

# Cull Cattle Report Card

National Beef Quality Audit gives producers a passing grade on handling and beef quality parameters of market cows and bulls, but producers are encouraged to continue striving for improvement.

by *Kindra Gordon*, field editor

Cattle producers are doing a better job ensuring the well-being and end-product quality of cows and bulls brought to market than they were a decade ago. Those are the findings in the market cow and bull data collected as part of the 2016 National Beef Quality Audit (NBQA).

The audit information, which was made public in September 2017, was collected from 18 commercial cow and bull harvest facilities in 10 states, including California, Texas, Nebraska, Wisconsin and Pennsylvania. Parameters evaluated included transportation, mobility, muscle scores, hide damage, bruising and carcass quality.

Prior to the 2016 audit, the last data collected relative to market cows and bulls was in 2007. During that 10-year span, the recent audit revealed that the industry has made significant improvements in several areas, including animal welfare and handling, hide damage, injection-site location and bruises.

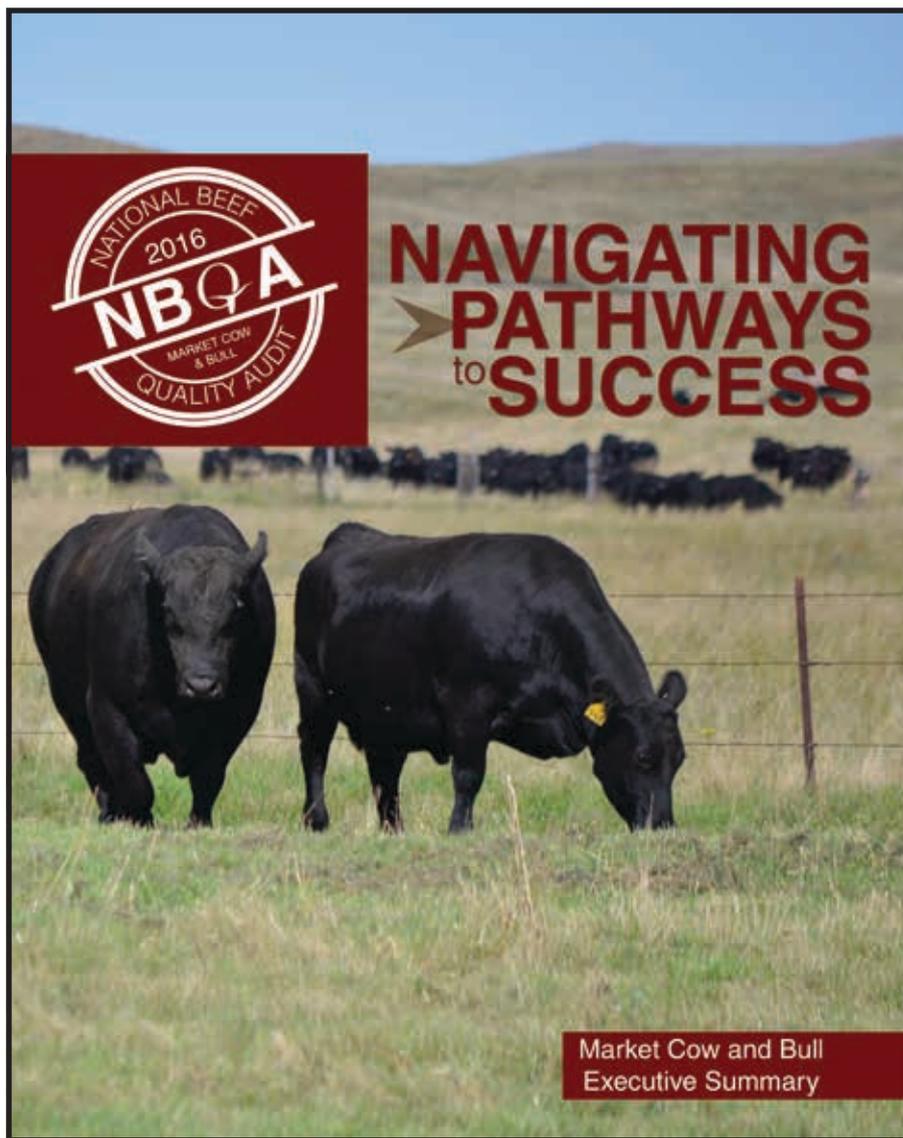
Researchers involved with the market cow and bull data collection and analysis were from eight universities and included Keith Belk, Colorado State University; Deb VanOverbeke, Oklahoma State University; McKensie Harris, Texas A&M University graduate student; and Jeff Savell, Texas A&M University.

