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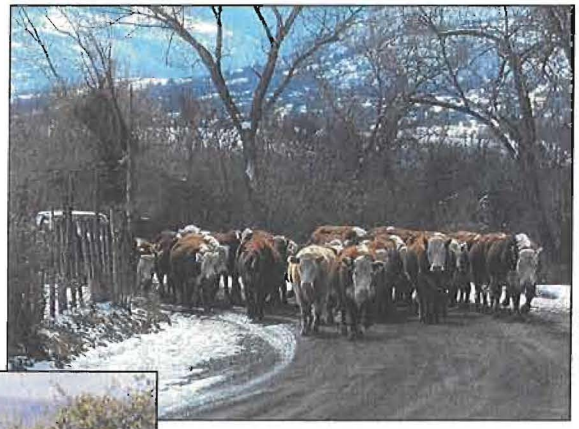
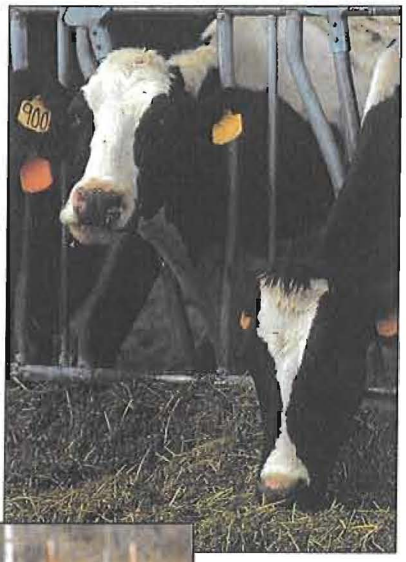
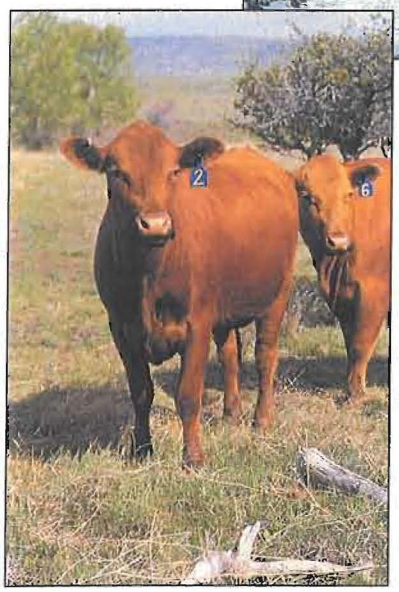
Executive Summary of the 1999 National Market Cow and Bull Quality Audit

Improving the Consistency and Competitiveness of Market Cow and Bull Beef & Increasing the Value of Market Cows and Bulls







The 1999 National Market Cow and Bull Quality Audit

Conducted by
Colorado State University

Funded by
Cattlemen's Beef Promotion and Research Board

Sponsored by
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ANSWER THE CALL

Manage Monitor Market

Are you doing a better job of producing, transporting and marketing your cows and bulls than you did in 1994? Is the beef you produce from your cows and bulls safer, more wholesome and higher in quality than it used to be? Have you adopted quality assurance management and marketing practices to promote value in your cattle?

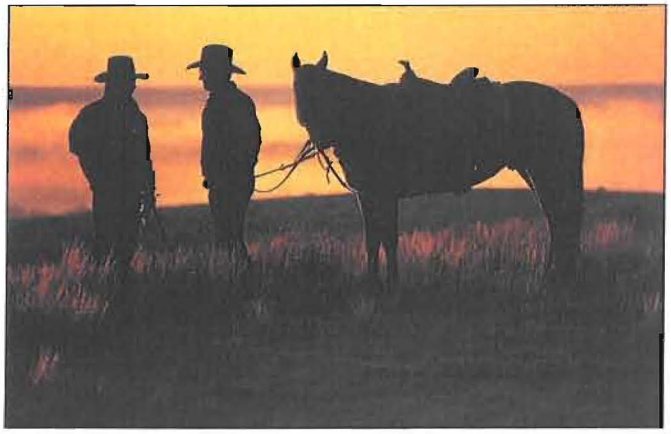
These are tough questions, questions that all producers should ask — no matter how many cattle you raise, or whether you are dairy or beef producer. After all, beef quality, consistency and competitiveness begins at the ranch or farm, long before consumers buy your product.

That's why in 1999 researchers set out to determine how well the industry is doing when it comes to answering these questions. The study they conducted, called the 1999 National Market Cow and Bull Quality Audit, was sponsored by the National Cattlemen's Beef Association. It was a follow-up to the 1994 National Non-Fed Beef Quality Audit, which found cow and bull beef falls short when it comes to quality.

Overall, the 1999 Audit resulted in both good and bad news for producers.

On one hand, the future for the U.S. beef industry is bright, and beef produced from cows and bulls is a vital element when it comes to consumer satisfaction. For the first time in more than two decades, per-capita beef demand is on the rise. Cattle prices are improving. New beef products are entering the marketplace at an unprecedented pace, and the industry has become more focused on the consumer than ever before.

