers report that ractopamine (RAC), a beta-adrenergic agonist that stimulates muscle growth, has no impact on pork quality. Therefore, the objective of this study was to determine the effect of feeding RAC to gilts on subsequent postmortem muscle carbohydrate metabolism. Gilts had ad libitum access to a 1.1% lysine commercial finishing diet containing RAC (20 mg/kg) for 0, 1, 2 or 4 wk prior to slaughter (12 gilts/time). Longissimus muscle samples were collected at 0, 30, 60, 90, 120 min, and 24 hr postmortem and snap frozen in liquid nitrogen. Muscle samples were powdered and glycogen, glucose-6-phosphate, glucose and lactate concentrations were determined. No differences were observed in any of the NPPC loin quality parameters investigated. Higher loin muscle pH values were noted ($P < 0.05$) at 10 min postmortem in pigs fed RAC for 1 or 2 wk, however, pH values at all other times were not affected by treatment. Compared to controls, pigs fed RAC for 4 wk had reduced ($P < 0.05$) muscle glycogen levels at all times postmortem. In addition, muscle glucose levels were greater ($P < 0.05$) in pigs fed RAC for 4 wk. Muscle lactate levels were reduced ($P < 0.05$) after feeding RAC 1 wk, whereas no reduction was observed in pigs fed RAC for 4 wk. These data show that increased time of feeding RAC results in altered muscle glycogen content and the ability of muscle to generate lactate, and suggest that RAC may improve pork quality by altering energy metabolism early postmortem.

Key Words: Ractopamine, Pork Quality, Glycogen

107 Relationships between environmental conditions on trucks and losses during transport to slaughter in finishing pigs. D. N. Hamilton*¹, M. Ellis¹, G. E. Bressner¹, B. F. Wolter², D. J. Jones³, and L. E. Watkins³, ¹*University of Illinois at Urbana-Champaign*, ²*The Maschhoffs, Carlyle, IL*, ³*Elanco Animal Health, Greenfield, IN.*

The objective of this study was to evaluate relationships between environmental conditions on a commercial livestock trailer and losses during transport from the farm to the packing plant. A total of 93 loads with 169 ± 11.2 pigs per load with a live weight of 128 ± 14.0 kg were evaluated. The trailer was divided into nine compartments and the pigs were loaded at a stocking density 0.47 ± 0.126 m²/pig. Percent dead and subjects (pigs that were unable to walk, sustained an injury, or showed signs of exhaustion) on arrival at the plant was 0.19 ± 0.530 and 0.62 ± 0.979 , respectively. Temperatures at the start and end of loading, halfway through the journey, on arrival at the plant, and at unloading were 16.6, 19.2, 19.7, 20.3, and 20.5°C, respectively (SE = 0.21; $P < 0.05$) and relative humidities were 72.7, 72.7, 64.8, 64.4, and 62.1 %, resp. (SE = 0.71; $P < 0.05$). Of all the factors evaluated, number of pigs per load was the most strongly correlated to the subjects, deaths, and total losses ($r = -0.23, -0.29, -0.27$, resp.; $P < 0.05$). Average temperature during loading, transport and unloading was inversely correlated to the percentage of subjects and total losses ($r = -0.20$ and -0.15 , resp.; $P < 0.05$). Average relative humidity during loading, transport and unloading was positively correlated to the percentage of subjects and total losses ($r = 0.27$ and 0.21 , resp.; $P < 0.05$). Transport time was correlated with losses during transit ($r = 0.30, 0.25$, and 0.16 , for subjects, deaths, and total losses, resp.; $P < 0.05$). All of the correlations in this study were relatively low, indicating that there was no single factor responsible for the transport losses or that the issue may be caused by a combination of factors. Further research is warranted to evaluate other factors that may contribute to losses during transport.

