

## Do the Right Thing

National quality audit provides a roadmap to improved beef quality.

by *Helen Redli*

**H**ats off to the beef industry! Results of the 2007 National Market Cow and Bull Beef Quality Audit, funded by the beef checkoff, were released in February during the 2008 Cattle Industry Annual Convention and NCBA Trade Show in Reno, Nev. From the production end to the packing plant, auditors found significant improvements in a number of areas concerning both cattle stewardship and beef quality. Dan Hale and Ron Gill of Texas A&M University presented the results of the audit — the good news and some management considerations for improvement — during the Cattlemen's College.®

### Background

In 1994, the industry conducted its first National Beef Quality Audit (NBQA) including market cows and bulls to develop strategies and tactics for improving quality and minimizing economic losses.

The first audit determined the industry lost about \$70 in potential profit for every cow and bull it marketed that year. Producers were not culling in a timely fashion, and cows that were disabled or in poor condition were reaching the market. Cows had inadequate muscling at harvest. Too many market cattle and carcasses were condemned, many times due to excessive bruising.

Auditors concluded that much of the \$70 loss could have been reclaimed if producers would have managed, monitored and marketed their herds more closely to promote value in their

cows and bulls and to improve the quality of beef.

In 1999, a second audit determined that the industry had made significant strides in reducing condemnations and the frequency of disabled cattle, bruising, damage caused by branding, and injection-site lesions, and improved the overall condition of cattle. But since the industry was still leaving \$69 per head on the table, it was clear that much more work needed to be done to make beef better and beef producers more competitive.

### The 2007 audit

Researchers carried out the 2007 National Market Cow and Bull Beef Quality Audit between December 2006 and September 2007. Their goals were to compare results to the 1994 and 1999 audits, determine how far the industry has come in addressing previously identified quality problems, identify areas still below grade and define future challenges.

The audit was comprised of four phases.

During Phase I, researchers conducted audits in packing plants to identify quality defects in cows and bulls in receiving areas and holding pens, and in their carcasses on harvest floors and in chill coolers. They also audited packing plants for fabrication and traceability.

The packing plant phase of the audit is the result of the work of more than

70 auditors, including faculty, staff and graduate students, as well as state beef council personnel and other members of the industry working in collaboration with seven universities.

The audit encompassed 23 packing plants in 11 states, together handling more than 15,000 head per day. The audit surveyed approximately 5,500 live animals, 5,000 carcasses during harvest and 3,000 carcasses in the coolers. It also includes the results of eight end-user audits.

In Phase II, interviews consisting of free response and aided questionnaires were conducted with two interviewees at each plant — one packer and one Food Safety Inspection Service (FSIS) employee. The purpose of the interviews was to determine improvements and declines in the quality of cattle since the 1999 audit.

In Phase III, the audits consisted of interviews with eight end users, looking specifically at subprimal defects, top sirloin center cuts, caps and bottom round flats. They also looked for injection-site lesions and other defects that would cause devaluation.

In Phase IV, researchers, producers, retailers, restaurateurs, packers, processors and government representatives met for a two-day workshop to discuss strategies and tactics to ensure continued quality and animal-handling improvements.

### Phase I: Packing plant audits

During this phase, auditors monitored receiving areas, holding pens, harvest floors, coolers and fabrication units at

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# Convention & Trade Show

23 packing plants. Auditors evaluated approximately 5,500 live animals and 10% of trucks. The auditors also looked at the traceability of the cattle being processed by these plants.

To evaluate traceability, 2% of carcasses were selected randomly to determine whether the animal could be traced back to the farm or ranch. Plant information such as back tags, brucellosis (Bang's disease) vaccination tags and owner information were used for this process. Auction barns, U.S. Department of Agriculture (USDA) offices and actual owners were contacted to identify the point of origin for each animal.

Results of the traceability audits were:

- ▶ 64% of all cattle, 71% of beef cattle and 56% of dairy cattle were traced back to their original owner.
- ▶ 19% of all cattle, 16% of beef cattle and 22% of dairy cattle were traced back to the auction barn.
- ▶ 13% of all cattle, 11% of beef cattle and 16% of dairy cattle were traced back to the cattle dealer/trader.
- ▶ 5% of all cattle, 3% of beef cattle and 7% of dairy cattle could not be traced back past the packing plant.

## Phase II: The interviews

Interviews were conducted with one packer and one FSIS employee at each packing plant. The interviews consisted of free response and aided questionnaires and were used to determine improvements and declines in the quality of cattle since the 1999 audit.

