The National Beef Quality Audit — 2011

A Producer's Guide to Understanding and Improving Quality Grade

The National Beef Quality Audits (NBQA) have been conducted since 1991 to provide guidance for the beef industry to improve the quality and consistency on the U.S. fed steer and heifer population, and ultimately improve beef demand. Funded by The Beef Checkoff, the most recent NBQA provides a glimpse of how much the beef industry has changed in the last 20 years.

Conducted in three phases, the 2011 NBQA is the most comprehensive to date.

- Phase I: Face-to-face interviews with representatives from all production sectors over an 11-month period defined seven quality categories.
- Phase II: Carcass data was collected from more than 2 million carcasses at 28 processing plants across the country.
- Phase III: A survey of 3,755 cattlemen to understand the adoption level of management principles essential to the checkoff-funded Beef Quality Assurance program (BQA).

Forty-one industry leaders representing every segment of beef production met to review the results of the research phases and develop a blueprint strategy to provide new guideposts for improving the quality and consistency of the U.S. beef supply.

One thing that hasn't changed in the last 20 years is consumers' desire for an enjoyable beef eating experience. End-users' "willingness to pay" was evaluated for the first time in the 2011 audit, and food safety and eating satisfaction were important across the board—a clear sign that these beef attributes are fundamental demand drivers.

During the strategy workshop, industry leaders representing every segment of beef production reviewed the audit results and collaborated to determine what the ideal quality grade consist should be. Phase II research revealed an increase in the number of carcasses grading USDA Choice and Prime (61%) since the first audit conducted in 1991 (55%); however, not enough carcasses meet the consist goal for the Prime category. A lost value opportunity of $25.25 per head is the result of falling short of the goal across all qaulity grades.

Table 1. Quality Grade Consist Goal Versus Actual				
	Prime	**Upper 2/3 Choice**	**Low Choice**	**Select**
Actual	2.7%	22.9%	38.6%	31.5%
Goal	5.0%	21.0%	33.0%	31.0%

Seventh in a series of NBQA fact sheets.

Improving quality grade starts at the cow-calf level, and includes a variety of components that contribute to the overall quality and consistency of the beef supply.

Beef quality grading uses the marbling score assigned to the ribeye muscle of a carcass to predict palatability and sort carcasses into like categories. Degree of marbling is the primary determination of quality grade.

Beef quality grading is a voluntary program offered to packers by the USDA Agricultural Marketing Service (USDA-AMS).

There are several things that can be done post-harvest to improve beef tenderness, such as aging and mechanical tenderization. However, the implementation of pre-harvest management practices is critical to maintaining the success already achieved in improving quality grade and the ability to recapture lost value by increasing the number of carcasses meeting quality grade goals. Pre-harvest management tools for improving beef quality include:

Table 3. Glossary

Marbling:
The white flecks of fat interspersed within the muscle (intramuscular fat.)

U.S. Department of Agriculture (USDA) Quality Grades:
A composite evaluation of factors that affect palatability of meat (tenderness, juiciness and flavor). These factors include carcass marutiry, firmness, texture and color of lean, and the amount and distribution of marbling within the lean. Beef carcass quality grading is based on (1) degree of marbling and (2) degree of animal maturity (based on physiological maturity).

Instrument Grading:
Quality grading was performed solely by trained USDA graders since the programs' inception in 1926. In 2006, the USDA-AMS approved the use of instrument grading as an alternative. Beef processing plants can utilize either USDA graders or approved instrument grading technology to categorize beef carcasses by quality and yield grade.

Control of breed/genetic inputs:

- Use genetics to optimize cutability and palatability, and thereby reduce variation in eating quality. This was a top Strategy Workshop priority from the 2011 NBQA.
- Balance crossbreeding programs with production and marketing goals to achieve an optimum balance of *Bos taurus* and *Bos indicus* breeding. While highly adapted to tropical environments, *Bos indicus* cattle consistently have been shown to produce beef that is less tender than beef from *Bos taurus* breeds of cattle. Limiting *Bos indicus* inheritance to 3/8 or less is an effective means to take advantage of heterosis and environmental adaptability, without negatively impacting tenderness.
- Use genetic predictors to improve selection for tenderness and carcass quality attributes within breeds. Expected Progeny Differences (EPDs), selection indexes, and DNA marker-assisted selection using some of the latest genetic advancements offer the potential to select not only sires that excel in carcass quality, but also replacement females with a higher potential to produce calves that will grade well.

Use of feeding systems that enhance product quality:

- Feed a high-concentrate or grain-based ration prior to harvest to increase marbling and beef flavor. Time on a high-concentrate ration also impacts tenderness. Finishing periods of approximately 100 days are optimal to improve carcass quality.

Judicious application of growth enhancement technologies:

- Understand the impact that various implant regimes can have on carcass quality and balance those management considerations with production needs and profitability.
- Use estrogenic implants prudently as some data suggest their repetitive use increases carcass maturity, which can negatively impact tenderness. Additionally, the use of multiple lifetime implants may reduce marbling scores.

Adherence to best management practices:

- Implement an effective preventative animal health program at the cow-calf and feedlot levels. Morbidity during the finishing period due to bovine respiratory disease (BRD) has been shown to reduce marbling scores, and cattle with respiratory tract lesions have been shown to produce tougher steaks than those without.
- Administer animal health products, including using subcutaneous routes of administration whenever possible, to improve tenderness. Intramuscular injections cause muscle trauma, and subsequent wound healing leads to an increase in connective tissue around the site, which negatively impacts tenderness.

Consider the hormonal status of the cattle:

- Castrate male calves as early as possible (prior to the development of secondary sex characteristics) to reduce variations in tenderness.

Minimize pre-harvest stress:

If an animal is stressed to the point that glycogen is depleted from muscle tissue, it can lead to a high final muscle pH that creates an undesirable dark lean color ("dark cutting" beef).

- Train everyone involved in cattle handling in low-stress methods.
- Avoid long transit periods to harvest facilities.
- Don't commingle cattle from different sources immediately before harvest to avoid the increased physical activity that often results.
- Avoid extended fasting (or "dry lot") periods immediately before harvest.
- Realize that extreme weather conditions can be a stressor prior to harvest (extreme heat or cold, wet weather).
- Avoid sending heifers exhibiting estrus to harvest as they are more prone to physiological stress.

For more information about the 2011 NBQA, or to read a copy of the full executive summary, visit www.bqa.org

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Funded by the Beef Checkoff.