

Project Title: Using Measurements of Muscle Color/pH/Water-Holding Capacity to Augment the Current USDA Beef Carcass Quality Grading Standards and Improve the Accuracy and precision of sorting Beef Carcasses into Palatability Groups

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Layman's Summary:

A project was undertaken to evaluate the use of muscle color, pH and water holding capacity as it relates to sorting beef carcasses into palatability groups. Phase I of the project involved data collection on 1,000 carcasses and was conducted to define the U.S. beef carcass population with regard to muscle color and muscle pH. Phase II involved the selection of 100 beef carcasses. Muscle color, pH and water holding capacity of the ribeye muscle was obtained. Steaks from the 100 carcasses were used to determine shear force (tenderness) on eight beef cuts and taste panel ratings (tenderness, juiciness, and flavor) on three beef cuts. It was discovered that the darkest 20 to 25% of the beef sampled was less palatable and considerably less consistent than the other 75% of the beef sampled. When marbling score, hump height, and some measure of muscle color or pH were combined, 36 to 42% of the variation in beef palatability was explained.

The muscle color scores, while not highly effective at distinguishing those carcasses with exceptional palatability, appear to be effective at sorting out a group of carcasses which are quite undesirable in palatability. This relationship between dark colored muscle and unpalatable beef was the strongest within the Select grade. The greatest palatability improvements could be made within USDA Select by using a muscle color specification. The beef industry could implement one of these proposed systems into the current USDA beef quality grading standards and improve the accuracy and precision of sorting beef carcasses into palatability groups. Also, measurements of muscle color or pH could be used in a branded-beef program to increase the palatability consistency of its beef products.

