

Animal Handling and Well Being

Cattle behavior and facilities design

Cattle handling and facilities design can impact beef quality. Many bruises, dark cutters and other damage to the meat product can be reduced if cattle are handled properly. Proper handling is easier to accomplish in facilities designed to take advantage of the natural instincts and tendencies of cattle.

Understanding cattle behavior facilitates handling, improves handler safety, animal welfare, reduces stress and bruising. Bruising due to improper cattle handling costs the industry literally millions of dollars each year in carcass trim at the packing house.

Low-stress handling decreases shrink and improves the immune system and rumen function, resulting in decreased respiratory disease and lower cost. Mishandling can also develop temperament and behavior problems that are retained throughout the animal's life.

Communicating with cattle

To achieve the desired level of proper handling, a clear understanding of cattle behavior and their response to stimuli is needed. Communication to and with cattle is accomplished through sight, sound or touch. Cattle prefer sight as a means of communication. Loud sounds or noise are stressful and distracting to cattle and counterproductive to proper or low-stress handling. Touch can only be utilized effectively when working cattle in confinement. Proper application of touch can help avoid the need to apply the use of other driving aids when working cattle.

Vision

The primary means of communicating with cattle should be through vision and cattle have a visual field in excess of 300 degrees. Because of their vision field it becomes important to recognize the importance of line of sight in handling cattle. When distractions cannot be minimized, it is generally recommended that more confined areas such as loading ramps and

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handling chutes have solid walls to prevent animals from seeing distractions. Movement seen through the sides of corral facilities can cause balking or even frighten livestock if it is in too close a proximity. Solid sides on the crowd pen and alley can be helpful if animals are not tame or are unaccustomed to the facility. While solid sides can help keep down distractions, they can also make it more difficult to get cattle moved. Cattle do not like to be driven toward a closed end alley or tub.

Corrals should be designed to allow cattle to move toward open sided fences as much as possible. Only when distractions cannot be eliminated by the proper placement of people and equipment should solid sides be used. In close confinement situations, such as crowd tubs and alleyways, solid sides that cover the lower portion of the structure will aid in preventing an animal from getting a leg extended through the fence.

Cattle have a tendency to move from a dimly illuminated area to a more brightly illuminated area. However, light (natural or artificial) should not glare in their eyes. Lighting can be useful in handling cattle that are unaccustomed to their surroundings. A spotlight directed onto a loading chute can be used to improve cattle movement. General soft lighting inside the processing barn/shed will often facilitate entry.

In areas where animals are handled, illumination should be uniform and diffuse. Shadows and bright spots should be minimized. Livestock are sensitive to harsh contrasts of light and dark around loading chutes, scales and work areas. A zebra-stripe pattern cast by slatted roof and fences can cause balking.

Cattle have poor depth perception. To see depth on the ground, the animal must stop and lower its head. The pattern of alternating light and dark caused by shadows can have the same effect as building a cattle guard in the middle of the facility. Cattle are also more likely to balk at sudden changes in color, which can also affect depth perception. Handling facilities should be painted one uniform color.

It should be mentioned that most of these responses to contrasting light and dark are a result of animals being stressed and looking for distractions. Cattle walk across contrasts and shadows in the pasture all day long without hesitation. In those conditions, the cattle are not looking for something to frighten them. As handlers it is always in the best interest of safety and handling to have cattle that are not looking for something to frighten them. Reducing stress in cattle takes patience and practice.

Hearing

The second means of communicating with cattle is through sound. It is

always better to rely on vision to communicate with cattle than to rely on sound. Sound can be stressful to cattle and should be kept to an absolute minimum. Cattle can be handled calmly and moved successfully with minimal amounts of noise. In facilities where cattle are handled, loud noises and other distractions should be avoided. Rubber stops on gates and squeeze chutes reduce noise. The pump and motor on a hydraulic squeeze chute should be located away from the chute. Employees should be encouraged not to vocalize.

Touch

The third means of communicating with cattle is through touch. It should normally be reserved as a last resort. If touch is reserved for the areas of most resistance, it is much more effective when used. For example, if an animal balks in the chute or alley, approaching from the front and simply running a hand down their back as the handler passes by is very effective in starting movement. Also in this category is use of driving aids such as sorting sticks, paddles, whips, ropes, and hotshots. None of these tools are bad, but when misused all can be detrimental to improved cattle handling.