The researchers emphasized in their final NBQA written report that the audit provides an opportunity to evaluate the production system and determine where opportunities exist to enhance quality of beef going into the consumer market, while also adding economic value back to the producer. It is estimated cull animals represent up to 20% of the gross revenue for a cattle operation.

## Transportation and mobility

At the 18 harvest facilities, data collection for the live evaluation phase of the audit

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**Table 1: Lost opportunities in quality issues for Market Cow and Bull NBQA (prices in dollars) – 1994, 1999 and 2016 (using 2016 prices)**

	2016	1999	1994
Whole cattle/carcass condemnations	-6.82	-4.11	-11.99
Head, tongue, heart and liver condemnations	-2.56	-1.90	-1.75
Hide defects (brands and latent defects)	-7.47	-6.27	-6.92
Arthritic joints	-1.89	-9.72	—
Bruises	-3.41	-2.24	-3.91
Injection-site lesions (rounds only in 2016)	-0.10	-1.46	-0.66
Yellow-colored external fat	-12.47	-6.48	-2.27
Dark cutters	-1.35	-1.41	-0.06
Inadequate muscling	-31.59	-18.70	-14.43
Excess external fat	-55.11	-10.17	-17.74
<b>Total</b>	<b>-122.77</b>	<b>-62.46</b>	<b>-59.73</b>

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began by assessing transportation and cattle mobility. Ten percent of all trucks arriving at each processing facility were evaluated for type, dimension and use of compartments. Notable findings included:

- ▶ Pot-belly trailers were the primary vehicle to transport cows and bulls to market, followed by gooseneck trailers.
- ▶ Across all loads surveyed, cattle were in transit for an average of 6.7 hours and traveled 283.2 miles.
- ▶ Across all load types, an average of 25.3 square feet (sq. ft.) was offered for animals during transit. This is sufficient space as outlined by the Animal Handling Guidelines, and helps assure animal safety and welfare while maintaining carcass value, according to the researchers.
- ▶ The average number of cattle in a load was 26 head, with an average of four compartments used. The use of trailer compartment divisions does suggest transporters are utilizing the features available to separate cattle by size to minimize carcass bruising and ensure animal welfare. The researchers noted that compared to 2007, today fewer transporters are using the doghouse at the back of a pot-belly trailer, which is designed for hauling smaller-framed cattle.
- ▶ On loads containing both cows and bulls, the researchers found that 64.4% of loads did not separate the two sex groups. They suggest that separating cows and bulls during transport may reduce incidence of carcass bruising.
- ▶ Regarding cattle mobility once unloaded at the harvest facility, the majority (more than 80%) of beef cows and bulls walked normally. Market dairy cows and bulls were also above 75% for good mobility. Compared to the 2007 data, this is a 3.3% increase in sound beef cows, a 14.2% increase in sound beef bulls and a 24.6% increase in sound dairy cows. Researchers noted that this represents producers being

more mindful of the value and quality aspects of culling cows before lameness is observed.

### Live-animal evaluations

At the harvest facilities, one-third of the cattle to be processed during a production day were observed prior to slaughter to collect live-animal characteristics and determine possible reasons those cattle were marketed. In total, 5,470 cows and bulls were assessed. Notable findings included:

