



UNDERSTANDING LOW-STRESS CATTLE HANDLING TECHNIQUES

To Improve Animal Performance and Human Safety

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Safety

Human safety, family dynamics, cattle performance, and consumers' perception are all impacted by the way cattle are handled at the ranch, sale arena, feedlot, or packing plant. Individuals have been seriously injured and even killed while handling cattle. In addition, many minor incidents and near misses to handlers often go unreported by individuals handling animals. Low-stress cattle handling not only improves producer and human safety, morale, and employee retention, but it has also been proven to improve animal performance (growth, feed efficiency, and reproduction), health, meat quality, and the public perception of the cattle industry (Grandin 2001 and Hemsworth 2003). Low-stress cattle handling is based on applying handling techniques in relation to cattle's natural behavior to move the animals in a safe, efficient, effective, and low-stress manner (Figure 1).



Figure 1. Producers can improve animal health and performance by implementing low-stress cattle handling techniques. Photo by Carolyn Russo.

Behavioral indicators of stress in cattle are expressed by flight, vocalization, kicking, and struggling, while physiological indicators of stress are expressed by elevated levels of cortisol, beta endorphins, and heart rates (Grandin 1997a).

Corticosteroid levels (cortisol) may indirectly inhibit the pro-inflammatory responses necessary for the animal's immune system to develop a defense against disease (Hodgson et al. 2005). Research has also demonstrated that vaccinations administered during immunosuppression, due to elevated stress levels, can reduce vaccine efficacy and immune development against viral and bacterial pathogens responsible for various diseases (Richeson et al. 2009).

Stressors of weaning, transportation, processing, and handling can significantly impact an animal's exposure and susceptibility to diseases, especially respiratory diseases, through the various stages of beef cattle production. According to Dr. Tom Noffsinger, DVM and nationally recognized cattle handling expert, confinement anxiety and poor handling cause greater stress than severe weather and a harsh environment (Smith 2014). Cattle handled roughly in poorly designed facilities have significantly higher heart rates than cattle that are handled quietly in well-designed facilities. Research by Temple Grandin (1997b), nationally recognized animal behaviorist and handling expert, also demonstrated that cattle with elevated heart rates as a result of psychological stressors from squeeze chute restraint, also had increased cortisol levels. Disease prevention can be accomplished by minimizing both exposure to pathogens and stressors associated with managing cattle (Grandin 1997b).

To adequately develop facilities and low-stress cattle handling techniques, handlers must first understand basic cattle behavior. All individuals responsible for cattle care and handling should be trained in natural cattle behavior, handling movement techniques, and be able to recognize signs of distress or behavior that could result in injury or additional stress to the animals or handlers.

Natural Behavior of Cattle

Cattle are herd and prey animals, which can become stressed when isolated from others in the herd. Over time, prey animals, both domestic and wild, have developed awareness and sensitivity to their surroundings for survival. The ultimate survival mechanism for a prey animal is to conceal weakness or sickness when confronted by a predator. According to Dr. Tom Noffsinger, when cattle view a handler as a predator, rather than a leader, cattle are not likely to express their true state of health, and will hide sickness until it is in advanced stages and difficult to treat, or has caused significant decrease in animal and herd performance (Smith 2014).

Cattle have a wide angle of vision and can become frightened by shadows or moving distractions. Efforts should be taken to minimize noise when working cattle, as they are very sensitive to high frequency noises and can become very agitated by loud and unfamiliar sounds. The flight zone of cattle worked in a routine calm manner will typically be smaller (Figure 2), than animals that have had adverse handling. Cattle can learn to associate specific sights and sounds with both positive and negative experiences (Grandin 1997a, 1997b, 2001 and Smith 2014).