On the other hand, the industry continues to be faced with many product-quality challenges. Government regulators are looking more closely at antibiotic residues in cow and bull beef. And, like never before, consumers are more sensitive to food safety issues — whether perceived or real — and in today's fast-moving, media-frenzied marketplace, demand for beef can be good today, but gone tomorrow.



Improving the quality and value of market cows and bulls is an attainable goal. Based on 1999 Audit results, approximately 96% of market cows and bulls have clear eyes, 99% show no evidence of lumpy jaw, 96% are without abscesses, 85% are sound or have only minor structural problems, 99.8% show no evidence of prolapse, 97% have a body condition score of 3 or higher, 90% are free of excessive hide contamination, and 99.7% are free of birdshot/buckshot. In this case, success will come not by doing 1 thing 100 percent better; it will come by doing 100 things 1 percent better.

In the end, the Audit's message is this: *to promote value* in market cows and bulls, producers should *manage* their cow herds to minimize quality shortcomings and defects, *monitor* the health and condition of market cows and bulls and *market* cows and bulls in a timely manner.

"Improving the quality and value of market cows and bulls is an attainable goal," says Dr. Tom Field of Colorado State University. "Based on 1999 Audit results, approximately 96% of market cows and bulls have clear eyes, 99% show no evidence of lumpy jaw, 96% are without abscesses, 85% are sound or have only minor structural problems, 99.8% show no evidence of prolapse, 97% have a body condition score of 3 or higher, 90% are free of excessive hide contamination, and 99.7% are free of birdshot/buckshot. In this case, *success will come not by doing 1 thing 100 percent better; it will come by doing 100 things 1 percent better.*"

THE NATIONAL MARKET COW AND BULL QUALITY AUDIT

Goals

1. To conduct a national quality audit of U.S. market cows and bulls, their carcasses and their dress-off/offal items for the U.S. beef industry.
2. To compare the results of this Audit to those of the 1994 Audit.
3. To establish baselines for present shortfalls.
4. To identify targets for desired quality levels by the year 2009.

Objectives

- ✓ To identify and quantify, numerically and monetarily, the incidence of quality defects among U.S. market cows and bulls, their carcasses and dress-off/offal items.
- ✓ To assess the economic impact of quality defects in market cows and bulls.
- ✓ To develop strategies and tactics needed to reduce incidence of specific quality defects.
- ✓ To compare the specific results of this Audit to those of the 1994 Audit.
- ✓ To provide recommendations to the U.S. cattle industry to minimize losses due to quality defects.

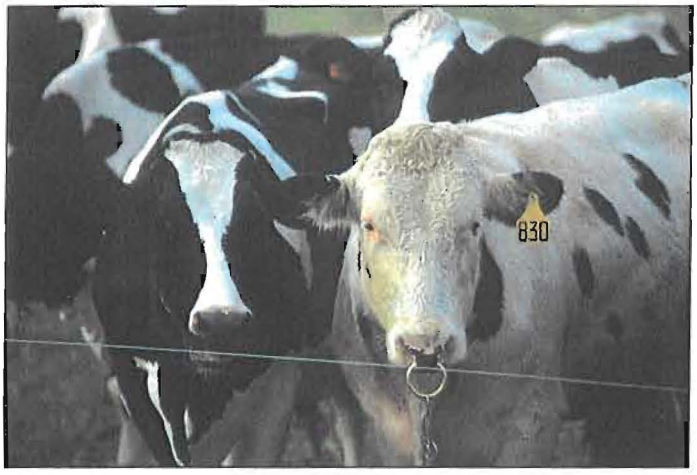
Background

The National Cattlemen's Beef Association conducted its first market cow and bull audit in 1994. That Audit, called the National Non-Fed Beef Quality Audit, discovered that the industry lost about $70 per cow or bull marketed that year because of product-quality defects.

The 1994 Audit came to five major conclusions that were delivered to the industry:

1. Too many producers do not harvest cows and bulls in a timely fashion.
2. Too many beef and dairy cows have inadequate muscling at harvest.
3. Too many market cows are disabled prior to harvest.
4. Too many market cattle and carcasses are condemned.
5. Too many carcasses have excessive bruises.

To overcome these problems, the Audit recommended that producers *manage*, *monitor* and *market* their cowherds in order to promote value in their cows and bulls and improve the quality of beef. Had producers followed these guidelines, the Audit concluded, the industry could have recaptured much of the $70 by eliminating or reducing the quality shortcomings. It was determined that better management could have recaptured $14.60, monitoring $27.65, and marketing $27.65.



Producers shouldn't work too many cattle at one time and should monitor trailers and sharp corners. They also need to understand that they need to have water available, prior to transport, to prevent dehydration of cows and bulls.

– Burley Smith, Lone Star Packing, Texas

THE 1999 AUDIT

Researchers began the National Market Cow and Bull Quality Audit in the summer of 1999. It was comprised of three phases.

During Phase I, researchers met face to face with industry leaders and asked them to quantify quality defects in U.S. market cows and bulls, their carcasses and their dress-off/offal items.