Proper use of a sorting stick relies on using it for its intended purpose. Use it to direct cattle movement, not as a means of striking an animal. Often times sticks, paddles, whips and ropes are overused just because they are in the handler's hand. The same can be said of hotshots.

The use of a hotshot should be reserved for use when all other proper handling techniques have failed. Never let anyone carry a hotshot in their hand at all times, it will lead to overuse. A properly used hotshot is a much more humane way to encourage an animal to move forward than any other available driving aid. However, there is a proper way to use them, and employees should know and adhere to those guidelines. Never apply a hotshot to the sensitive areas of an animal such as the eyes, muzzle, genitalia, or udder. When used, apply only as much stimulus as needed to establish desired movement.

Flight zone

An important concept of livestock handling is the "flight zone." The flight zone is the animal's "personal space." Managing where the handler is in relation to the flight zone is what allows the movement of cattle. Being able to read, gauge and adjust to an individual animal's or a herd's flight zone is important in managing the speed of cattle movement and in reducing stress placed on cattle.

Size of the flight zone depends on cattle disposition and prior handling. Handling of cattle can be used to alter the flight zone on cattle. Cattle need to be able to accept pressure without bolting, and if they know that small responses

will release the pressure the handler put on them, they will learn to respond with a measured, controlled response. Cattle accustomed to frequent calm handling may have a small flight zone. Extremely tame cattle are often difficult to move because they no longer have a flight zone.

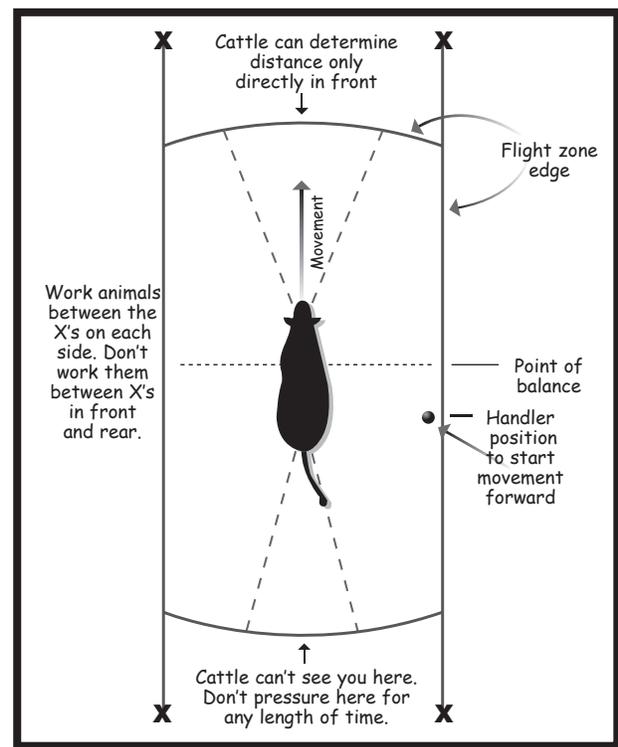
The flight zone of range cows varies greatly. However, and regardless of the size/range of the flight zone, when a person enters the flight zone, animals move away. To develop proper handling skills it is important to learn how to read cattle and anticipate the edge of the flight zone. The flight zone is not as important as the area right before the flight zone. How cattle are approached just prior to their flight zone dictates the direction and speed of their departure. Understanding the flight zone can reduce stress, prevent accidents and injury to handlers, and ease cattle movement and flow (See Figure 5).

The edge of the flight zone can be determined by slowly walking up to the animal. When the handler penetrates the flight zone, the animal will move away. The best place for a person to work cattle is on the edge of their flight zone. Movement can be started and stopped by movement into and out of the flight zone. Staying out of the flight zone becomes more difficult as cattle move toward and through a working facility. Cattle with a large flight zone may benefit from closed sides on the working facility. The solid sides shield pressure exerted on the animal just through their proximity to people.

One example of this is expressed in working facilities when cattle sometimes become agitated and rear up while waiting in a single-file crowd alley. This often happens because a person is in too close of proximity or they lean over the crowd alley, invading the animal's flight zone. That behavior is dangerous to both people and cattle and, if observed, the person working the crowd alley or standing too close should simply back away from the crowd alley. Never approach the animal that is rearing, as it will only put more pressure on them and make the problem worse and last longer and become more dangerous.

