



# It May Be Time to Rethink the Bias Against Texas Beef

## Issue

In the 1990s, a bias emerged against beef from cattle raised in Texas. Because of the hot and humid climate of Texas, the majority of the state's cattle at the time were Brahman cattle and their crosses. These *Bos Indicus* breed cattle have a greater tolerance to elevated ambient temperatures and humidity than most *Bos Taurus* breeds. However, the carcasses of Brahman cattle were known to grade lower and produce less tender beef than their counterparts.

The authors of the original, 1996 Texas Perception Study wrote that "food service and some retail companies specify that the product they purchase come from 'northern' plants. Some even state 'any plant but Texas plants.'" The report goes on to note that as a result of this, Texas beef was often priced below similar cuts from other geographic regions, translating to a \$3 to \$5 per head disadvantage.<sup>1</sup>

In the years since the original Texas Perception Study, Texas cattle ranchers have worked diligently to improve both the quality of the beef they produce as well as the perception around Texas beef. The Department of Animal Science at Texas A&M has routinely conducted palatability assessments comparing Texas and non-Texas beef. The latest study, published in April 2021, found that geographic source no longer plays a role in consumer sensory panel ratings or Warner-Bratzler Shear Force (WBS) values for Choice or Select steaks.<sup>2</sup>

## The Research

This research sourced strip loins in three quality categories – USDA Select, USDA Choice and upper 2/3 USDA Choice (Top Choice). These steaks came from Texas processing establishments as well as

establishments in Colorado, Kansas and Nebraska. The following are the steps taken to prepare the steaks for shear force and sensory testing:



Three 2.54-cm-thick steaks taken from the anterior end (closer to the front of the body) of each strip loin



Steaks individually sealed and frozen at -40°C



Thawed for 48 hours



Individually weighed and weight recorded



Internal temperature taken and recorded



Cooked on electric grill until internal temperature reached 70°C



Weighed, weight and cook time recorded



Steaks for sensory evaluation placed in food warmer at 60°C



Steaks for WBS evaluation placed on trays, covered with plastic film and stored at 2-4°C for 16-18 hours



### CONSUMER SENSORY EVALUATION

The consumer panel consisted of 335 panelists from Bryan and College Station, Texas, with some slight demographic skews:



56.7% of panelists aged 21-35



43.3% of panelists worked full-time,  
41.8% of panelists were students



82.7% of panelists identified as conventional beef eaters

Red theater gel lights were utilized to mask any difference in the steaks' appearance. Samples were served to panelists with randomized 3-digit codes to ensure identity of the samples was unknown, and panelists were asked to rate each sample for overall liking, flavor, juiciness and tenderness on a 9-point hedonic scale ranging from "Dislike Extremely" to "Like Extremely."

How do you like the FLAVOR of SAMPLE 321?								
Dislike Extremely	Dislike Very Much	Dislike Moderately	Dislike Somewhat	Neither Like nor Dislike	Like Somewhat	Like Moderately	Like Very Much	Like Extremely
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

### SHEAR FORCE TENDERNESS EVALUATION

Tenderness also was measured. The industry standard for obtaining a quantitative measurement of tenderness in a laboratory setting is the Warner-Bratzler Shear Force test. This test measures the amount of force required to shear (or cut through) a sample of meat.