Packing plant and FSIS representatives interviewed acknowledged that the downer rule instituted by the USDA's FSIS has led to several improvements in beef cattle quality.

Packing plant representatives noted a decrease in the number of downer, dead and moribund cattle, and fewer instances of inadequate space on trailers and incorrect loading of cattle.

FSIS representatives also noticed fewer downer, dead and moribund cattle, and fewer instances of inadequate space on trailers. Their observations indicated fewer animals are arriving at packing



PHOTO BY BROOKE BYRD

▶ Results of the traceability audits revealed 71% of beef cattle could be traced back to their original owner; 3% could not be traced back past the packing plant.

plants suffering from advanced lameness and extreme emaciation.

## Phase III: End-user audits

A total of eight end-user audits were conducted. These audits consisted of interviews and looking for quality defects in subprimal cuts as they were being further processed. Auditors looked at top sirloin center cuts, caps and bottom round flats. They looked for any injection site lesions or other defects that cause devaluation.

The top five quality challenges for cull cows and bulls, according to end users as determined during the interview process, were:

- ▶ product uniformity;
- ▶ product quality;
- ▶ buckshot;
- ▶ cattle availability; and
- ▶ injection sites.

End users said that injection-related defects have improved since 1999, including a reduction in the incidence of needles, abscesses, injection-site lesions and bruising. They also noted that there were fewer incidences of buckshot.

End users noted growing concerns over meat from subprimals that are too light or too dark in color. Coloration problems were mainly a concern for steaks cut from top butts.

## Phase IV: The strategy workshop

Representatives of all industry sectors met at a strategy workshop to discuss the findings of the audit and to develop industry-wide recommendations for the improvement of quality defects in cows and bulls.

Overall, participants agreed, the beef cattle industry has made significant quality gains since the last audit:

- ▶ There has been significant improvement in the reduction of downer cattle.
- ▶ All trailer- and truckloads met the American Meat Institute (AMI) guidelines for spacing.

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- ▶ Less than 1% of the cattle traveled for more than 28 hours.
- ▶ Fewer cattle had mud/manure problems than in 1999.
- ▶ More cattle were polled than in 1999.

“The reduction in the incidence of horns is a positive development, because horns can cause substantial bruising to other animals in pens and on trucks,” said Lynn Delmore, professor at California Polytechnic State University (Cal Poly). “Horns can also result in head condemnations during postmortem inspections, because they have to be removed to allow the hide to be removed properly. This exposes the sinus cavity to hair and other foreign materials that violate the zero tolerance standards.”

- ▶ More cattle had no brands than in 1999. The presence of brands causes devaluation of hides, particularly if the brand is located on the ribs.
- ▶ 92% of the cattle in the 2007 audit had identification (ID) (predominantly back tags), so traceability was improved.
- ▶ Prevalent color for beef cattle was black.
- ▶ 97% of the cattle had no evidence of cancer eye (an improvement compared to 1999 and 1994).
- ▶ Fewer beef cows were lame.
- ▶ More dairy and beef cows were in leaner condition.
- ▶ Fewer cattle had inadequate muscle scores.
- ▶ Fewer cattle had bruises than in 1994 and 1999. This is a positive trend

because bruises require trimming in varying degrees depending on the severity of the bruise.

- ▶ Overall, 94% of the cattle had no evidence of injection-site blemishes. Only 2% of beef cows had visible injection-site blemishes.
- ▶ Fewer cattle had arthritic joints than in 1999. This is a very positive trend because packers are required to remove all tissue associated with arthritic stifle joints. Fewer arthritic joints equals less trim loss.
- ▶ No buckshot or birdshot was observed during the audit.
- ▶ Fewer cows were pregnant at harvest than in 1999.
- ▶ Cows and bulls were heavier than in 1999.

**NBQA-2007: Four primary directives**

Participants at the strategy workshop conducted as part of the 2007 National Market Cow and Bull Beef Quality Audit developed four primary directives for the improvement of cow and bull beef.

**1) Be proactive to ensure the safety and integrity of your product.**

Consumer confidence is one of the most important issues facing today’s beef industry.

Market cows and bulls must be free of chemical and physical hazards when they are shipped for harvest. Additionally, both dairy and beef producers must do their part to reduce the incidence of pathogens in the beef supply.

Injectable pharmaceuticals must be administered using recommended guidelines regarding location and route of administration, dosage and specified withdrawal time to ensure cattle are free of antibiotic and other violative residues. Following proper guidelines also will minimize the occurrence of injection-site lesions in whole-muscle products entering the beef trade.

