NATIONAL BEEF TENDERNESS SURVEY

A 30 YEAR JOURNEY

Tremendous progress has been made since the inception of the survey in beef tenderness.

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A Pivotal Time for the Beef Industry

In the early 1990s, the beef industry was facing shrinking demand for their product as it was too tough, too fat, and too inconsistent to stay relevant at the meat counter[1].

At the time, 1 in 4 steaks just didn't eat right[2]. Changes were needed to keep beef on the plate.

Beef's unique eating experience is a key reason consumers purchase beef over other proteins. Eating experience is centered around three key components: tenderness, flavor, and juiciness. These attributes have been well-established as key factors that determine overall beef palatability and extensive research has been conducted around each factor and the interrelationships among factors[3]. While each factor is not considered independently, underperformance of a single factor can greatly impact overall eating satisfaction. Consumers are willing to pay a premium for guaranteed-tender meat products[4]. Thus, providing a consistent, high quality eating experience is essential to keep beef on the plates of consumers.

In the early 1990s, the industry rallied around a systematic approach to overcoming challenges and improving beef tenderness for consumers. The National Beef Tenderness Survey (NBTS, or Survey), funded by National Cattlemen's Beef Association, a contractor the Beef Checkoff, was initiated in 1990 to quantify beef tenderness and identify areas for improvement. The Survey has been conducted six times over the last 30 years to benchmark beef tenderness, verify improvements, and identify opportunities for ongoing research around tenderness. Providing a benchmark for beef tenderness allows the industry to identify where improvements have been made and where tenderness challenges may still exist.

From its inception, the Survey was designed to evolve to meet industry needs and provide insights as thinking around tenderness evolved. The initial survey began capturing relevant information and the evolution in successive surveys has bolstered applicability of the outcomes and helped to provide direction to the industry. Throughout the surveys retail cuts captured and data collected have shifted to stay relevant to the market and the direction of the industry at the time.

Quantifying Beef Tenderness

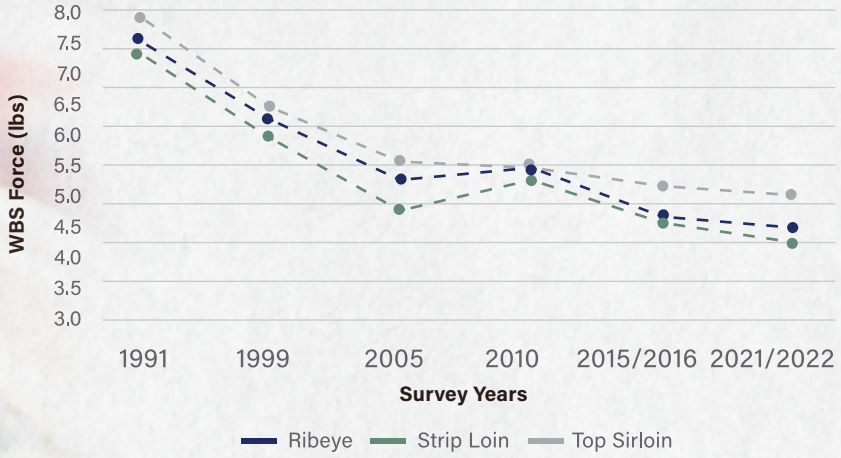
A key component to improving beef tenderness is quantifying the tenderness of the beef available in the marketplace to provide the greatest understanding of tenderness attributes.

In measuring beef tenderness two key methods are utilized. Warner-Bratzler Shear (WBS)[1] Force, is a quantitative measure that reflects the amount of force needed to bite through a steak. Since the inception of the Survey, WBS Force has been used to quantify beef tenderness with reducing numerical scores reflecting an improvement in beef tenderness. Consumer Taste panels are a qualitative measure of beef tenderness and provide greater insight into the interaction of tenderness as a component of eating experience. Taste panels can be limited in scope due to the number of samples each panelist can evaluate. The dual pronged approach of combining WBS force with consumer taste panels provides the most complete information about beef tenderness.

