45 Eating quality of pork loin chops from 1980 vs. 2005 pigs when fed 1980 or 2005 feeding programs. J. S. Fix*, D. J. Hanson, E. van Heugten, J. P. Cassady, and M. T. See, *North Carolina State University*, *Raleigh*.

The objective of this study was to assess changes over 25 yr in the eating quality and descriptive sensory characteristics of boneless LM. Pigs (n=162) representative of the current commercial industry were compared to pigs representative of the commercial industry 25 years ago. The 1980 genetic line was produced from dams selected to minimize genetic improvement and frozen semen from boars available in 1980. Pigs within sex, farrowing group, and genetic line (GL) were randomly assigned to a feeding program (FP). The 2005 FP included a 7 phase FP (lysine from 1.51 to 0.73% and ME from 3428 to 3651 Kcal/kg), pelleted diets, added fat and current diet formulation. The 1980 FP consisted of 4 meal diets (lysine from 1.05 to 0.62% and ME from 3262 to 3317 Kcal/kg) based on formulations from the 1978 PIH. Pigs were slaughtered on a weekly basis when avg pen wt exceeded 116 kg. Based on a consumer sensory evaluation LM from pigs fed 1980 FP had higher overall liking ($P<0.01$) and texture liking ($P<0.05$) than LM from pigs fed 2005 FP. Trained flavor and texture descriptive panels were conducted on a 16 point intensity scale. Stronger cooked pork aroma was found ($P<0.01$) for LM from pigs fed 1980 FP vs 2005 FP. LM from pigs fed 2005 FP had a higher cohesive mass than LM from pigs fed 1980 FP. There was GL x FP interaction ($P<0.01$) for cooked pork flavor where LM from 1980 GL pigs fed 1980 FP vs 2005 FP did not differ but LM from 2005 GL pigs had more cooked pork flavor when fed 2005 FP vs 1980 FP. Interactions of GL x FP were observed where LM from 2005 GL pigs did not differ when fed 1980 FP vs 2005 FP, however LM from 1980 GL pigs fed 2005 FP were juicier ($P<0.01$) and had more moisture release ($P<0.01$) than LM from pigs fed 1980 FP. Also GL x FP interactions were observed where LM from 2005 GL pigs were harder ($P<0.01$) and more fibrous ($P<0.01$) when fed 2005 FP vs 1980 FP while LM from 1980 GL pigs fed 1980 FP vs 2005 FP were harder ($P<0.01$) and more fibrous ($P<0.05$). Changes in genetics appear to have not affected the overall eating quality while changes in diet have, for the most part led to poorer eating quality traits in pork loin chops.

Key Words: pigs, genetics, taste panel

46 Logistic regression analysis to predict weaning-to-estrous interval in first-litter gilts. Y. Wang*[1], T. H. Wise[2], G. A. Rohrer[2], K. J. Hanford[1], and L. D. Van Vleck[1,2], [1]*University of Nebraska*, *Lincoln*, [2]*U.S. Meat Animal Research Center*, *Clay Center, NE*.

Delayed return to estrus after weaning is a significant problem for swine producers. In this study, we investigated the relationships between weaning-to-estrous interval (WEI) and body weight (BW), back fat (BF), plasma leptin (L), glucose (G), albumin (A), urea nitrogen (PUN) concentrations and litter traits to identify physiological traits associated with WEI. Data were collected from 845 gilts prior to farrowing (f, 110 d gestation), at weaning (w) and at first estrus (e) after weaning. A composite population of ¼ Duroc (D), ¼ Landrace (Lc), ½ white cross (W) was developed by mating W females to either D or Lc boars. The lines were crossed and subsequently inter se mated. Records collected in 2002 were from D or Lc sired gilts. All other records (2003-2005) were on DLcW composite gilts. Statistical analyses were performed using combined data with year as a fixed effect. Estimates of correlations showed that WEI was positively associated with BWe, Le, BWe-BWw and Le-Lw, and was negatively associated with Ge, Ae, Ge-Gw and Ae-Aw ($p<0.05$). At f, w and e, BW and BF were positively associated with L ($p<0.05$). With WEI classified as ideal (1-7 d, I), acceptable (8-14 d, A) or late/no estrus (>14 d, N), stepwise logistic regression was used to generate models with reduced sets of traits to discriminate between pairs of populations: I vs. A+N (M1) and I vs. A (M2). Because the goal was to predict WEI, only farrowing and weaning traits were included. With M1, yr 2002, yr 2004, BWw, BFw, Aw, Lw-Lf and number of pigs weaned in litter were positively associated with I, while yr 2003, BWf, PUNf and number of pigs fostered off (NF) were negatively associated. With M2, BFf, Lw, BFw-BFf, Aw-Af, NF and number of pigs alive at birth had positive associations with I, while BFw and Lf had negative associations. The results suggest physiological traits associated with WEI may be useful in predicting WEI of gilts.

Key Words: logistic regression, swine, weaning-to-estrous interval

47 Validation of flank-to-flank measurements for predicting boar weight. R. C. Sulabo*[1], J. Quackenbush[2], R. D. Goodband[1], M. D. Tokach[1], S. S. Dritz[1], J. M. DeRouchey[1], and J. L. Nelssen[1], [1]*Kansas State University*, *Manhattan*, [2]*Zoltenko Farms, Inc.*, *Hardy, NE*.

Previous work at Kansas State University showed a positive correlation between flank-to-flank measurement and sow body weight. Prediction equations were developed to estimate sow weight; however, it is not known if the same equation will be valid in estimating body weight among other groups of pigs such as boars. The objective of this study was to validate the use of flank-to-flank measurement in predicting boar weight and to determine if the allometric equation for gestating sows can also be used for adult boars. A total of 100 adult working boars from two genetic lines (83 TR4, 17 PIC 380) in a commercial A.I. boar stud were used in the study. Boars were selected specifically to obtain the widest possible range in weights (129 to 374 kg). Individual boars were weighed and a cloth tape measure was used to measure the distance from the base of the flank on one side over the back to the base of the flank on the other side of each boar. Regression equations to predict boar weight using flank-to-flank measurement were developed using PROC REG of SAS. Three equations were compared: Equation 1 – boar model with BW having no scaling factor, Equation 2 – boar model with BW expressed as $BW^{0.333}$, Equation 3 – sow model with BW expressed as $BW^{0.333}$. Residuals were used to estimate the accuracy of the equations. Flank-to-flank measurement was positively correlated to boar body weight ($R^2 = 0.84$, $P<0.01$). The fit of the model improved slightly ($R^2 = 0.86$, $P<0.01$) when body weight was expressed as $BW^{0.333}$. The boar equation was: $BW^{0.333}$, kg = 0.0458 x Flank-to-flank, cm + 1.1838. Based on the comparison of residuals, all three equations accurately predicted boar weight. The sow equation was as accurate as the boar equations in estimating boar weight. Therefore, the sow allometric equation can be used as the final model to predict both sow and boar body weight. The final model to estimate pig weights using flank-to-flank measurement is: $BW^{0.333}$, kg = 0.0511 x Flank-to-flank, cm + 0.5687.

Key Words: boars, prediction equations, weight