Foreign matter includes broken injection needles, birdshot/buckshot, etc. Producers cannot risk leaving broken needles in the muscle tissue of cattle that ultimately will enter the human food supply and must develop a protocol for removing needles should they break off into the muscle tissue when treating or vaccinating cattle. Producers also must be aware of the growing concern regarding adulteration of beef products with birdshot and buckshot. Use of shotguns to gather cattle must be prohibited. Moreover, efforts of cattlemen to identify sources of birdshot/buckshot by hunters and others should be intensified.

Producers, by their efforts alone, cannot eliminate the occurrence of pathogens in the beef supply. However, they can play an important role in reducing the incidence of pathogenic organisms in or on beef by maintaining biosecurity and cleanliness of animal facilities and by keeping market cows and bulls as clean as possible.

**2) Closely monitor herd health and market cull cattle timely and appropriately.**

Diseases and injuries are common in mature cattle and cannot always be prevented or corrected. In such cases, producers must intervene promptly and appropriately to prevent suffering of afflicted animals and to maintain product quality and safety.

Producers should closely monitor their herds for serious conditions such as cancer eye, arthritis and severe structural problems or injuries, lump jaw, advanced abscesses, chronic illness, and emaciation. Euthanasia should be considered for disposing of “downers” or cattle with advanced or terminal disease conditions that may be more responsible and humane than transporting an afflicted animal to a processing plant in an effort to use it for human consumption.

Producers can reduce marketing losses associated with advanced stages of cancer eye by early detection and correction of the problem. Long term, cattlemen should consider genetic strategies [such as development of expected progeny differences (EPDs) or marker-assisted selection (MAS)] for reducing the occurrence of cancer eye in breeds that are most susceptible to the problem. Finally, the incidence of severe cases of cancer eye would decrease if producers would refuse to sell, and packers would refuse to buy, cattle that have advanced cancer eye lesions.

Marketing losses associated with arthritis and the considerable carcass trim loss that results from removal of arthritic joints also can be reduced by early detection and intervention. Other actions that producers may consider



- ▶ Cows and bulls had a lower fat thickness than in 1999.
- ▶ The majority of cows had a muscle score of 1 or 2.
- ▶ More cows had desirable fat color scores of 1 and 2 (whiter color).

### Initiatives for improvement

1) The cattle industry needs to reduce the use of hotshots and other aggressive driving aids when receiving cattle at packing plants and moving cattle to a restrainer or knock box.

2) Improvements are needed to lessen the incidence of cattle slipping

**Producers should market cull cattle in a timely and appropriate manner, long before their cattle become too thin or too lame for transport.**

health products. Most of these products need to be administered subcutaneously (sub-Q) rather than intramuscularly

when unloading, especially for beef cattle loads.

3) Continued improvement is needed in separating cattle by gender.

4) More knots in the shoulder than in the neck indicates a need for continued education about the proper way to administer animal

(IM). Because NCBA encourages producers to administer products in the neck, knots in this region are not counted as quality defects.

5) More heads and livers were condemned.

6) All producers should realize that the animal care guidelines adopted by NCBA apply to the handling and care of all cull animals.

### Culling

Producers should market cull cattle in a timely and appropriate manner, long before their cattle become too thin or too lame for transport.

Because producers tend to observe the condition of their cattle during

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include training of all personnel to avoid causing injuries to cattle, selection for structural correctness, and improvement of flooring and housing in production facilities (particularly dairies) to reduce the incidence and severity of arthritic joints.

### 3) Use appropriate management and handling practices to prevent quality defects.

A number of quality defects — such as bruises, injection-site lesions, improperly placed brands, dark cutters, cattle that are too thin or too fat, and inadequate muscling caused by emaciation — are manageable and can be prevented.

Producers should implement a quality assurance (QA) program and use “best” management and handling practices to reduce the incidence of such quality defects.

Bruising of market cows and bulls represents a significant source of marketing losses to producers. Producers can reduce the incidence of bruises by not overcrowding cattle in alleyways, chutes and trailers; minimizing the use of prods and whips; selecting against wild or temperamental cattle; training people at all points in the marketing chain with respect to proper cattle-handling techniques; eliminating horns; moving cattle slowly to and from pens; properly designing and maintaining facilities; and improving transportation methods.