Since its start, the NBTS has seen a tremendous decrease in WBS Force values, resulting in an overall increase in beef tenderness for steaks sourced from the ribeye, strip loin, and top sirloin:

Figure 1

DECREASE IN WARNER-BRATZLER SHEAR FORCE OVER TIME (LBS)

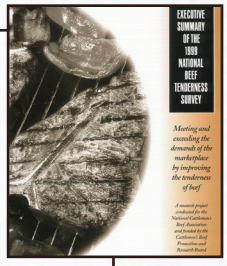


Tremendous progress has been made since the inception of the survey in beef tenderness. The following is a summary of the results and key takeaways from the 30 years of progress captured in the NBTS, as well as the progress the industry has seen:

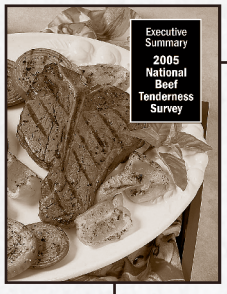
1990

The initial survey conducted by Texas A&M University in 1990 quantified and characterized beef tenderness. The findings reconfirmed the tenderness challenges the industry was facing, especially with cuts from the chuck, sirloin, and round. The undesirable toughness of these cuts was negatively impacting desirability and marketability of beef[5]. An opportunity to evaluate antemortem and postmortem product management to optimize product tenderness was identified as a key initiative because of this initial survey.

1999



Ten years later, the 1999 survey was expanded to include products from the food service sector to fully characterize beef tenderness throughout the industry. The findings indicated progress in beef tenderness with a 20% increase in product tenderness compared to 1990[6]. Improvements were seen in the chuck and sirloin from the initial survey, but the round remained challenging from a tenderness standpoint. Since the initial survey, the industry had shifted towards practices to promote beef tenderness including longer more gradual chilling. Product aging and management was identified as an area of improvement for beef tenderness.



2005/2006

In 2005/2006, a follow-up survey was conducted and confirmed additional progress in beef tenderness. Since the 1999 survey, there was an 18% improvement in tenderness and a 34% improvement compared to the initial 1990 survey[7]. The progress in beef tenderness can be attributed to the increased aging times, longer and slower chill processes, added focus on tenderness parameters, and an increased number of retailers participating in branded programs focused on tenderness. Results indicated 47% of cuts surveyed were marketed through packers or branded programs to guarantee certain quality traits such as phenotype, genetic makeup, aging times, and electrical stimulation. Authors of the 2005/2006 survey suggested strategic efforts to emphasize appropriate cooking methods for cuts marketed at retail to ensure consumer satisfaction.

2010/2011

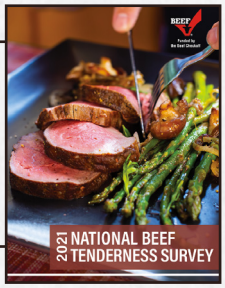
The fourth tenderness survey conducted in 2010/2011 reported tenderness values consistent with those seen in 2005/2006. This was partially attributed to the decreased aging time, with a greater number of retail steaks being aged less than 14 days[8].

2015

2015 marked the fifth NBTS. Most of the steaks evaluated in the survey were considered tender, similar to the finding in the 2010/2011 survey[9]. The results of this survey confirmed the industry's notable progress since the 1990s in efforts to consumer demands for consistently tender, leaner, and more flavorful beef.

2020/2021

Thirty years after the initial benchmark survey, the sixth survey was conducted in 2020/2021. This survey highlighted the greatest percentage of each cut falling into the very tender category for tenderness[10]. All WBS force values for steaks purchased at retail decreased compared to previous surveys. Sensory ratings for retail and food service maintained the performance from previous surveys.



Conclusion:

Despite the challenges the beef industry has faced over the last 30 years, including drought, herd liquidation, fluctuating supply, and input costs, the quality of beef and tenderness has seen great improvements.

Furthermore, recent surveys have indicated the ability of the industry to maintain tenderness goals. With the dramatic improvement in beef tenderness, the industry has opportunities to focus on important for palatability such as flavor development and increasing product consistency.

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