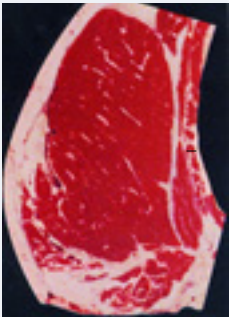


III-C. Carcass Quality Traits

Industry Targets for Carcass Traits

Improving quality and consistency begins with understanding the industry targets for carcass traits. As always, targets for carcass defects (injection site blemishes/lesions, bruises, dark cutters, liver condemnation, etc.) are zero.

Trait		Target
Yield Grade		< 3.0
Quality Grade		> Select, A-Maturity, No Dark Cutters
Carcass Weight		> 600 lbs.; < 900 lbs.
Ribeye Area		>11.0; < 15.0
Brands		No Hot Brands

Quality Goals & Performance Data:

To improve quality and consistency, it is necessary to receive feedback on the performance of cattle that leave the production unit. Use this information as a basis for setting goals to increase performance. Producers must realize that if cattle don't gain or convert efficiently, or if cattle grade Standard, or if carcasses have yield grades of 4 or 5, they must make adjustments to improve the consistency of not only the beef products from *their cattle*, but also the beef products within the *whole industry*.



Excessive External Fat

Excessive external fat cost producers \$50 per head of fed cattle marketed (2000 NBQA).

Typically, this loss plus the carcass quality defects discussed in other sections of this BQA Manual, are passed along to all producers as packers figure lost value into the prices paid for all cattle sold. In addition to average lost value to the market, excessive external fat creates individual carcass discounts. Carcasses with adequate muscling and without excess external fat are rewarded for quality -- particularly when sold on a grade and yield basis. Responses from the National Beef Quality Audits indicated that beef quality improvements have been demonstrated by: the increased availability of closely trimmed beef, heightened producer awareness of quality problems, improved cutability, and extended shelf-life or retail case-life of beef products. At the same time, the results of the audits show that more work remains to be done to improve product quality and consistency -- particularly eating quality and consistency.



Inadequate Muscling

Cutability, the percentage of boneless, closely trimmed retail cuts from a beef carcass, **is reduced by both excessive external fat and inadequate muscling**. Data from the 2000 National Beef Quality Audit suggests that U.S. beef cattle are losing muscle compared to previous audits. Nearly 40% of the beef carcasses studied were below industry targets for ribeye size -- the accepted measure of total carcass muscle. This decrease in cutability has resulted in a significant loss in carcass value. Conservative estimates based on the 2000 audit point to **a loss of approximately \$5.00 per hundredweight due to inadequate muscling**.

Producers must understand that **breeding and selection practices significantly impact muscling**, as it is one of the most highly heritable genetic traits.

Muscling is more than a beef quality issue, it is also a feedlot efficiency issue. Feeding practices that allow for the full expression of lean tissue (muscle) growth and development prior to finishing, will also positively impact carcass cutability, even in lighter-muscled cattle. Finally, muscle growth is energetically more efficient than fat accumulation, and this fact translates into **better overall feed efficiency and a lower cost of gain in cattle with more muscle.**



Dark Cutters

The 2000 NBQA reported that dark-cutting beef carcasses (dark cutters) result in a loss of \$5.43 per beef animal harvested in the U.S. **Dark cutters result from pre-harvest stress**, which depletes muscle glycogen stores. Without sufficient glycogen in the carcass, lactic acid cannot be produced to reduce the pH of the meat. The result is lean that is dark, firm, and dry. Weather, growth promotants, genetics, disposition, and handling practices before harvest -- all play a role in causing dark cutters.

Reducing Dark Cutter Losses

Feedlot data were obtained from nine large commercial feedlots by Colorado State University scientists (Scanga et al., 1998). Data sets were compiled for the period of June 1, 1993 through July 31, 1996 -- totaling 2,672,223 cattle. Of these, 18,106 were dark cutters, resulting in \$4,024,058 in losses (\$1.51 per animal harvested).