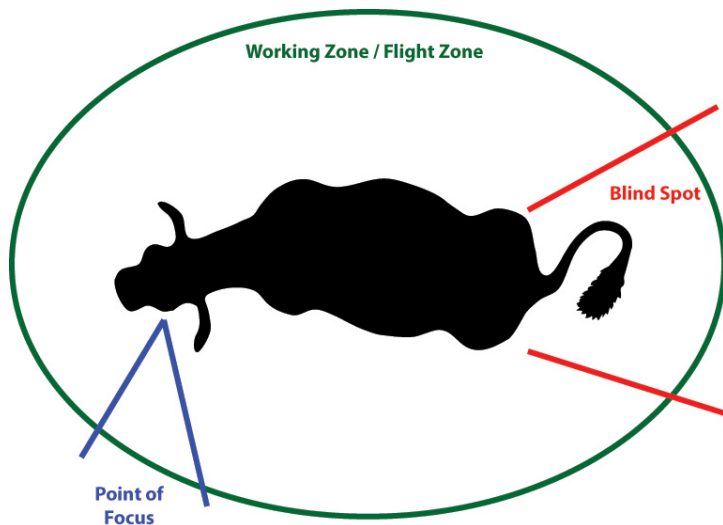


Figure 2. The working or flight zone of cattle is the area where the animal responds to pressure from the handler. This zone varies between animals due to genetics, temperament, and past handling experiences. Applying pressure in reference to the animal's eye "point of focus" will allow handler to cause movement in desired direction. Original cow image by Jason C. Fisher, University of California Los Angeles.

Flight or Working Zone and Movement

When a prey animal feels threatened from a person, predator or object, and moves away from the source of fear, the area around the animal when movement begins is known as the flight zone. When someone or something enters the animal's flight zone, the animal will move away from the pressure to get relief from fear. Scared animals or animals that have had negative experiences with handlers, will have a larger flight zone than animals that are handled in a calm, routine manner. Understanding how to apply pressure and release pressure by moving in and out of the animal's flight zone when it responds correctly, allows a handler to turn the flight zone in to the working zone (Figure 2). The working zones of animals vary depending upon temperament and previous experiences. Working with pressure and release and the prey animal's natural instinct to seek relief from pressure, allows a handler to encourage movement, rather than trying to force movement out of fear and stress (Smith 2014).

Understanding how to use an animal's working zone and the point of focus can help reduce stress for both cattle and handlers (Grandin 1997a and 1998). To get cattle to move calmly in a desired direction, handlers should work on the edge of the working zone and in reference to the animal's point of focus, the globe of the eye (Figure 3). Handlers should always walk where cattle can see them, since the animals cannot see directly behind them. Handlers should avoid being directly behind cattle, because the animals will want to turn to see pressure, preventing forward motion.



Figure 3. To get cattle to move calmly forward, handler should work on the edge of the working/flight zone, at angle behind the point focus (cattle's eye). This allows the animal to watch the handler and take direction as pressure is applied. Photo by Don Llewellyn.

To get cattle to continue to move forward, the handler should apply pressure in the animal's sight area and at an angle towards the front shoulder. To cease movement of cattle, the handler should retreat from the flight zone, but ensure that the animal can still see them (Smith 2014).

Noises

Strange, loud, or new sounds are strong stressors to prey animals, as prey animals often associate these sounds with danger. Noise can cause both behavioral and physiological reactions to stress, making cattle even more difficult to handle. However, animals will adapt to a reasonable amount of continuous noise or human voices (Grandin 1997a). Handlers should not elevate their voices to yelling or shouting, as it can be as stressful to cattle as an electric prod (Pajor et al. 2003).

Facility Design

Low-stress cattle handling techniques should be used when handling and managing cattle at all times, despite the type or quality of the facilities. There are many different types of handling facilities available to make or purchase, and some work better for certain cattle handling situations. However, the most important aspect of any handling facility is to utilize cattle's natural behavior to minimize stress and increase efficiency of handling during gathering, processing, sorting, or transporting. Animals will hesitate at flooring changes or sudden lighting differences during movement in corrals and other handling facilities. They may also become excited when their footing is unstable and they start slipping.