### 4) Recognize and maximize the value of your market cows and bulls.

In 1999, returns from the sale of market cows and bulls represented approximately 16% of total returns to the average beef cow-calf operation and about 4% of total returns for the average dairy operation.

Cattle-Fax reported a \$36.19-per-cow profit in 1999. However, without proceeds from the sale of market cows, the average commercial cow-calf producer would have lost \$22.35 per cow in 1999.

The perception of many beef and dairy producers is that market cows and bulls are simply culls rather than an important food source. However, beef from market cows and bulls is widely used in the retail and foodservice sectors in a variety of product forms — not just as ground beef.

It is important that producers begin to view their market cows and bulls as valuable contributors to the beef supply. During the Strategy Workshop, Bill Mies of Elanco Animal Health encouraged producers to have the same mind-set when selling market cows and bulls that they have when they are trading for a new pickup truck.

“Most people will clean up an old pickup truck to add value to it before trading it in on a newer model,” Mies says. “The same is not true for most producers when selling cows and bulls.”

Mies suggested that perhaps market cows and bulls should be viewed as “trade-ins,” and not just “junk” intended for disposal.

Producers should identify opportunities to add value to their market cows and bulls. For example, it may be possible to feed cows for a short period prior to marketing to increase weight and improve body condition and carcass grade characteristics. This brief feeding period may also help identify obviously ill cattle that should be rendered.

Moreover, small-scale operators may be able to expand marketing opportunities by pooling cattle resources and forming cooperative marketing agreements. Livestock auction markets can play an integral role in the development of expanded marketing opportunities for producers.





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pregnancy-checking, calving and branding, this can lead to seasonal market overloads and product quality deficiencies within these cattle. This reduces income opportunities for cattlemen.

Producers should conduct frequent observation of their cattle to prevent loss of body condition to the point where the animal is emaciated.

Producers should consider marketing cattle that show structural and/or disease problems rather than holding on to them to try to get one more calf. Holding cattle for a longer period of time decreases the quality of the cull cow and raises the possibility that she will be condemned at harvest, returning no income.

Producers need to make culling decisions prior to the application of drugs, insecticides and wormers, which might leave a violative residue if the animal is marketed prior to the withdrawal date.

Producers should cull animals with body condition scores (BCS) of 3 or less. These cattle need to possess sufficient soundness for transport and sale.

In some cases, producers should consider a reconditioning program to increase muscle and fat deposition of their cull cattle prior to marketing.

**Transport and handling of animals**

All persons involved in the handling and transport of beef and dairy animals should follow the guidelines defined in the Master Cattle Transporter program. Judicious use of driving aids such as electric prods (hot shots) is always recommended. Truckers should receive more training.

**Risk management and information management**

Producers should maintain recordkeeping systems to verify their Best Management Practices (BMPs). Production records should document the use of animal health products as well as the animal husbandry practices that have

been employed prior to the animals being marketed.

The result will be a decrease in liability for issues that may occur after harvest. And, integration of existing ID systems will improve traceability of the product, such as the integration of tag numbers and visual animal ID tags.

**Get to work**

This overview of the audit results is good news and good information for the future. Take a minute to give yourself a pat on the back for all the ways in which the beef industry has improved to address the concerns pointed out by previous audits. Then, roll up your sleeves and get to work on those areas that still need improvement.

The audit was funded by the Cattlemen's Beef Promotion and Research Board (CBB) and sponsored by the National Cattlemen's Beef Association (NCBA). The Executive Summary of the 2007 National Market Cow and Bull Beef Quality Audit will be available soon. Check [www.beefboard.org](http://www.beefboard.org) for more information.



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**Code of ethics**

To facilitate implementation of the four directives, participants in the 1999 Strategy Workshop developed a Quality Assurance Marketing Code of Ethics for use by cattlemen, dairymen and packers when it comes to marketing cows and bulls. It follows:

I will only participate in marketing cattle that:

- ▶ Do not pose a known public health threat;
- ▶ Have cleared proper withdrawal times;
- ▶ Do not have a terminal condition (including advanced lymphosarcoma, septicemia, etc.);
- ▶ Are not disabled;
- ▶ Are not severely emaciated;
- ▶ Do not have uterine/vaginal prolapses with visible fetal membrane;
- ▶ Do not have advanced eye lesions; and
- ▶ Do not have advanced lumpy jaw.

Furthermore, I will:

Do everything possible to humanely gather, handle and transport cattle in accordance with accepted animal husbandry practices.

Finally, I will:

Humanely euthanize cattle when necessary to prevent suffering and to protect public health.

