The enjoyment from eating beef is derived from three fundamental features: flavor, juiciness and tenderness. Of these, research has identified tenderness as either the primary basis of palatability (Huffman et al., 1996; Platter et al. 2003; Shackelford et al., 2001), or equal to that of flavor (Neeley et al., 1998). Moreover, research studying tenderness classification schemes has demonstrated that consumers are willing to pay a premium for certified-tender beef (Lusk et al., 2002; Platter et al., 2005).

Recently, USDA's Livestock, Poultry and Seed (LPS) Program launched a verification program that allows beef processors to certify beef products as “USDA Tender” or “USDA Very Tender” (USDA, 2012). The two classifications are based on instrument assessed tenderness measurements of Warner-Bratzler shear force (WBSF) or slice shear force (SSF). Thanks to the collaborative efforts of USDA, academia and industry stakeholders, beef processors can now market their products as USDA-certified tender or very tender through product labeling, advertisements and/or promotions if the product meets the verification program requirements (USDA, 2004).

The new tenderness program represents the culmination of 15 years of academic, government and beef industry efforts to address tenderness variability. In the late 1990s, these groups approached the LPS Program about certifying beef based on researched tenderness classification schemes, similar to successful beef certification programs such as Certified Angus Beef®.

The LPS Program originally proposed 13 U.S. Standards for Livestock and Meat Marketing Claims, as a Notice and request for comments, in December 2002 that included a tender claim for meat and meat products. The submitted comments plus the diversity of claims led to the conclusion that this collection of standards should not be pursued. However, the public comments received did foster the need for further work to the proposed tender marketing claim standard.

The LPS Program held a forum on March 2007, in Kansas City, Missouri, to discuss the tender claim proposed in the December 2002 Notice. The goal was to examine the potential development of a tender claim that would provide clear and defined parameters for tenderness classifications. The forum was attended by forty-seven scientific and technical experts representing academia, breed and species organizations, packer/ purveyor/retailer organizations, instrument manufacturers, corporations and individuals throughout the supply chain. The attendees provided the foundation for a large and diverse tenderness working group.

The working group focused on four areas: (1) predictive technologies; (2) methodologies, testing and verification; (3) economic implications; and (4), consumer implications and sensory. These efforts resulted in a second forum held on June 2008, in Gainesville, Florida at the Reciprocal Meat Conference of the American Meat Science Association. Key areas of discussion focused primarily on species affected, setting a minimum tenderness threshold value, qualifying muscles/cuts, and inherent versus enhanced tender meat products. These findings allowed the LPS Program to draft an approach to a tender marketing claim for meat and meat products.

Initially, the LPS Program drafted a voluntary standard for tender marketing claims and Notice that would be published in the Federal Register. However, an internal Departmental clearance review advised the LPS Program to consult with voluntary consensus standards bodies in order to comply with the National Technology Transfer and Advancement Act of 1995 in the development of voluntary consensus standards. This makes sure that agency resources are effectively used and that voluntary consensus standards are in the public interest and are compatible with the mission, authority and priority of USDA.

The LPS Program followed the guidance issued under the Office of Management and Budget Circular A-119, (OMB, 1998) to work with the American Society for Test-
ing and Materials (ASTM) International. ASTM was chosen since other standards have been formulated regarding sensory evaluation, and, livestock and meat through this organization. It was through this organization and in consultation with the working group that a tenderness standard was established by consensus. The standard defined “Tender” minimum tenderness threshold values for WBSF and SSF of 43.1 N (4.4 kg) and 196.1 N (20.0 kg), respectively. “Very Tender” minimum tenderness threshold values for WBSF and SSF were established at 38.1 N (3.9 kg) and 150.1 N (15.3 kg), respectively.

The verification program, based on one of either two tenderness measurements (WBSF or SSF), consists of a documented, statistically-verified quality management system to meet “USDA Tender” or “USDA Very Tender” requirements. The program provides industry with the flexibility and versatility to adapt many types of programs since it is based on performance rather than prescriptive government protocols.

Other programs have been developed to support the Tenderness Certification Program to assure consistent and equitable delivery to participants and consumers. One program has been approved and outlines the performance standards for shear force proficiency testing for laboratories. Another is being developed that will lead to the approval of new technologies for predicting tenderness via carcass measurements at line speeds.

REFERENCES