During Phase II, researchers conducted audits in packing plants to identify quality defects in cows and bulls in holding pens, and their carcasses on slaughter/dressing floors and in chill coolers.

In Phase III, researchers, industry leaders, packers, processors, restaurateurs and cattle producers met in Denver, Colo., to discuss the 1999 study and to compare results of the 1994 and 1999 Audits. They also developed strategies to reduce the incidence of product-quality shortcomings, correct non-conformities and improve the quality, consistency and competitiveness of market cows and bulls.

PHASE I: FACE-TO-FACE INTERVIEWS

During Phase 1, researchers conducted Face-To-Face Interviews with packers, auction market operators and representatives of affiliated organizations, which included government agencies and trade associations. Interviewees were asked to rank the severity of producer-controllable problems in market cows and bulls, their carcasses and their dress-off/offal items.

Packer Interviews

Interviews with packers revealed that carcass bruises and arthritic joints continue to be the packing industry's top concern in regards to quality in cow and bull carcasses. When these defects occur, packers must trim them from carcasses, resulting in a substantial economic loss.

Packers also ranked antibiotic residues and birdshot in cow and bull carcasses as top concerns because of their potential food safety implications.

Packers said producers can alleviate the severity of many carcass defects by culling cattle earlier and marketing in a more timely fashion, handling cattle properly, implementing herd-health management practices, branding appropriately, managing horns, improving transportation, eliminating bruises, and managing the condition and leanness of cows and bulls.

"Producers shouldn't work too many cattle at one time and should monitor trailers and sharp corners," said Burley Smith of Lone Star Packing. "They also need to understand that their cattle need to have water available, prior to transport, to prevent dehydration of cows and bulls," he pointed out.

In follow-up interviews, researchers asked 12 packers whether the quality of market cows and bulls had improved, declined or experienced no change since 1994. Seven responded that the quality had stayed the same; four said it had improved, while one said it had declined.

For the most part, producers have done a good job of moving injection-site location to the neck region on calves, but producers still tend to process cows and bulls as they did years ago.

— Dr. Bob Bohlender, DVM, Nebraska

TABLE I

Packers: Most Frequently Cited Problems
Bruises
Antibiotic Residues
Birdshot/Buckshot
Arthritic Joints
Yield (DP and product/carcass)
Condition/Leanness
Condemnation Rate

Auction Market Interviews

The research team also interviewed five auction market operators in five states to obtain information about their business practices and on the quality of market cows and bulls sold through their facilities.

TABLE 2

Affiliated Organizations: Most Frequently Cited Emerging Issues

Pricing and Prompt Payment
Antibiotic Residues
National ID and Verification
Pathogen Control
Injection-Site Lesions
Birdshot/Buckshot
Antimicrobial Resistance

The incidence of birdshot in cattle/carcasses is beyond comprehension. Birdshot occurrence in beef should be the easiest thing to prevent and should be corrected — now. Anyone who owns cattle and knows the impact of birdshot in the product will not allow their cattle to be shot.

— Gene Wiese, Wiese Cattle Company, Iowa

On average, these markets sell 375 market cows and bulls per week. The majority of these cattle originate from within about 200 miles of the market. About 90% of these cattle are sold to packers for harvest, while approximately 10% of them return to production.

Two interviewees indicated that the overall quality had not changed during the past five years. The remaining three said quality had improved. They attributed this improvement to better genetics and culling practices by producers.

At the same time, auction markets continue to face a wide range of quality challenges, and operators underscored the need for more timely culling by producers. "Some of the cows and bulls we receive should have been marketed two years earlier," commented an auction market operator.

Auction market owners/operators believe an effective way of improving the quality and value of market cows and bulls is through education of producers, veterinarians, truckers, auction market representatives and packers. They recommended producers improve timeliness of marketing to maximize the value of their market cows and bulls, diagnose disease as early as possible, and identify the proper locations and methods for branding and administering injections.

Affiliated Organization Interviews

As their top emerging issue, representatives of affiliated organizations ranked pricing of market cows and bulls as well as the possibilty that pricing provisions could change if packers were to decide to delay payment for cattle suspected of having arthritis or chemical residues.

Interviewees pointed out that producers can improve quality and value by improving the timing of culling and marketing to capitalize on seasonal upswings in prices; participating in partnerships or other collective marketing situations; adopting source- and process-verification systems; enhancing the value of market cow and bull products; increasing export marketing of cow and bull products; and standardizing trade language in order to clearly quantify the quality and value of cow and bull carcasses.

Affiliated organizations also listed antibiotic residues as an emerging concern. Birdshot or buckshot found in cow and bull carcasses was also an emerging issue of affiliated organizations. As a leading producer-related complaint from the National School Lunch Program, the nation's largest purchaser of ground beef, birdshot poses a potential food-safety problem for the industry if not addressed by producers.

Another emerging issue was antimicrobial resistance. Affiliated organizations believe producers can take proactive steps by following "Judicious Antimicrobial Use Guidelines." They also felt it was important for individuals to find a way to control pathogens before cattle are shipped to packing plants.

