

Project Title: Evaluations of the Canadian Vision System, the HunterLab Miniscan, the Minolta Colorimeter and the HunterLab/CSU BeefCam Technologies for Augmenting Application of USDA Yield and Quality Grades for Sorting Carcasses for Expected Tenderness and/or Palatability of Their Steaks

Principle Investigators: R.C. Cannell, J. D. Tatum, K.B. Belk, G.C. Smith: Colorado State University
J. Wise: USDA
B.R. Schutte, H.G. Dolezal, J.B. Morgan and G.A. Kranzler: Oklahoma State University

Completion Date: September 1999

Layman's Summary:

The objective of the study was to evaluate the accuracy of the Canadian Vision System (CVS) to predict yield as a percentage of carcass weight of subprimal cuts, to augment the USDA Yield and Quality grades. In addition, the study evaluated the accuracy of the instruments' ability to predict tenderness by sorting beef carcasses into groups differing in tenderness. Another objective was to evaluate the Minolta Colorimeter and the HunterLab/CSU BeefCam technologies/CVS to predict tenderness.

Approximately 296 carcasses were involved in the study over a three-week period. Steers and heifers were selected with carcass weights between 550-749 or between 750-949 pounds. Yield Grades 1 through 3 were equally represented with Yield Grades 4 and 5 combined. Carcasses were graded by traditional "line graders" in the packing plant as well as an expert panel of "In-line graders" from the Agricultural Marketing Service for comparison against the CVS system. The CVS system is designed to scan the carcass immediately following harvest before entering the hot box (hot-system) and to scan the rib eye at the time of traditional grading before fabrication.

The second portion of the study involved the purchase of a section of the short loin to investigate the opportunity of using the previously mentioned technologies to determine tenderness. Comparison was made between instrument readings and USDA Quality Grades, Warner-Bratzler shear and sensory analysis tests .

At chain speeds, the CVS cold and hot-systems were more accurate than the line graders and slightly less accurate than the Expert USDA Graders. However, a combination of the Expert USDA Yield Grade with the CVS cold and hot-systems improved the predictability of yield over each individual system. This suggests that augmentation of the current yield grade system would



be of great benefit to the industry. Use of the Minolta Colorimeter for prediction of tenderness and palatability was not successful. However, the BeefCam/CVS cold-system for prediction of tenderness and palatability of beef steaks resulted in substantial improvements in predictive accuracy.

