

## PORK QUALITY

**Title:** Predicting Pork Quality Using Measurement Collected from Various Locations on the Boneless Loin. **NPB #17-192**

**Investigator:** T. Dean Pringle

**Institution:** University of Georgia

**Date Submitted:** 24 Jan 19

**Scientific Abstract:** Many U.S. pork export markets demand high quality pork with darker color and higher marbling content than domestic markets. Although, the U.S pork industry does not have a quality grade program through the USDA-Agricultural Marketing Service, application of voluntary quality grade standards may result in financial benefits to the pork industry as well as enhanced eating experiences for consumers. This study analyzed quality measurements collected at locations along the surfaces of boneless pork loins to determine the relationship between these measures and traditional pork quality measures collected at the 10<sup>th</sup> rib. Market hogs (n=126) from two genetic lines and two sexes were slaughtered at 113.4, 136.1 and 158.8 kg endpoints. One genetic line was selected for increased lean yield, while the other was selected for meat quality attributes. Seven litters from each line with at least 6 pigs (3 barrows and 3 gilts) were used in the study. When the pigs reached their preassigned endpoint, they were transported to the University of Georgia Meat Science and Technology Center and slaughtered under federal inspection. Following a 24-hr chill period, carcasses were ribbed between the 10<sup>th</sup> and 11<sup>th</sup> ribs, bloomed for 20 min and the following pork quality attributes were measured on 10<sup>th</sup> rib surface: Hunter L\*, a\*, b\* (D<sub>65</sub>); Minolta L\*, a\*, b\* (D<sub>65</sub>); and NPPC color and marbling score. Carcasses were then fabricated and the boneless loin (IMPS# 413C, trimmed to 0.64 cm of fat) was weighed. The loin was allowed to bloom, ventral side up, for at least 20 min before collection of the previously listed loin quality attributes collected at the following 5 locations anterior to posterior: blade-end and sirloin-end (cross section), and at approximately the 7<sup>th</sup>/8<sup>th</sup> rib, 12<sup>th</sup>/13<sup>th</sup> rib, and 1<sup>st</sup>/2<sup>nd</sup> lumbar regions on the ventral surface of the loin. These locations were evaluated since they would allow assessment of quality attributes without devaluing the loin. Pearson correlations were calculated between 10<sup>th</sup> rib color and marbling scores and all other loin measures and Max R<sup>2</sup> regression was used to determine the best variables to predict 10<sup>th</sup> rib color and marbling scores (SAS Institute Inc.). Sirloin end marbling score had the strongest correlation with 10<sup>th</sup> rib marbling score (r=0.69; P<0.01), followed closely by the 8<sup>th</sup> rib location on the ventral surface (r=0.60; P<0.01). Instrumental L\* values were more highly correlated to 10<sup>th</sup> rib color than subjective color scores. For regression, subjective measures collected on the ventral surface of the loin were better predictors of 10<sup>th</sup> rib marbling score (R<sup>2</sup>=0.42) than 10<sup>th</sup> rib color score (R<sup>2</sup>=0.26), with marbling score and color score collected at the 8<sup>th</sup> rib region being the most valuable predictor. Inclusion of all subjective measures slightly increased the prediction accuracy for 10<sup>th</sup> rib marbling score (R<sup>2</sup>=0.53) and 10<sup>th</sup> rib color score (R<sup>2</sup>=0.27). In contrast, instrumental measures were better predictors of 10<sup>th</sup> rib color (R<sup>2</sup>>0.29) than 10<sup>th</sup> rib marbling score (R<sup>2</sup><0.15). These results suggest that the U.S. pork industry could use measures on the intact loin to predict 10<sup>th</sup> rib marbling scores, providing the potential to sort loins into quality-based grades.

---

These research results were submitted in fulfillment of checkoff-funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer-reviewed.

---

For more information contact:

National Pork Board • PO Box 9114 • Des Moines, IA 50306 USA • 800-456-7675 • Fax: 515-223-2646 • pork.org

---