Samples equilibrated to room temperature for 30 minutes



Samples trimmed of visible fat and heavy connective tissue



Six 1.3-cm cores removed from each sample for testing



Cores sheared once



Peak shear force recorded, and mean shear force values used for analysis

## The Results

### COOKING YIELD & COOK TIME

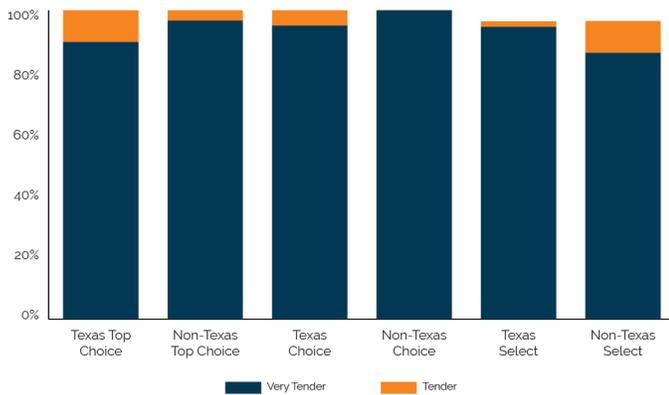
Geographic differences did not have an effect on cooking time or yield. USDA Grade did factor in, with Top Choice steaks having a greater yield than Choice or Select. Cook time also varied with USDA Select taking the longest and Top Choice steaks finishing the fastest.<sup>2</sup>

### SHEAR FORCE

Shear force tenderness also did not vary significantly by geography. Steaks graded USDA Select or Top Choice were found to be the most tender, with USDA Choice slightly less tender.<sup>2</sup> These findings differ from previous published work on WBS values and grade/marbling.

Almost all of the steaks sampled had shear force values that fell within the established Very Tender or Tender groupings, as defined in Belew et al.<sup>3</sup> Only steaks from the USDA Select grade had values that fell in the Intermediate or Tough categories. These findings are much improved compared to the tenderness concerns of the 1990s. All samples in the study had mean shear force values (19.5 to 22.7) well within the threshold which consumers find acceptable (< 29.4).<sup>2</sup>

Percent of WBS Samples That Fall Within Tenderness Thresholds



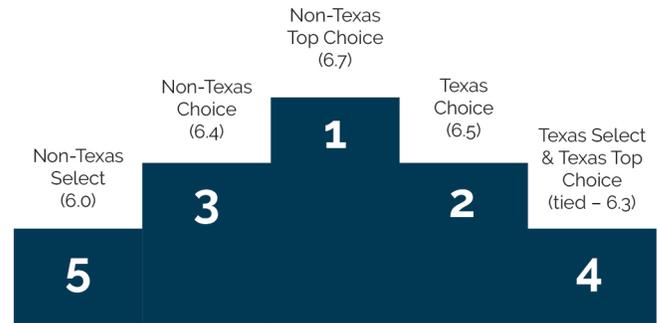
### CONSUMER SENSORY

The consumer sensory panel in this study measured flavor, juiciness, tenderness and overall liking of each steak sample. In terms of both flavor and juiciness, neither geography nor USDA Grade made a significant difference in eating experience.

When rating for tenderness, consumers found that non-Texas Top Choice and Texas Choice steaks had similar tenderness, the highest of the samples evaluated. Non-Texas Choice was the next in tenderness rating followed by Texas Select. Top Choice from Texas and Non-Texas Select were found to be the least tender by consumers. However as stated above, all of the tenderness levels fell within what consumers find acceptable – the differences detected in tenderness were minute.<sup>2</sup>

### OVERALL LIKING

All steaks tested received between a score of 6 and 7 on the 9-point scale. This puts all of them between the “Like Somewhat” and “Like Moderately” points on the scale employed in this study.<sup>2</sup>



### Impact

Top Choice steaks, which are often used for branded programs, did vary by geography on consumer tenderness and overall liking tests. The research presented no explanation for this difference. Outside of Top Choice, geographic source did not play a role in consumer sensory panel ratings or WBS values. This is a significant increase in palatability of Texas beef from the original research. This is due in large part to a commitment to quality by Texas ranchers, feeders and processors.

Terry Maul, chief executive officer of STX Beef in Corpus Christi, Texas, said his team has spent a lot of time working on the live operations side of the business because it all starts with the genetics.

“We are focused on genetics and high-quality cattle to bring the best beef possible to Texas and beyond,” Maul explained. “A couple years ago, this plant graded at only about 34% USDA Choice or higher beef. Since acquiring the plant, we have worked with our trusted cattle suppliers to improve quality and we are now on par with industry standards for grading.”