PHASE II: LIVE CATTLE, SLAUGHTER-FLOOR AND COOLER ASSESSMENTS

In the summer and fall of 1999, an audit team conducted in-depth, on-site audits at 21 packing plants in six geographic regions. These plants harvest approximately 50% to 60% of the Federally Inspected Slaughter of market cows and bulls each year. The teams collected live animal data on a minimum of 20% of each plant's daily kill of market cows and bulls.

Holding-Pen Audits

In holding-pen audits, researchers evaluated a total of 3,969 market cows and bulls. Overall, beef cattle comprised 68% of the cattle evaluated, dairy cattle 31%, and approximately 1% of the cattle were beef-dairy crosses. Fifty-six percent of the cattle were beef cows, while 28% were dairy cows. Beef and dairy bulls comprised 10.5% and 2%, respectively.

Cancer-eye — Ninety-five percent of the cattle had no growth or tumor on or around either eye. About 1.4% exhibited a small, benign tumor generally found on the lower eyelid; 0.9% had a small, white, elevated plaque on the eyeball; 1.4% had a tumor that was vascular in nature; 0.4% had tumors with bone or lymph involvement; and 0.2% had a prolapsed eyeball.

Lumpy Jaw — Ninety-nine percent of market cows and bulls showed no sign of Lumpy Jaw. For those that did have this condition, it was more prevalent in beef cows than in dairy cows and more common in cows than in bulls.

Horns — Horns can cause substantial bruise damage to other cattle in the pens and on trucks. Presence of horns can also result in head condemnations during postmortem inspection because

TABLE 3

Incidence of Bruises and Severity of Trim Loss

Severity of Bruises	% Incidence					
	Cows & Bulls	Cows	Bulls	Trim Loss (Lbs.) by Severity Category	Trim Loss (Lbs.) by Primal Cut	
Extreme	2.2	2.4	1.0	15.0	Round	2.21
Major	19.4	21.6	6.9	4.78	Top sirloin	2.82
Medium	38.0	41.7	16.7	1.42	Flank/Plate	4.59
Minor	72.4	77.2	44.4	0.69	Loin	2.84
No bruises	16.8	11.8	47.1	none	Rib	2.43
					Chuck	2.44

TABLE 4

Incidence of Arthritic Joints, Subsequent Trim Loss and Projected Carcasses Affected

Condition	Actual Observed Incidence	Projected Number of Head Affected[1]
One Arthritic Joint	7.37%	456,203
Two Arthritic Joints	3.97%	245,743
Total	39.4 lbs.	701,946 Head

If estimated trim loss/joint is 39.4 lbs. and 701,946 head are affected, then total trim would be 37,338,946 lbs.

[1]Projected numbers for 1999 are based on the estimated 1999 Federally Inspected Slaughter for market cows and bulls (6,190,000 head).

they must be removed to allow for proper removal of the hide. This process exposes the sinus cavity to hair or other foreign material that violates the zero tolerance standards and results in significant economic loss.

Approximately 10% of cattle had "minor horns," such as scurs or small horns. About 13% of cattle had large, protruding horns. Horns were more prevalent among bulls: 5.1% of dairy bulls had major horns and 26% of beef bulls had major horns. Major horns were also more prevalent among beef cows (15.7%) than in dairy cows (1.8%).

Brands and Hide Damage — About 5.6% of the cattle had shoulder brands, 21.1% had rib brands, and 36.4% had hip brands. Cattle with no brands (native hides) comprised 53.5% of the sample population, while 25.3% of the cattle had one brand, 19.6% of the cattle had two or three brands, and 1.6% of the cattle had four or more brands.

The majority of dairy cows (82.4%) had native, unbranded hides, while only 40% of beef cows were not branded. Rib brands — the brands that cause the greatest devaluation to the hide —were much more common in beef cows (28.8%) than in dairy cows (4.5%). Beef cows also had more multiple brands: 29% of beef cows and 2.7% of dairy cows had multiple brands.

Two years ago, I visited a packing plant to find out why their bruise percentages were so high. Most of the bruises I observed were old bruises which had occurred during the transporting and marketing processes and before the cows reached the plant.

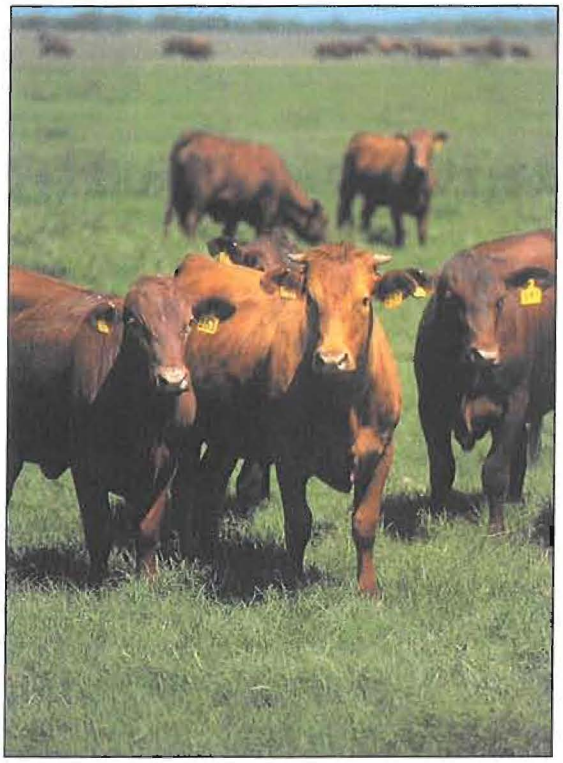
— Dr. Temple Grandin, Colorado State University

