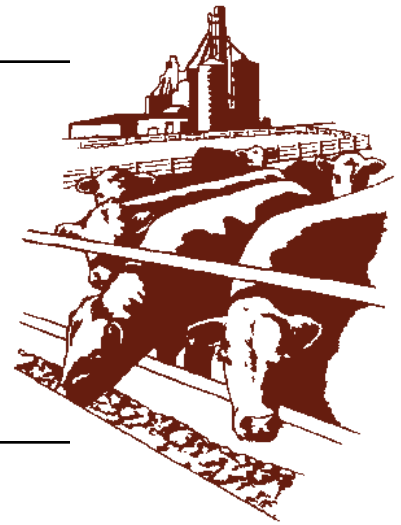


Beef Cattle Handbook



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Reducing Bruising In Cattle

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Bruises cost the cattle industry millions of dollars each year. A recent survey conducted by the National Cattlemen's Association indicated that bruises cost \$1.00 for every fed animal marketed. A high percentage of bruises occur in the valuable loin. Large loin bruises can cause \$20.00 loss per animal. Reducing bruises will also improve animal welfare. Bruised meat has to be trimmed off and it cannot be used for human consumption. It is also important to reduce bruises on ranches and at auction markets because bruising stresses animals.

Rough handling is a major cause of bruises. When cattle become excited they are more likely to bump into gates, truck doors or each other. Quiet, gentle handling and moving cattle at a slow walk will halve the number of bruises (Grandin, 1981). Gentle cattle handling is the single most important thing that feedlots and packing plants can do to reduce bruising. Contrary to popular belief, cattle can be bruised up until the moment of processing. Bruises can occur after stunning and prior to bleeding (Meischke and Horder, 1976). Cattle can have large bruises even though the hide is undamaged.

Livestock handlers need to use and understand principles of cattle handling, such as the flight zone and point of balance. The flight zone is the animals' personal space. Cattle will move more quietly if the handler works on the edge of the flight zone. Deep invasion of

the flight zone can cause animals to panic. Handlers also need to use the point of balance at the shoulder. To make an animal move forward, the handler should stand behind the point of balance. To move it backward, the handler stands in front of the point of balance. It is also important to keep cattle calm. Excited, agitated cattle are more likely to injure themselves. If cattle become excited, it takes 20-30 minutes for their heart rate to return to normal. (Stermer et al., 1981). Electric prod usage should be kept to a minimum and handlers should refrain from yelling.

Overloading of trucks will greatly increase bruising. One study shows that there is an optimal density for loading trucks. Too many cattle increases bruises and too few will also increase bruising (Eldridge and Winfield, 1988). All researchers agree that overloading of trucks increases bruising (Grandin, 1981; Eldridge and Winfield, 1988; Tarrant and Grandin, 1993). Overloading of trucks also increases the incidence of downed crippled animals (Tarrant and Grandin, 1993). If an animal slips and falls in an overloaded truck, it may not be able to get up because the other cattle close in over it. Trucks should be loaded according to guidelines published by the Livestock Conservation Institute (Table 1).

Table 1. Recommended Truck Loading Densities

Feedlot Fed Steers or Cows Average Weight	Horned or Tipped or more than 10% Horned and Tipped	Polled or Dehorned
800 lbs.	10.90 sq. ft.	10.40 sq. ft.
1000 lbs.	12.80 sq. ft.	12.00 sq. ft.
1200 lbs.	15.30 sq. ft.	14.50 sq. ft.
1400 lbs.	19.00 sq. ft.	18.00 sq. ft.

Horns

Several surveys have shown that horned cattle have twice as many bruises compared to polled or dehorned cattle (Ramsey et al., 1967; Shaw et al., 1976). A few horned cattle can greatly increase bruising. In one study, fed cattle with 25-50 percent horns had 10.5 percent discountable bruises (Grandin, 1981). Elimination of horns can lower this figure to 2-5 percent.

Contrary to popular belief, tipping (cutting off parts of the horn) does not reduce bruising (Ramsey et al., 1976). Tipping horns on heavyweight steers is painful and reduces live weight gain (winks et al., 1977). Ranchers should remove horns from young calves. Recent National Beef Quality Audit figures indicate that 31 percent of fed cattle have horns. Economic incentives should be used to reduce bruises and other losses. A producer is going to be more motivated to remove horns if he gets paid a premium price for dehorned calves. In fed cattle, bruises were cut in half when feeders switched from live weight selling to carcass weight selling (Grandin, 1981). When the feeders had bruises deducted from their payments, they became motivated to reduce them.

Equipment Problems

Edges with a small diameter such as angle irons, channels, truck doors and the exposed end of a sharp edge of a pipe are most likely to bruise cattle. Bumping into a smooth, wide surface such as a flat wall or a large, round, four-inch diameter post are less likely to bruise. Broken boards and protruding gate latches can also cause bruises. Gates should be equipped with tiebacks to prevent them from swinging out into an alley. It is also important to provide non-slip flooring. Slick floors and cattle falling down cause many bruises and injuries. For high traffic handling areas, such as loading ramps, scales, processing areas, etc., the floors should have deep grooves. An eight-inch diamond pattern with 1 to 1/2 inch deep V-grooves works well. Scales can be made non-slip by installing a grid of 1-inch steel rods welded in a 12-inch by 12-inch square pattern. The angle of loading ramps should not exceed 20 degrees.

Trouble Shooting Bruises

When bruising occurs at a packing plant, a determination must be made to find out where the bruises are occurring. If the bruises occur on cattle from many different origins, then it is likely that the problem is at the packing plant. If bruises occur on cattle from only one origin,

then the problem is likely to be on the truck or at a feedlot. A sudden occurrence of bruises is usually caused by a change in personnel or broken equipment. If faulty equipment is causing the bruises, there will be sharp edges that have been rubbed shiny from cattle hitting them.

Loin bruises. A major cause of loin bruises is rough handling during truck loading or unloading. This causes two excited cattle to sedge themselves in the truck doorway. Loin bruises can be reduced by installing full width doors on trucks. Horns also greatly increases loin bruises. Loin bruises can also be caused by slamming gates on cattle. The loin becomes bruised when the animal becomes wedged between the gate and an alley fence. Protruding gate latches and sharp edges on the entrance of a scale also cause many loin bruises.

Shoulder bruises. Shoulders are often bruised on sharp edges such as protruding gate latches or broken boards. If the bruises are occurring at the packing plant, broken parts in the restrainer conveyor entrance may be to blame. Other causes are a sliding gate track that is not recessed and broken sideways one-way flipper gates in a single file chute. Rough handling and horns also cause many shoulder bruises

Back bruises. Back bruises are most likely to be caused by equipment problems. One common cause is tall cattle hitting the bottom of the top deck when they exit from the bottom compartment of a semi-trailer. These bruises can be reduced by unloading cattle at a slow walk. Animals that jump up are more likely to hit the upper deck. Another major cause is careless use of vertical slide gates. The bottom edge of a vertical slide gate should be constructed from a 4-inch round piped covered with rubber. Another cause of back bruises is improperly adjusted one-way gates. Cattle can get severe back bruises if they back up under a one-way gate that is set too high.

Most bruises can be prevented by careful, quiet handling, dehorning of calves and fixing broken equipment. Bruise prevention requires constant management commitment to good handling.

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