

Cull Cow Beef Quality Issues: Bruising, Condemnation, and Foreign Objects¹

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Bruising

The primary concern associated with bruising is *trim loss* (i.e., when meat is removed and discarded), since bruises are considered adulterated tissue and must be removed from the carcass to pass inspection. Trim loss, especially in high-value areas and from bruises classified as “extreme,” can be costly to both the cattle producer and packer. Bruises are classified by their severity and subsequent trim loss:

1. *Minor*—small area that requires less than 1 pound of trim to be removed from the carcass.
2. *Medium*—moderate areas on the carcass that require more than 1 pound but less than 5 pounds of trim from the carcass.
3. *Major*—large areas on the carcass that require on average 5 pounds or more trim to be removed.
4. *Extreme*—areas that are nearly the size of an entire primal cut that require at least 15 pounds of trim to be removed from the carcass. These bruises are the most concerning to the industry because they also devalue the primal cut. In general, extreme bruises require so much trimming that the primal cut cannot be sold and must be sold as lean trim for ground beef products.

Best Management Practices

The presence and severity of bruising can be minimized in one of three ways:

1. *Improved Cattle Management, Handling, and Facility Design*—Since it is estimated that one-third of bruises occur on the ranch, cattle producers should employ sound cattle management and facility design to minimize their incidence. Management practices like dehorning and sorting cattle by size and sex can help reduce the occurrence of bruising as cattle mingle with one another. Handlers should also be trained to reduce their reliance on aggressive handling practices and cattle prods. Facilities should be designed to reduce injury and maximize cattle flow as well.
2. *Improved Transport Management*—Often, cattle become injured and bruised during transport to the market and harvest facility. Cattle producers can minimize or prevent bruising in transit by following trailer loading and transport guidelines. Always sort cattle by size and gender groups when loading animals onto a trailer. If cattle with different origins, ages, or sizes are transported together or without proper separation within the transport vehicle, bruising can occur. Transport times should also be minimized since long hauls can fatigue cattle and

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make them more prone to lying down and then becoming injured or bruised.

3. *Minimized Co-mingling*—Unfamiliar cattle will fight to establish social order. Physical aggression often results in bruising in both dominant and submissive animals. Bruising can increase when bulls are comingled with females, especially if one or more cows are in estrus at the time of transport.

Condemnation

Condemnation of whole and partial carcasses has been a focus of recent beef quality audits within the industry. The greatest concern and economic impact is whole carcass condemnation that can result from residue violations, non-ambulatory cattle, extreme cases of cancer eye, bruising, or lumpy jaw. In addition, head condemnations and condemnations of edible offal are equally concerning.

The primary concern harvesting facilities have with whole and partial condemnations are the economic losses associated with them. The loss of an entire carcass can cost the packer several hundreds of dollars in lost product alone. Additionally, many American consumers don't consider byproduct items to be valuable; however, offal is a significant source of income for a harvesting facility. These offal items such as the liver and tongue are exported, receiving price premiums. Other economic losses associated with condemnation are the costs associated with retaining, testing, and disposing of cattle that cannot enter the food chain.

Best Management Practices

Cattle producers can prevent whole carcass condemnations as well as minimize the impact of partial condemnations on the industry.

1. *Improved Herd Monitoring and Timely Marketing*—Cattle producers can reduce condemnations within the non-fed market by closely monitoring their cow herd and bull battery. When cattle producers find cattle that have beef quality defects (even if they are minimal), they should market those cattle as soon as possible. If cattle producers delay marketing their cull cattle, the cattle's condition can deteriorate, raising public concerns and condemnation at harvest.
2. *Improved Herd Management and Parasite Control*—Appropriate and adequate control of parasites and the damage caused by them can decrease the incidence and severity of carcass condemnations.

Foreign Objects

Although rare, foreign objects can be found in cull cattle at harvest. The two primary foreign objects the industry is concerned with are (1) buckshot or birdshot and (2) broken needles.

Carcass Adulteration

Lead is considered an adulterant by the Food and Drug Administration and as such cannot be allowed into the beef supply. Whenever buckshot, birdshot, or broken needles are found in a carcass, the production line at the harvest facility is shut down to remove the contaminated product, ensuring it does not enter the food chain. Not only does this present economical and logistical problems for packers as production lines are stopped, but there is also lost product.

Food Safety and Consumer Confidence

More important than the economic losses experienced in the harvesting segment are those that are incurred because a consumer finds buckshot or a broken needle in a piece of beef. This is unacceptable from both a quality-control and consumer-safety standpoint. Consumers should not have to worry about the safety of their beef supply or that they may find a foreign object in their beef products. Every time consumers hear or experience such a quality defect, the entire industry suffers significantly.

Public Perception and Animal Well-Being

In addition to the loss in consumer confidence regarding food safety and foreign objects such as buckshot, bullet fragments, or broken needles, there are concerns associated with cattle safety and well-being. Shooting an animal, except in the case of proper euthanasia procedures, to move or harass is not acceptable. Additionally, needles that break off in the animal present an emergency health issue because these needles will move throughout the animal and potentially cause damage.

Best Management Practices

Both of these foreign objects can be entirely prevented at the producer level.