Researchers also evaluated other causes of hide devaluation. Latent defects — those caused by scratching and/or scarring of the hide — were identified in 61% of the cattle evaluated.

Insect damage was identified in 2.4% of the sample population. This defect was most common in beef bulls (8.6%).

Knots and Abscesses — Visible knots on live cattle were most commonly found in the neck region of the animal. Since NCBA encourages producers to administer animal-health products subcutaneously in the neck, knots in this region do not represent a "quality defect."

However, knots were not confined to the neck region, nor were they all indicative of subcutaneous administration of medicines. This quality



defect was generally more prevalent among dairy cattle, with 4.2% of all dairy cows showing evidence of injection-site knots in the round.

Unfortunately, injection-site knots visible in the live animal are only indicators of the number of injection-site lesions that may actually be present in the carcass. It is evident that any intramuscular injection of animal-health products will cause tissue damage even though a visible "knot" may not form.

Abnormal Swelling and Abscesses — These defects can result from trauma during transport or include visible tumors and abscesses.

Abnormal swelling and abscesses were most prevalent among dairy cattle and were thought to be associated with confined housing environments under which dairy cattle are commonly raised. Both dairy cows and bulls had a higher frequency of abscessed knees and/or hocks (6.2% and 5.1%, respectively) than beef cattle. Dairy cows and bulls also had the highest frequency of abscesses on the hooks and pins (2.2% and 2.5%, respectively).

Lameness — Of the cattle evaluated in the study, 11.9% of beef cows, 18.1% of beef bulls, 14.5% of dairy cows, and 16.5% of dairy bulls had arthritis or a stifle injury. Packers are required to remove all

tissue associated with an arthritic stifle joint, and because of this reason, they are very concerned about cattle with this condition.

A condition that should be of particular concern to beef and dairy producers is the number of "disabled" cattle identified in this Audit. Among beef cattle, 0.7% of all beef cows were disabled, while 1.5% and 1.3% of dairy cows and dairy bulls, respectively, were disabled.

Udder Defects — The most common udder defect in beef cows was bottle teats (9.5%), while mastitis was most common in dairy cows (8.4%). Mastitis is the most common disease in dairy cows, and researchers estimate that each year 30% of dairy cows have clinically apparent inflammation of the mammary gland.

Muscling — Among beef cows, 44.4% were inadequately muscled. Among dairy cattle, 72.5% were inadequately muscled.

Body Condition Score — All cattle were evaluated using the nine-point body condition scoring (BCS) system. Cattle that were extremely emaciated — those barely having energy to stand — were given a BCS of one. Extremely obese cattle were assigned a BCS of nine.

Among beef cattle, 2.3% of cows and 1.2% of bulls scored a one or two, while the corresponding percentages for dairy cows was 5.4% and 1.3% for dairy bulls. A relatively high percentage of the cows received a BCS score of four or less — 40.6% for beef cows and 57.5% for dairy cows.

Among beef cattle, 4.5% of cows and 0.2% of bulls were identified as having a BCS of eight or nine. However, dairy cattle were much less likely to be overly fat, with just 1% of dairy cows and no dairy bulls being assigned a BCS score of eight or nine.

Visible Contamination on Hides — Quantifying the degree of hide contamination is new to the 1999 Audit. Hide contamination was found on 84% of dairy cows and 93.1% of beef cows. The hide contamination on 82.8% of the beef cows was wet and likely accumulated during transport or in the holding pens at the packing plant. Beef bulls were most likely to have fecal contamination around their rump (61.6%), followed by beef cows (52.4%), and dairy cows and bulls (39.7% and 38%, respectively).

TABLE 5

Carcass and Offal Condemnation Rates, 1994 Versus 1999, and Projected Condemnations for 1999[1]

Product	% Condemnation		Projected Condemnations, No. Head
	1994	1999	1999
Whole Cattle/Carcasses	2.6	1.1	68,090
Liver	30.8	24.1	1,491,790
Tripe	44.8	19.2	1,188,480
Tongue	5.9	9.5	588,050
Heart	11.0	7.2	445,680
Head	11.1	6.7	414,730

[1]Projected numbers for 1999 are based on the estimated 1999 Federally Inspected Slaughter for market cows and bulls (6,190,000 head).