Key Words: Pigs, Transport Losses, Temperature

108 Effects of removing slaughter weight pigs from single-sex pens on subsequent growth performance of finishing pigs. J. M. DeDecker*¹, M. Ellis¹, B. F. Wolter¹, B. P. Corrigan¹, S. E. Curtis¹, E. N. Parr², and D. M. Webel², ¹*University of Illinois at Urbana-Champaign*, ²*United Feeds, Inc. Sheridan, IN.*

The objective of this study was to determine the effects of removal rate and sex (barrow vs gilt) on the performance of finishing pigs. Sixty single-sex pens of crossbred pigs (n = 1537) were used in a randomized complete block design with a 2 x 3 factorial arrangement of treatments. Factors included 1) sex (barrows vs gilts) and 2) removal rate (0, 12 and 24% of pigs removed). Pens (25 pigs; mean BW = 105.6 ± 0.37 kg) were randomly allocated to treatment, and the heaviest animals were removed as dictated by treatment. Floor and feeder spaces/pig were 0.64 m² and 2.7 cm, 0.72 m² and 3.1 cm, and 0.84 m² and 3.6 cm for the 0, 12 and 24% removal treatments, respectively. Two statistical analyses were conducted. The first compared 20-d growth performance between the entire group of pigs after removal (25 vs 22 vs 19 pigs/pen for the 0, 12 and 24% removal treatments, respectively). The second analysis compared the 20-d growth performance of the lightest 19 pigs in each treatment. Daily weight gain post-removal was similar ($P > 0.05$) for the 0, 12 and 24% removal rate treatments (792, 810, and 826 ± 26.6 g/d, respectively) as well as for the lightest 19 pigs (776, 819, and 826 ± 25.1 g/d, respectively). Therefore, the average weight of pigs produced decreased linearly ($P < 0.01$) as the percentage of the heaviest pigs/pen removed increased (121.1, 118.9, and $117.8 \text{ kg} \pm 0.84$ for the 0, 12 and 24% removed treatments, respectively). The within-pen coefficient of variation for the entire group at d 20 post-removal decreased quadratically ($P < 0.05$) with increasing pig removal rate (8.74, 7.10, and 7.38 ± 0.293 for the 0, 12 and 24% removed treatments, respectively). Pens of barrows and gilts responded similarly to pig removal. Overall, barrows consumed more feed ($P < 0.001$), were heavier ($P < 0.001$), and had a lower ($P < 0.01$) gain:feed ratio than gilts. In summary, these results suggest that removing 12 or 24% of the heaviest pigs in pens averaging 105 kg BW does not impact the subsequent growth performance of the remaining barrows or gilts.

Key Words: Pigs, Removal, Sex

109 Effects of dexamethasone injection at birth on growth performance of pigs from birth to weaning. M. G. Young, M. D. Tokach, S. S. Dritz, R. D. Goodband, and J. L. Nelssen, *Kansas State University.*

A total of 82 litters were used in a 21-d study to evaluate the effect of injecting litters of pigs with dexamethasone on growth rate from birth to weaning. In dexamethasone treated litters, all pigs within a litter were administered 1 mg dexamethasone per pig intramuscularly when the litter was processed (within the first 24 h after birth). Control pigs were processed according to standard practice and did not receive a dexamethasone injection. The standard processing practices included clipping needle teeth, docking tails, notching ears, and intramuscular iron injection. Pigs were weighed at birth and weaning, and litter size within treatment was equalized after processing. There was no difference ($P > 0.28$) in sow weight change, litter growth rate from birth to weaning, mortality, or number of pigs weaned between pigs injected with dexamethasone compared to the control pigs. Administration of 1 mg/pig of dexamethasone within 24 hours of birth to whole litters of pigs did not improve pig performance from birth to weaning.

| Item | Dexamethasone | Control | SEM | P < |
|-------------------------|---------------|---------|------|------|
| Lactation length, days | 20.8 | 21.0 | 0.71 | 0.60 |
| Sow weight, kg | | | | |
| Entry farrowing | 237.0 | 246.6 | 4.35 | 0.26 |
| Weaning | 227.2 | 231.2 | 4.15 | 0.55 |
| Loss | 9.8 | 15.4 | 2.70 | 0.28 |
| ADFI lactation, kg | 5.8 | 6.0 | 0.18 | 0.46 |
| Number of pigs | | | | |
| Day 1 | 10.0 | 10.0 | 0.40 | 0.95 |
| Weaning | 9.1 | 9.1 | 0.31 | 0.97 |
| Preweaning mortality, % | 8.7 | 8.3 | 1.56 | 0.85 |
| Piglet weight, kg | | | | |
| Birth | 1.50 | 1.51 | 0.07 | 0.93 |
| Weaning | 6.67 | 6.68 | 0.48 | 0.95 |
| Piglet ADG, kg | 0.235 | 0.231 | 0.01 | 0.67 |

Key Words: Dexamethasone, Pigs, Growth