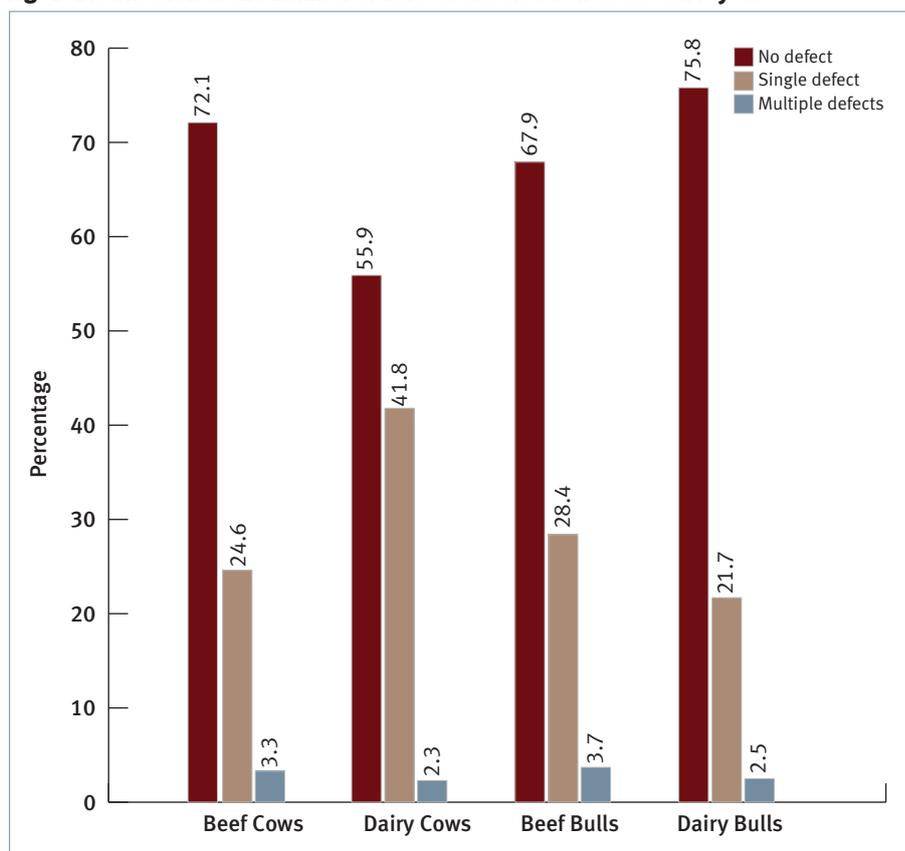
- ▶ Muscle scores and body condition for the majority of market beef cows and beef and dairy bulls was adequate.
- ▶ The majority of beef cattle (72.1% of cows and 67.9% of bulls) showed no observable defects, with about one-fourth of the beef

cows and bulls showing one observable defect that may have been the reason for the animal being marketed. (Dairy cows did have a higher incidence, with about 41% having one observable defect.)

Defects noted included foot abnormalities, udder issues, swollen joints, lump jaw, warts or some type of abscess.

- ▶ Of the cattle observed, 97.9% had no visible knots or swelling resulting from an injection of an animal health product. Of the knots observed, 44.9% were in the neck, which is in accordance with Beef Quality Assurance (BQA) guidelines. These results suggest producers are following BQA recommendations of proper injection-site locations, researchers say.
- ▶ More than 85% of the cows and more than

**Fig. 1: Distribution of the number of defects observed on cattle surveyed**



**Table 2: Mean values for time and distance traveled, number of cattle in the loads, trailer area, and the subsequent area allotted per animal for all trailer types surveyed<sup>1</sup>**

	n	Mean	Std. Dev.	Min.	Max.
Time traveled (hours)	151	6.7	6.4	0.2	9.5
Distance traveled (miles)	145	283.2	273.9	2.0	1,412.9
Number of cattle in load	154	26	13.4	1	47
Number of compartments used	152	4	1.7	1	7
Trailer area (sq. ft.)	151	360.6	110.2	96	467.5
Area allotted per animal (sq. ft.)	151	25.3	35.5	6.4	217.6

<sup>1</sup>Approximately 10% of cattle trucks were sampled within a day's production at each plant.

75% of the bulls observed during the audit were identified with one or multiple ear tags. Among them, 22.1% of dairy cows had an electronic tag, compared to only 4% of beef cows having an electronic tag.

### Harvest floor assessments

A total of 5,278 carcasses with hides still on were assessed for hide color, mud, brands and horns. This represented about one-third of total production for the individual day that research data was collected. Once hides were removed, more than 5,500 carcasses were evaluated for the incidence, location and severity of bruising. Notable findings included:

- ▶ Black hides were the predominant color for beef animals.
- ▶ Fifty-six percent of hides showed little or no mud, an improvement from 2007, when only 42.7% of hides showed no mud. Researchers say this suggests the industry is making improvements to remove mud from hides prior to dressing.
- ▶ Ninety percent of the beef cows (and 82.7% of beef bulls) did not have horns, which was an improvement from 2007 data.
- ▶ Upon inspecting hides for brands, 63.9% of beef cows and 66.4% of beef bulls did not have brands. Hides without brands have higher byproduct value. Producers are encouraged to minimize value loss due to branding by placing brands on the animal's hip or shoulder as opposed to on the ribs or side, researchers suggest.
- ▶ More than half of the cow carcasses assessed in the audit showed some bruising, but the majority (67.3%) of bruises were minimal in severity, requiring less than 1 pound (lb.) of surface trim to be removed. Researchers point out that a significant reduction in carcass bruising of extreme severity has occurred since previous audits in 2007, 1999 and 1994.
- ▶ The greatest percentage of bruising on cows was located on the round and sirloin. On bulls, a higher frequency of bruising was observed on the brisket, plate and flank. Researchers suggest continued emphasis on proper cattle handling may reduce bruise frequency and severity, and increase value of beef carcasses.
- ▶ On the harvest floor, 23% of lungs

were condemned, most often because of contamination. Hearts (15.5%) and viscera (10.1%) were condemned for the same reason. The liver condemnation rate in the 2016 study was nearly 50%, which was similar to the 2007 audit. Liver condemnation was most commonly due to abscess. Researchers say this is an area they will continue to study to gain better understanding.