TABLE 6

Incidence of Bruises, 1994 Versus 1999

Severity	% Incidence			
	Cows		Bulls	
	1994	1999	1994	1999
Extreme	N/A	2.4	N/A	1.0
Major	30.7	21.6	7.4	6.9
Medium	53.9	41.7	19.5	16.7
Minor	51.5	77.2	25.3	44.4
None	20.3	11.8	63.8	47.1

Slaughter-Floor Audits

Researchers evaluated 5,679 carcasses during 24 on-site audits at 21 different packing plants.

Bruises — For all primals, just 16.8% of carcasses did not have a bruise. More specifically, only 11.8% of cows and 47.1% of bulls were free of bruises.

Based on information supplied by 15 packing plants, more than 10,000 carcasses (0.3% of capacity) containing birdshot or buckshot will be detected on the kill floor this year.

Dairy farmers understand the costs involved with producing milk; we just need to go one step further and become more educated on the costs involved in lost value of dairy beef due to carcass and hide problems.

– Bill Wailes, Morwai Dairy, Colorado

For cows and bulls, the round, flank/plate and rib primal areas were more likely to contain a bruise of some severity than the top butt, loin and chuck primal areas. Percentages of cow and bull carcasses with bruises of minor, medium, major and extreme classification in each primal area are presented in Table 3 and 6.

Arthritic Joints — Arthritic joints, which must be removed from carcasses, resulted in a significant amount of trim loss per carcass. Across all regions, 7.37% of carcasses had one arthritic joint that had to be removed and 3.97% of carcasses had two arthritic joints that required removal. On average, each arthritic joint required removal of 39.4 pounds of carcass product. Projected numbers of carcasses that will require removal of joints due to arthritis and the subsequent pounds of trim loss are presented in Table 4.

Whole Carcass and Offal Condemnations — In 1998, 0.37% of cows and 0.04% of bulls were condemned antemortem, while 1.86% of cow carcasses and 0.23% of bull carcasses were condemned postmortem. Based on the data provided by USDA inspectors, in 1999 0.12% of cows and bulls were condemned antemortem, while 1.06% of cow/bull carcasses were condemned postmortem. Percentages of tripe, tongue, liver, heart and head condemnations and predicted condemnations for those items in 1999 are presented in Table 5.

Birdshot/Buckshot — Based on information supplied by 15 packing plants, more than 10,000 carcasses (0.3% of capacity) containing birdshot or buckshot will be detected on the kill floor this year.

Injection-Site Lesions — The percentage of injection-site lesions in market cows continues to be above 40%. Injection-site lesions will cause the affected muscle to be downgraded from 100% visual lean to trimmings for use in the manufacturing of ground beef.

Cooler Assessments

Researchers assessed 4,959 cow and bull carcasses at random in 21 packing plants during 24 visits to packing plants located throughout the United States. They evaluated carcasses for weight, muscling, finish, fat color, skeletal maturity, kidney, pelvic, and heart fat percentage, fat thickness, adjusted fat thickness, marbling score, lean maturity, ribeye area, packer grade and plant grade.

Carcass weight — Forty three percent of cow carcasses were too light (less than 500 pounds). About 4.8% of bull carcasses were too heavy (more than 1,199 pounds). See Table 8.

Skeletal maturity — Of cow carcasses, more than two-thirds were very mature. Of bull carcasses, 40.97% were very mature and 9.81% were youthful enough to qualify for the Bullock class and the Bullock grades of Choice, Select or Standard.

Muscling scores — The muscling scores were lower than desired by packers in about 89% of cow carcasses and 19% of bull carcasses. See Table 9.

Fat — Carcasses with excess external fat occurred in 14.5% of cows and 6.9% in bulls. The external fat on 31% of cow carcasses and 6% of bull carcasses was too yellow. Of cow carcasses, 34.3% qualified for the Packer Grade of Cutter/Canner, 1.1% were White Cows and 2.4% qualified for youthful Packer Grades (Standard, Select, Choice). Of bull carcasses, 26.6% were Bull Grade, 64.6% were Bologna Bulls and 8.3% qualified for the Standard-Bullock or Select-Bullock Packer Grades. See Tables 9 and 10.

Bloodsplash and Dark Cutters — Bloodsplash was evident in 1% of cow carcasses, while 2.22% of cow carcasses exhibited dark-cutting beef characteristics.

PHASE III: STRATEGY WORKSHOP

More than 40 participants representing all segments of beef production, processing and marketing convened in Denver, Colo., in late 1999 to discuss results of the Audit. Their goal was to arrive at a consensus for improving the consistency and competitiveness of market cows and bulls. They developed benchmark value-losses for quality defects that compare economic losses to those of the 1994 Audit.

The total loss for the 1999 Audit was $68.82/head compared to $69.90/head in 1994. The top-three losses were excess external fat, inadequate muscling and trim loss from arthritic joints. The Audit concluded that producers could have helped the industry recapture much of this loss through improved management ($13.82), monitoring ($27.50) and marketing ($27.50). See Table 11.

