

Project Summary

National Beef Tenderness Survey – 2010

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Background

In addition to juiciness and flavor, tenderness is a major factor contributing to consumer perception of taste. This survey allowed for a current national benchmark of beef tenderness to be determined. National Beef Tenderness Surveys have been conducted in 1991, 1998, 2005, and 2010. Each survey has allowed the beef industry to identify advancements made in beef tenderness and which beef cuts require additional attention. Furthermore, the survey gathers important marketing and post-fabrication processes used in the retail and foodservice sectors.

Objective

The objective of this study was to determine the current tenderness rating of US beef retail and foodservice steaks using Warner-Bratzler Shear (WBS) and consumer sensory panels. This study also created a snapshot of marketing techniques and steak characteristics for the current U.S. beef retail and foodservice industry.

Methodology

Eight universities (Texas A&M University, Texas Tech University, California Polytechnic State University, University of Florida, University of Missouri, North Dakota State University, Oklahoma State University, and Penn State University) collected 10 types of beef steaks (Top Blade, bone-in Ribeye, boneless Ribeye, bone-in Top Loin, boneless Top Loin, T-Bone, Porterhouse, Top Sirloin, Top Round, and Bottom Round) from 12 US cities (Houston, TX; Tampa, FL; Seattle, WA; New York City, NY; Denver, CO; Las Vegas, NV; Los Angeles, CA; Philadelphia, PA; Kansas City, MO; San Francisco, CA; Atlanta, GA; Chicago, IL). In each city, retail chains comprising the top 33% of the market share were identified and contacted to provide four stores to sample per chain. Additionally, one club store was sampled per city. In five cities (Houston, TX; Tampa, FL; Denver, CO; Las Vegas, NV; Philadelphia, PA), three types of beef steaks (boneless Ribeye, boneless Top Loin, Top Sirloin) were collected from a foodservice establishment. Brand designation, marketing claims, enhancement with percentage pumped, sodium content, form of tenderization, and any other important features were recorded on each steak, and each steak was measured for average external fat thickness and steak thickness. Approximately 60% of retail steaks ($n = 1,319$) were used for consumer sensory panels conducted at six universities, and the remainder of the retail steaks were used for Warner-Bratzler shear force. Foodservice steaks ($n = 464$) were divided in half and used for consumer sensory panels and Warner-Bratzler shear force. All steaks were cooked to an internal temperature of 70°C. Consumer sensory panels rated samples for overall like, overall like of tenderness, level of tenderness, overall like of flavor, level of beef flavor, overall like of juiciness, and level of juiciness.

Findings

Post-mortem aging times for retail establishments ranged from 1 to 358 days with a mean of 20.5 days, and foodservice establishments ranged from 9 to 67 days with an average of 15.9 days. For retail, non-enhanced and enhanced top blade had the lowest ($P < 0.05$) WBS values while non-enhanced cuts from the round – top round and bottom round – had the highest ($P < 0.05$) WBS values. Top Loin steaks had the lowest ($P < 0.05$) WBS value compared to ribeye and top sirloin foodservice steaks. Retail Top Blade steaks received the highest ($P < 0.05$) ratings by consumers for most palatability attributes, and foodservice top loin steaks received the highest ($P < 0.05$) ratings. USDA quality grade did have an effect on foodservice ribeye and top sirloin steaks for sensory

panels. Data collected at each university laboratory have been sent to NCBA for further dissemination. Participating retail and foodservice chains have been sent the data collected for their respective establishments.

Implications

This research allows all sectors of the beef industry to track advancements made in beef tenderness and consumer trends since the last survey was conducted. The results of this survey have been published as an executive summary titled 2010 National Beef Tenderness Survey. This executive summary is available for download on www.beefresearch.org.

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