

Feedlot Welfare Advances

Research shows how handling, loading and transport can improve welfare of feeder cattle.

by **KASEY BROWN**, senior associate editor & **TROY SMITH**, field editor

The cattle production cycle is long, and the handling and management of cattle through through the different segments can impact the end product. One of the major topics at the fifth International Symposium on Beef Cattle Welfare (ISBCW) June 8-10 in Manhattan, Kan., was the welfare of cattle in transportation to and from the feedlot.

Fatigued cattle syndrome

Mobility of cattle at slaughter facilities got a lot of attention in the summer of 2013, and two heat events provided some anecdotal evidence against the use of beta-agonists like Zilmax® and Optaflexx®. In the two events, cattle showed a reluctance to move, and some even sloughed hoof walls. Seventeen cattle were euthanized. It brought animal-welfare issues to the forefront of summer handling, and the syndrome was termed fatigued cattle syndrome (FCS). Jacob Hagenmeier, veterinarian and doctoral student at the Kansas State University College of Veterinary Medicine, explained that these cattle exhibited elevated levels of lactate and creatine kinase (CK), which signify muscle damage.

He shared that the pork industry had a similar event 20 years before in which a higher incidence of transport losses occurred. It was called fatigued pig syndrome and was most prevalent among heavily muscled hogs that were reluctant to move with increased levels of lactate and CK. Several studies found that extreme muscling and heavy body weights, aggressive handling, long distances traveled, and high doses of beta-agonists fed all contributed to the issue.

FCS is also caused by multiple factors, including beta-agonist use, aggressive handling, increased live weights at slaughter (having increased by 150 pounds in the last 15 years), heat stress, and distance traveled — both within larger feedyards to the trailer and while on the truck, he explained.

Hagenmeier shared several studies on the effects of cattle handling and beta-agonist use. He reported that aggressive handling, which in this case was running cattle from their feedyard pen to the load-out pens, caused acute metabolic acidosis in both cattle fed beta-agonists and those not fed beta-agonists. The stressful handling did not affect carcass characteristics, but was detrimental to normal physiological function. It is important to remember that cattle are not athletes; cattle have 30% the capacity of equine lungs but 250% of the requirements.

He suggested staging heavy cattle near load-out facilities and continually acclimating cattle to handling, even after

arrival at the feedyard. When a pen rider rode in front of the cattle to encourage movement, the cattle moved quietly. Avoid shipping cattle during extreme heat loads, and be cognizant of the temperature-humidity index when handling cattle. Additionally, when weighing out cattle, weigh them in smaller groups to reduce stress.

— by Kasey Brown

Tips for loading, unloading cattle

According to Texas A&M University Extension Livestock Specialist Ron Gill, designing and building loading facilities for cattle doesn't have to be complicated, but you need to understand animal behavior.

Gill said the design can be simple. He offered the “Bud Box” as an example, noting the loading or processing facility design favored by the late animal-handling guru Bud Williams takes advantage of the natural inclination of cattle to return to the gate through which they entered the facility.

Gill offered the audience food for thought applicable to laying out loading facilities favorable for staging of cattle, sorting and maintaining flow to a loading area. He recommended that facilities be designed so cattle can be sorted quietly into loading groups, and handled so they flow easily to a chute.

Regarding the question of whether solid or open-sided alleys are preferable, Gill said both can work. Open sides are fine, depending on where personnel are situated during handling. If the objective is to block animals' view of potential distractions, the solid portion of the sides should be high enough that cattle cannot see over them.

Discussing loading chutes, Gill said the ramp should not be overly steep. He recommends the long, moderate grade offered by a ramp length of 16 feet (ft.) to 20 ft. He advised use of non-slip flooring, preferably with cleats. Bumpers should be situated where the trailer backs up to the chute to prevent gaps that an animal's leg could slip through, causing injury.

Noting that many cattle are transported by stock trailer, Gill reminded the audience that many modern trailers are designed such that the clearance between ground level and trailer floor is greater than in the past. He recommended that loading facilities be designed to minimize the step-up distance.

Gill said how cattle are handled has much to do with how cattle load and behave during transport.

“If we sort and load cattle quietly, they typically are more quiet and calm on the truck,” stated Gill. “We don't want to



unload cattle too fast either. Cattle exiting rapidly can ‘draw’ those behind them to follow too quickly and increase chances of injury.”
— by Troy Smith

Bruising during transport

Kansas State University veterinarian and researcher Tiffany

Lee believes significant strides have been made in improving beef cattle welfare. However, an aspect that she considers deserving of more attention is bruising of beef cattle carcasses as a result of physical trauma experienced prior to slaughter. In Lee's opinion, the incidence of bruising among fed cattle is significant enough to have serious economic implications for the beef industry, as well as being a welfare concern.

Lee explained research exploring the relationship between traumas sustained when cattle were unloaded at a packing plant, and bruising among carcasses from the same cattle. The study involved approximately 9,800 head delivered to three different slaughter facilities.

According to Lee, trained observers recorded all potentially traumatic events occurring as animals exited the trailer, and, subsequently, the prevalence and location of carcass bruises. Nearly 70% of carcasses exhibited bruises, with more than half located along the dorsal midline.

“Generally, there was a relationship to the prevalence of traumatic events at unloading and the relationship was stronger with the incidence of bruising along the dorsal midline,” said Lee. “There was a significant correlation between trauma incurred at unloading and carcass bruising, especially bruising along the back.”

Lee noted the opportunity for animals to experience trauma along the length of their backs when entering and exiting the belly compartment of typical “fat-feeder combination trailers.” While the maximum height of the compartment is 66 inches (in.), clearance is nearer 55 in. at the ramp area where cattle enter and exit. In trailers designed specifically for finished cattle, the overall belly height is 69 in. and the entrance-exit area has 57 in. of clearance.

According to Lee, ramp brackets in the entrance-exit areas of trailers typically are rubbed clean by contact with animals' backs, raising suspicion that trauma from contact with ramp brackets contributes to linear bruising resulting along the dorsal midline of carcasses.

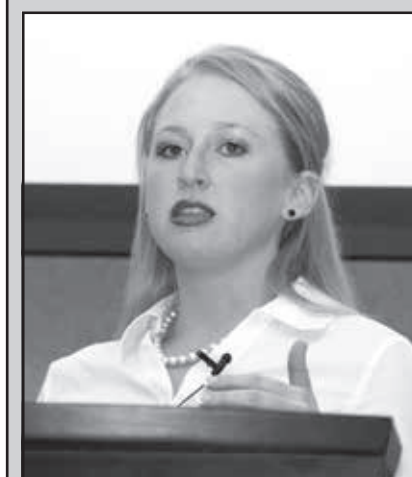
While cattle trailer design has changed little over the decades, cattle have changed in frame size and musculature. However, Lee reported that a trailer manufacturer has produced some fed-cattle trailers with a different deck and ramp configuration allowing more than 62 in. of clearance.



Jacob Hagenmeier says fatigued cattle syndrome is caused by multiple factors.



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In Tiffany Lee's opinion, the incidence of bruising among fed cattle is significant enough to have serious economic implications for the beef industry, as well as being a welfare concern.

“I would like to resume studies to include a comparison of new and old trailer designs and their potential contribution to trauma and prevalence of carcass bruising,” stated Lee.

— by Troy Smith



Editor's Note: Troy Smith is a cattleman and freelance writer from Sargent, Neb. Watch for additional coverage of the 2016 ISBCW on www.angus.media and in the *Angus Journal* and *Angus Beef Bulletin*. Comprehensive meeting coverage will be archived at www.api-virtuallibrary.com/meetings_other_news.html.