Facilities should be designed to have no-slip floors or adequate bedding applied to crowding pens to provide proper footing for the animals (Figure 4). Lighting changes or shadows should be minimized in animal handling and loading facilities. Cattle will typically move from dim lighting to brighter lighted areas, however, caution should be taken to ensure light does not glare into the animals' eyes (Grandin 1997a and 1997b). Facilities should also be checked regularly to make sure that there are no objects, such as tarps, coats, sorting flags, or other distracting objects, which may cause cattle to balk. Regularly maintained and cleaned facilities will help minimize stresses related to injuries or exposure to environmental (such as mud) and pathogen stressors.



Figure 4. Cattle handling facilities should be designed to prevent slipping. Photo by Don Llewellyn.

Genetics

An animal's genetics can influence its temperament and ability to respond to handling stressors. There is a direct relation to stress stimuli and disease susceptibility (Salak-Johnson and McGlone 2007). Therefore, an effort to reduce psychological and environmental stressors, in addition to decreasing pathogen exposure, will aid in disease prevention.

Research by Temple Grandin showed that cattle with poor temperament, or those that are easily excitable, have a more difficult time adapting to repeated non-painful handling procedures than cattle with calm temperaments (Grandin 1997a). This causes increased stress for cattle and handlers. Management decisions about culling and bull selection should consider an animal's temperament to help decrease potential injuries and stressors for both cattle and handlers.

Animal Moving Aids

Handlers can move animals with minimal or no handling aids, if the cattle have been handled calmly in the past, and if the facilities are designed to complement their natural behaviors. Nonelectrical moving aids, such as paddles, flags, and sorting sticks with visual stimuli (plastic bag or plastic ribbons) can be used as an aid, stimulating natural flight behavior to move cattle. Care should be made to use aids calmly with small deliberate movement, so not to agitate or stress animals. Do not wildly wave the moving aid. Research by Grandin (1997a) demonstrated that most cattle at meat packing plants could be moved through the plant's facilities without the use of electric prods. Electric prods should not be a primary moving aid, rather only used when absolutely necessary to move a stubborn animal. If situations arise where animals are continuously balking, evaluate the area and facilities to determine why cattle are refusing to move, rather than using an electric prod as a primary moving aid.



Figure 5. Dogs used to aid in cattle handling should be well-trained and congruent with low-stress cattle handling techniques. Aggressive or poorly-trained dogs can cause unnecessary excitement in cattle, resulting in stress and more difficulty in handling. Photo by Carolyn Russo.

Memory

Cattle learn quickly, and will remember and act accordingly to past handling experiences. Frequent positive handling interactions with cattle will result in animals that are less stressed by handling and restraint than animals that have had limited human interaction (Figure 6). It is important to implement low-stress cattle handling techniques early in the calf's life, as it will impact how it will respond to psychological stressors later in life (Smith 2014). Cattle that are mishandled or have a negative experience will associate handling or the management process with fear, and will resist handling or facilities in the future (Grandin 2001). Raising calmer cattle requires cattle handlers to walk quietly among animals and teach them to follow a lead handler or horseperson.



Figure 6. Cattle learn quickly and act accordingly to past experiences. Low-stress cattle handling techniques not only enhance cattle health and performance, but also improve handler safety and morale when working animals. Photo by Don Llewellyn.

Conclusion

To help minimize stresses that negatively impact human safety and morale, and cattle performance and health, cattle handlers should implement low-stress cattle handling techniques. Cattle learn quickly and act accordingly to past experiences. Low-stress cattle handling techniques not only enhance cattle health performance, and meat quality, but also improve handler safety and morale and the public perception of beef cattle production.

WSU Extension with grant funding from the WSU Western Center of Risk Management Education has produced the video “Low Stress Cattle Handling Review: Understanding and Working With Cattle Instinct”, which is a summary of Dr. Tom Noffsinger’s teachings at the WSU Extension Low-Stress Cattle Handling Seminars. This video is a good visual supplement to this factsheet. The video is available at <http://vimeo.com/83256777>.

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