FOUR PRIMARY DIRECTIVES

Participants in the workshop also developed four primary directives for improving the quality and value of market cows and bulls. They include:

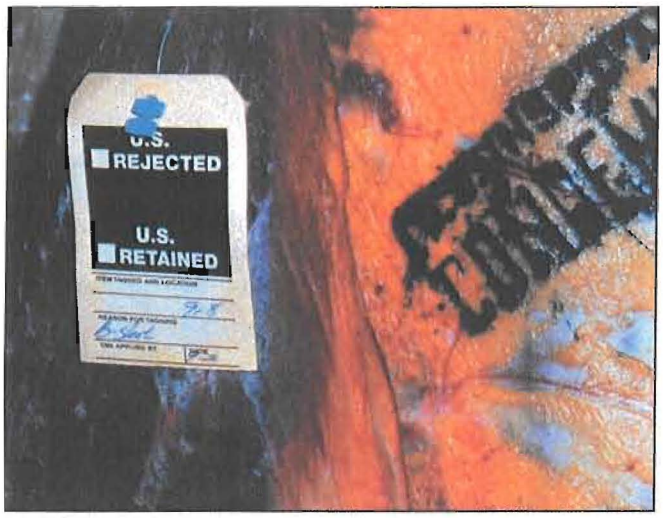
Recognize and Maximize the Value of Your Market Cows and Bulls

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/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. These data underscore the importance of the value of market cows and bulls to the profitability of a commercial cow-calf operation.

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 food service sectors in a variety of product forms — not just as ground beef.

Correspondingly, it is important that producers begin to view their market cows and bulls as valuable contributors to the beef supply. During the Strategy Workshop, Dr. Bill Mies of Texas A&M encouraged producers to have the same



In 1998, 0.37% of cows and 0.04% of bulls were condemned antemortem, while 1.86% of cow carcasses and 0.23% of bull carcasses were condemned postmortem.

TABLE 7

Overall Means of Carcass Traits

Carcass trait	Cows	Bulls
Carcass weight (Lbs.)	540.5	858.5
Muscling[1]	1.6	3.5
Finish[2]	2.1	1.6
Fat color[3]	3.8	2.5
Skeletal maturity	E-	D+
KPH fat %	0.5	0.3

[1]Muscling score is a subjective measurement (1= lightly muscled, 5= heavily muscled)

[2]Finish score is a subjective measurement (1= no external fat, 9= excessive external fat)

[3]Fat color score is a subjective measurement (1= white fat, 6= yellow, oily fat)

TABLE 8

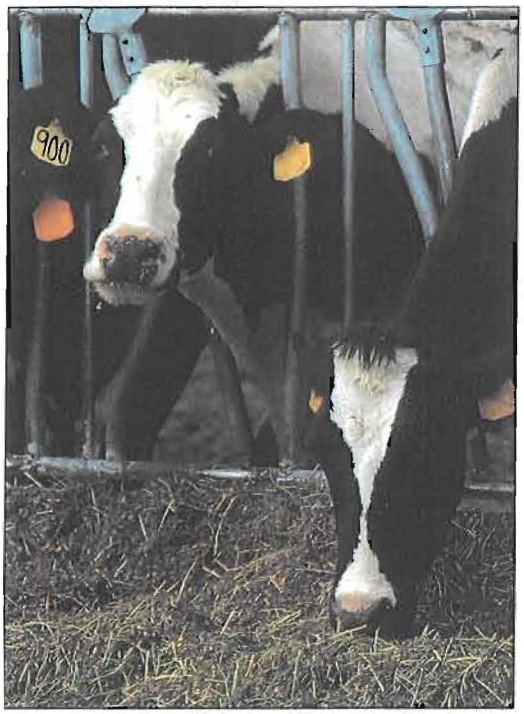
Frequencies of Carcass Weights

Carcass Weight (Lbs.)	% Cows	% Bulls
100-199	0.09	—
200-299	1.80	—
300-399	14.57	0.69
400-499	26.36	2.07
500-599	26.22	9.64
600-699	17.13	11.70
700-799	8.13	15.15
800-899	4.09	18.24
900-999	1.16	16.01
1000-1099	0.32	14.29
1100-1199	0.07	7.40
1200-1299	0.05	2.75
1300-1399	—	1.55
1400-1499	—	0.52

mindset 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," said Mies. 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," 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 brief 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 operators may be able to expand marketing opportunities by pooling cattle resources and forming cooperative marketing



Solutions to quality problems in market dairy cows should be actively sought by producers, by the animal ag-industry and by practicing veterinarians. Failure to adequately address this problem will negatively impact consumer confidence, market value of cattle, and quality/safety of our beef supply.

— Dr. Larry Hutchinson, Pennsylvania State University

agreements. Livestock auction markets can play an integral role in the development of expanded marketing opportunities for producers.

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/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 in beef and reduce the irresponsible use of firearms by hunters and others should be intensified.

If giving injectables in the neck region is not possible, at least keep them out of edible tissue. Alternative sites such as the ear or tail-fold should be considered.

– Dr. Dee Griffin, DVM, Nebraska

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.