- ▶ **FEEDLOTS:** Mean percentages of dark cutters per pen differed between individual feedyards. This indicates that the incidence of dark cutters was in part due to different management philosophies or the structural attributes of the feedyards. This may also be affected by when cattle are harvested during the week. Cattle that are “start-up” cattle for the week can be expected to have more dark cutters because they may have more time to stand around than other sets of cattle brought in during the week.
- ▶ **IMPLANTS:** Data from Colorado State University indicate that cattle tend to have a lower incidence of dark cutters per pen when the time from reimplantation to harvest was longer than 100 days.
- ▶ **ENVIRONMENT:** The occurrence of dark cutting beef is highest during very cold weather combined with precipitation. This increases the rate of body-heat loss and elicits shivering. The incidence of dark cutters is also high in hot weather or when large fluctuations in temperature occur over short periods of time. When temperature fluctuated more than 10 degrees in a 24 hour period, the incidence of dark cutters also increased.
- ▶ **MIXING DIFFERENT GROUPS OF CATTLE:** Don't mix strange animals. Fighting to establish a new social order 24-48 hours prior to slaughter, can increase the incidence of dark cutters. Mixing bulls can cause dark cutters within 90 minutes.
- ▶ **CROWDING:** Crowding can increase the incidence of dark cutters.
- ▶ **GENETICS:** Temperament appears to be inherited. Producers are encouraged to add disposition as a selection criteria.

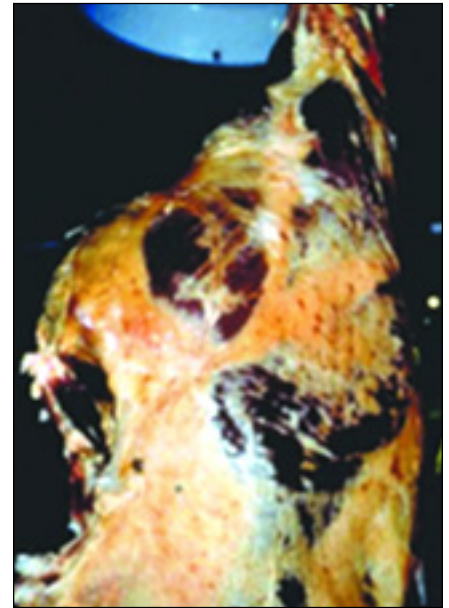
Reducing Bruising in Carcasses

Bruising costs the beef industry \$22 million annually in carcass trim at the time of processing. The most common cause of bruising is a hard bump against a protruding object or horns.

Rough, careless handling causes more than 50% of all bruises. It is advised not to rush livestock. Let them follow the leader and move at their own pace. Following are recommended practices to help reduce bruising:

- ▶ **HORNS:** Groups of horned cattle have more bruises than polled cattle; however, tipping will not reduce bruising. Dehorning of cattle (manual or genetic) is recommended. Over-crowding horned cattle on a truck will increase bruising.
- ▶ **GATES:** A common cause of loin bruises is throwing a gate into the side of an animal. A bruise will result if the animal becomes wedged between the end of the gate and the fence.
- ▶ **PROTRUDING OBJECTS:** Broken boards, nails and exposed bolts should be eliminated. Check facilities by looking for shiny, rubbed spots or tufts of hair. Sliding gates (vertical or horizontal) should be padded with large-diameter hose. Corners can be padded by cutting strips from old tires or conveyor belts.
- ▶ **FENCING:** Planks, sheet metal or other fencing materials should be installed on the side of posts toward the cattle. If animals are being handled on both sides of the fence, install a belly rail to prevent them from catching hips on the posts. The area from 28 inches to 52 inches from the floor is the hazard zone.
- ▶ **FLOORING:** In new facilities with concrete floors where cattle are handled, prevent slipping and falling by scoring the concrete with an 8-inch diamond pattern with grooves one inch deep. In existing facilities, roughen the concrete or make a grid from 1-inch steel bars. Be sure to grind down sharp edges and let the concrete cure before permitting animal traffic.

See Section III-E. Cattle Care & Handling Guide for more Best Management Practices, which help reduce quality defects.



Grooved concrete floors and scored rubber padding, improve footing and comfort. This is most important for high traffic areas like parlor holding pens and feedbunk alleys.