- ▶ Researchers did express concern that 17.4% of cow carcasses had a fetus present at the time of harvest. In 2007, only 10.7% of cow carcasses were pregnant.
- ▶ Carcass yield and quality were documented on nearly 2,000 selected beef carcasses, and the documented average yield grade for beef cows was 3.1 (compared to 2.6 in 2007), and had an average marbling score of Slight<sup>46</sup> (compared to Slight<sup>14</sup> in 2007).
- ▶ Carcass weights for both beef cows and beef bulls were heavier in 2016. Cow carcasses averaged 684.3 lb., while bull carcasses averaged 876.4 lb. In 2007, beef-cow carcasses averaged 634.9 lb., and bulls averaged 873 lb.

### Management considerations

With several million cows sent to slaughter every year, the researchers involved in the NBQA audit encourage producers to recognize cow and bull meat accounts for a sizeable part of the beef sold in different blends for ground beef, fast-food burgers and specialty sandwiches, and chicken-fried steaks — and therefore, “quality matters.”

Going forward, beef and dairy producers are encouraged to:

- ▶ Continue implementing BQA management measures to eliminate carcass bruising on farm, in transport and at the packing facility.
- ▶ Consider the size and placement of brands to reduce losses in hide value.
- ▶ Pregnancy-test females before harvest.
- ▶ Cull animals before physical defects or health are too severe or cause animal welfare concerns or carcass condemnation.

All segments of the beef industry are encouraged to continue communicating with the beef supply chain about the BQA

practices being employed to ensure beef product quality and safety.



**Editor's Note:** *The 2016 Market Cow and Bull Quality Audit is the second part of the National Beef Quality Audit. NBQA Steer and Heifer results were released in July 2017. Both studies were funded by the National Beef Checkoff Program. For more information about the NBQA results visit [www.bqa.org/national-beef-quality-audit](http://www.bqa.org/national-beef-quality-audit).*

### Face-to-face feedback

One phase of the 2016 National Beef Quality Audit (NBQA) Market Cow and Bull research involved collecting survey information in interviews with industry partners representing 92% of packers, 55% of retail and 25% of foodservice for the U.S. market. Colorado State University's Keith Belk, who assisted with the audit data collection and analysis, says those numbers indicate the audit input gathered is credible data.

The survey data collected from these sources identified the top quality attribute they are concerned about is “food safety,” with it being cited as “critically important.” It ranked 40 to 50 percentage points above other trait categories, which included lean/fat/bone composition, eating satisfaction, visual characteristics, weight and size, how and where cattle were raised, and cattle genetics. Many also indicated a willingness to pay premiums for food safety.

For comparison, interviews with end users in 2007 identified the top cow and bull quality challenges as product uniformity, product quality, buckshot, cattle availability and injection-site lesions.

Also of interest, the researchers gleaned from the data that “how and where cattle are raised” has different meanings to different sectors. Packers and retailers focus on source location (i.e., geography), while government trade organizations are more focused on it meaning production practices, and similarly foodservice is focused on animal welfare practices.

Based on this, Belk notes the industry must do more to define terms, as well as spend time teaching the buying outlets what ranchers and farmers do from a production and management standpoint to enhance beef quality.

“We need to do a better job projecting that cattlemen do care about the quality of what is produced,” he stated.

Additionally, the researchers noted in their report, “... it became apparent in 2016 that fewer beef buyers actually understand the types of cattle from which their products are being sourced. The beef industry needs to do a better job of helping beef buyers understand the products they're purchasing.”

### Improvement seen in incidence of injection-site lesions

Through additional research conducted in 2017 at seven of the National Beef Quality Audit (NBQA) Market Cow and Bull packing plants, data were collected to determine the presence of injection-site lesions. In each facility, nearly 200 outside rounds from beef or dairy carcasses were selected, cut into 1-inch slices and examined for the presence of injection-site lesions. Among beef-type carcasses (677 evaluated) only a 7% incidence of injection-site lesions was observed; dairy-type carcasses (623 evaluated) had a 15% incidence of lesions. This represents a 13% decrease in such lesions in beef carcasses and a 20% decrease in dairy cattle since a similar injection-site audit was conducted in 2000.