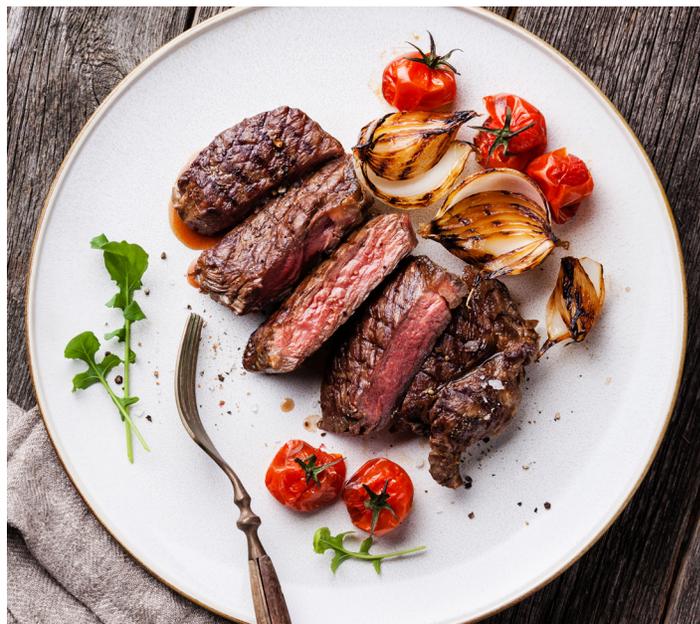
## Major Takeaways

The Texas beef industry has suffered a bias for many years due to a perception that the quality does not match the rest of the country. For meat buyers today, geography should no longer be a deciding factor. Sourcing USDA Select or Choice graded beef from Texas will result in a product that is, in every way, at least as palatable as that raised outside of Texas. When purchasing for a Top Choice branded program, Texas Top Choice beef falls within consumer standards for tenderness and is equally as flavorful as beef raised outside of Texas. While meat buyers may always use their lived experience as a guide, the research doesn't lie – it's time to rethink the bias against Texas beef.

According to USDA Agricultural Marketing Service, in 2021, "industry standard" meant 82.5% of beef nationwide graded was USDA Choice or higher. The state of Texas as a whole still lags behind this number a bit with right at 70% of beef grading similarly. This is a huge improvement for Texas from just 10 years ago, though, when only 50% of beef in the state graded Choice or higher.

In addition to a move toward more Angus genetics, Texas ranchers have also increased their usage of beef on dairy crossbreeds. These crossbreeds, according to research performed at Texas Tech, produce beef that is just as flavorful as conventional beef, with higher levels of tenderness and juiciness.

While this study focused on tenderness, that is not the only – and much of the time not the most important – element that consumers lean on to determine if their beef is acceptable. Research completed in 2019 found that once tenderness reaches an acceptable level (which all steaks in the study did), flavor is the major factor driving consumer acceptability.<sup>4</sup> When that is taken into account, we find that Texas or non-Texas, the flavor doesn't significantly differ, and all the steaks fit within the consumers' expectations for tenderness.



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### Sources:

<sup>1</sup> Department of Animal Science at Texas A&M University, Texas Perception Study: Evaluating Beef Based on Geographic Origin, August 1996.

<sup>2</sup> Department of Animal Science at Texas A&M University, Palatability Assessments of Beef Top Loin Steaks Sourced from Three Quality Grade/Brand Categories from Texas and Non-Texas Processing Establishments, April 2021.

<sup>3</sup> Department of Animal Science at Texas A&M University, Warner-Bratzler shear evaluations of 40 bovine muscles, August 2003

<sup>4</sup> Texas Tech University, Beef Flavor Audit, June 2019

### Full Citation of Summarized Research:

Till, M. C. & Arnold, A. N. & Griffin, D. B. & Hale, D. S. & Kerth, C. R. & Miller, R. K. & Gehring, K. B. & Savell, J. W., (2021) "Palatability Assessments of Beef Top Loin Steaks Sourced from Three Quality Grade/Brand Categories from Texas and Non-Texas Processing Establishments," *Meat and Muscle Biology* 5(1), p.7, 1 – 10. doi: <https://doi.org/10.22175/mmb.11471>

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