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 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

TABLE 9

Frequencies of Muscling, Finish and Fat Color Scores

	% Cows		
Score	Muscling[1]	Finish[2]	Fat Color[3]
1	50.16	45.82	0.82
2	38.76	26.52	17.86
3	10.12	13.23	23.73
4	0.91	6.88	26.77
5	0.05	3.29	24.90
6	—	1.83	5.80
7	—	1.44	—
8	—	0.78	—
9	—	0.23	—
	% Bulls		
Score	Muscling[1]	Finish[2]	Fat Color[3]
1	3.27	63.86	16.52
2	15.66	23.41	43.55
3	27.37	5.85	18.93
4	34.42	2.58	15.15
5	19.28	2.07	5.68
6	—	1.55	0.17
7	—	0.17	—
8	—	0.34	—
9	—	0.17	—

[1]Muscling score is a subjective measurement (1= lightly muscled, 5= heavily muscled)

[2]Finish score is a subjective measurement (1= no external fat, 9= excessive external fat)

[3]Fat color score is a subjective measurement (1= white fat, 6= yellow, oily fat)

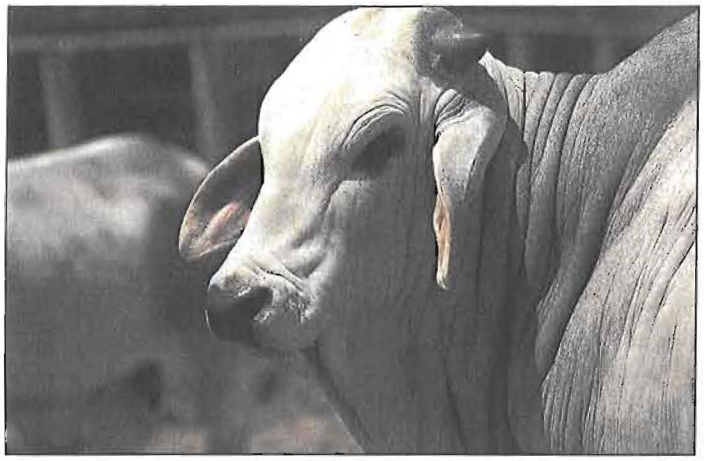


TABLE 10

Frequencies of Packer Grades for Carcasses

Market Cows Packer Grade	%	Market Bulls Packer Grade	%
Cutter/Canner	34.30	Bull	26.55
Boner	49.26	Bologna Bull	64.60
Breaker	13.08	Standard Bullock	8.32
White Cow	1.08	Select Bullock	0.35
Standard	2.16	—	—
Select	0.16	—	—
Choice	0.05	—	—

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.

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, lumpy 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 EPD development or marker-assisted selection) 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 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.

Cattle-Fax reported the average commercial cow-calf producer had a $36.19/cow profit in 1999. However, without proceeds from the sale of market cows, producers would have lost $22.35 per cow in 1999. These data underscore the importance of the value of market cows and bulls to the profitability of a commercial cow-calf operation.

QUALITY ASSURANCE MARKETING CODE OF ETHICS

To facilitate implementation of the four directives, participants in the 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.

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
- 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.

If producers fail to adopt a proactive position concerning product quality and integrity, the availability of antimicrobials and the approval of new animal-health products could be jeopardized, higher costs associated with residue monitoring systems could be incurred, the number of market outlets could decrease, and the beef industry could be forced to comply with an unwieldy and expensive national animal identification system designed and mandated by regulatory agencies.

TABLE 11

Value Losses from Market Cows and Bulls

	1994	1999
Condemnations (cattle, carcasses, cooking)	$12.02	$4.14
Condemnations (edible offal items)	3.99	4.49
Disabled cattle (additional handling)	0.78	0.56
Hide value loss (brands)	4.56	3.10
Hide value loss (latent/insect)	2.36	3.17
Trim loss (arthritic joints)	2.13	9.72
Trim loss (bruises)	3.91	2.24
Trim loss (zero tolerance)	1.87	0.46
Trim loss (birdshot/buckshot)	—	0.52
Trim loss (injection-site lesions)	0.66	1.46
Yellow external fat	2.27	6.48
Dark cutting muscle	0.06	1.41
Inadequate muscling	14.43	18.70
Excess external fat	17.74	10.17
Light weight carcasses	3.12	1.28
Antibiotic residue (Handling/Testing)	—	0.92
TOTAL PER HEAD	**$69.90**	**$68.82**

Finally, producers should be reminded that improving the quality and value of market cows and bulls is an attainable goal. Based on 1999 audit results, approximately 96% of market cows and bulls have clear eyes, 99% show no evidence of lumpy jaw, 96% are without abscesses, 85% are sound or have only minor structural problems, 99.8% show no evidence of prolapse, 97% have a body condition score of 3 or higher, 90% are free of excessive hide contamination, and 99.7% are free of birdshot/buckshot. In this case, success will come not by doing 1 thing 100 percent better; it will come by doing 100 things 1 percent better. ■

For more information about the 1999 Market Cow and Bull Quality Audit, contact Dr. Gary Cowman or Renee Lloyd at the address below:

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Version 1