1. *Proper Needle Selection and Use*—Broken needles can be minimized through proper needle selection and use. Producers should always choose the correct needle gauge and length when administering injections in cattle. Needles that are too small (20 gauge or greater) or too long (lengths greater than 1 inch) may be more easily compromised and could lead to bending and breaking (Figure 1).

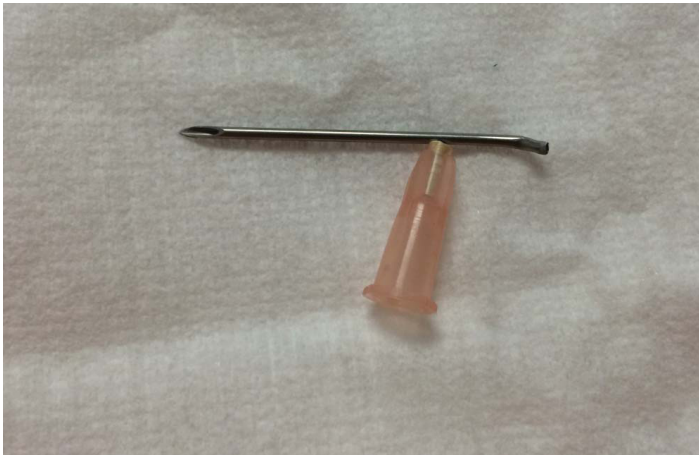


Figure 1. A needle that is too long or that was bent and straightened is likely to break. Needles that break off in an animal present an emergency situation and a potential foreign object issue.

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2. *Avoid Dull Needles*—Producers should also change needles frequently to prevent dulling that can lead to bending and breaking.
3. *Discard Bent Needles*—Bent needles should never be re-straightened and continue to be used.
4. *Improved Cattle Handling and Restraint*—Broken needles can also be minimized by proper animal restraint. When cattle are restrained in functional head catches and squeeze chutes, they are less likely to throw their head or move in a manner that would result in a broken needle.
5. *Utilization of a Standard Operating Procedure*—Producers should have a contingency plan in place in case a needle breaks during processing. Broken needles will not stay in the injection area. Needles can migrate throughout the tissue and can be very difficult or impossible to remove. Producers should mark the area where the injection was given and attempt to remove the needle with the assistance of a licensed veterinarian. Animals that are thought to have a foreign object in them that would adulterate the carcass should be permanently identified. These animals should never be allowed to enter the food chain and should remain on the farm until they die of natural causes or are humanely euthanized.
6. *Hunter Education*—It is believed that the majority of birdshot and buckshot found in cull cattle originates from hunting accidents. If producers themselves hunt or allow other individuals to hunt on their property, they must be aware of where cattle are located.

Antibiotic Residues

Antibiotic and chemical residues can pose food safety risks. Over the years residue violations have become minimal. However, processors and consumers continue to identify residues as a food safety concern. As a result, the beef industry and the government have established the National Residue Program to eliminate the potential entry of animals that violate residue levels into the food chain. Cattle producers who are associated with cattle that violated residue levels may be subject to regulatory action, which includes fines, herd quarantine, and criminal prosecution.

There are two ways cattle producers can be found in violation.

1. *Scheduled Sampling*—Random samples are taken from cattle at the harvesting facility to test for violated residue levels. This monitoring gives the industry and the USDA's Food Safety Inspection Service an incidence rate or indication of the problem.
2. *Inspector-Generated Sampling*—Specific samples are taken from suspect cattle exhibiting signs of deteriorating health, recent veterinary care treatment, or compromised well-being. Additionally, any animals that come from a cattle producer or herd that previously had a residue violator must be tested.

Whole Carcass Condemnation

Violate residues are associated with carcass adulterations. This adulteration make the carcass unfit for human consumption and illegal to sell as such. Whole carcass condemnation creates both logistical problems and tremendous economic losses to the packer.

Public Perception and Food Safety

Volatile residues can create public concerns regarding food safety, which are damaging to the beef industry. Consumers rely on cattle producers to provide a safe, affordable, and wholesome product.

Best Management Practices

1. *Read and Follow All Label Directions and Withdrawal Times*—Residues are avoidable. By reading and following all label directions on animal health products and pesticides BEFORE administering the product, cattle producers can minimize the presence of residues in their cattle. Cattle producers should work with a licensed veterinarian to develop animal health protocols. Cattle producers should always make sure the cattle they market

have passed their withdrawal times before sending them to the livestock auction or harvesting facility. Even if the cattle producer had no intention of sending a treated animal to harvest at the time of sale, they must realize that they do not know where that animal will go once it has left their farm.

2. *Prevent Feed Contamination*—Sometimes residues result from an accidental or non-intentional exposure of chemicals to feed, water, or pasture soil. Cattle producers can prevent this exposure by keeping insecticides, herbicides, fungicides, mycotoxins, petrochemicals, and other hazardous chemicals away from stored feed, water, or forage sources.

Summary

The loss in value associated with bruising can be partially associated with cattle handling practices at the farm or ranch. Antibiotic residues are also an issue that can be mitigated at the farm or ranch by reading and following label directions and observing appropriate withdrawal times. The sources of carcass condemnation are an economic loss to both beef cattle producers and beef processors. Utilization of beef quality assurance practices by beef cattle producers can help to eliminate detrimental outcomes.