One of the most misunderstood and misused characteristic of behavior is what is referred to as the "point of balance". The most common thinking is that the point of balance is the shoulder of the animal (figure 5) and as such to cause animal to back up, the handler

Figure 5



should stand in front of the point of balance (the shoulder). Therefore, to get an animal to move forward the handler must be behind the shoulder. There are several differences in opinion related to the point of balance and how best to use it when moving cattle.

The focus has always been on the shoulder as the reference point on cattle. There is nothing on or about the shoulder that would cause an animal to move forward or backwards. What needs to be keyed on to move cattle is the eye. It just so happens on a lot of cattle that when you pass the shoulder, your position in relationship to the eye changes such that most untrained animals will move forward.

Because the eye controls the point of balance, and not the shoulder, this point of balance can be managed and changed through proper handling and training of cattle. In fact, to easily sort cattle and manage their movement through a corral system, the point of balance needs to be shifted forward. If the only way to get an animal to move forward is to pass behind its shoulder, controlling movement and sorting cattle will be extremely difficult.

Handlers should always strive to teach animals to come by them by drawing them forward, rather than through getting behind and driving them out of the herd. Shifting the point of balance forward improves cattle handling and reduces stress on cattle and handlers.

Herd instinct

Properly designed facilities and cattle handling take advantage of the natural herding instinct of cattle. Unfortunately, many cattle are handled by trying to push the cattle through a system because of the way facilities are designed. The more cattle are pushed from behind, the more resistant they become to being moved.

This herding instinct helps establish flow through a corral system. It is difficult to push a large number of cattle anywhere, much less through the confinement of a working facility. However, if movement can be created in the animals in the front, the draw of that movement can easily send cattle through the working facilities. Allow livestock to follow the leader and do not rush them. If animals bunch up, handlers should concentrate on moving the leaders instead of pushing a group of animals from the rear.

The same use of the herding instinct should be used in gathering cattle. Handlers start the flow and movement of the leaders, and then help in maintaining flow through the pasture or corrals.

While the herding instinct is very useful in managing the movement of cattle, it can also cause stress in cattle that must be sorted from the herd. Cattle are herd animals and they are likely to become stressed and possibly highly agitated when they are separated from their herd mates. Try not to isolate an animal, but

if an isolated animal becomes agitated, other animals should be placed with it. This will calm agitated animals as well as facilitate movement.

Crowd alleys and loading chutes

Single-file crowd alleys are recommended for moving cattle onto a truck or squeeze chute. These can be either straight or curved, and there are advantages and disadvantages to both. A curved crowd alley might be more efficient for two reasons. First, it prevents the animal from seeing what is at the other end of the chute until it's almost there. Second, it takes advantage of the natural tendency to circle around a handler moving along the inner radius. However, there are a couple of concerns with curved crowd alleys. Where they leave the crowding pen, whether it be a crowd tub, V-shaped box or Bud box, it should be straight for at least 16 feet before starting a curve. This prevents the solid sides of a curved crowd alley from looking like a dead end as they approach.

While some believe a curved crowd alley is absolutely necessary, many facilities utilize straight systems. Both work equally well if cattle are loaded into them correctly and worked correctly by those taking the cattle to the squeeze or loading chute. Livestock will often balk when they have to move from an outdoor pen into a building. Animals will enter a building more easily if they are lined up in a single-file chute before they enter.

A curved chute with an inside radius of 13-16 ft will work well for handling cattle. The absolute minimum length for a crowd alley is 16 feet with 20 to 24 feet being a better minimum. Regardless of shape, the success or difficulty associated with moving cattle to the squeeze or loadout is dictated by how the cattle are moved from the crowd pen into the crowd alley, and then how they are moved up the crowd alley. Always work from the front of the animals toward the back of the alley. Once the handler has started movement they need to step away from the alley and move back to the front. Do not walk back up the side of the alley from back to front. That will stop movement of cattle. This is where a curved system has an advantage. Once the handler reaches the back of the alley they can cut across the diameter of the circle back to the front of the cattle without stopping flow.

Solid sides are routinely recommended on both the crowd alley and the crowd pen, which leads to a squeeze chute or loading ramp. While solid sides may keep distractions to a minimum, it also will prohibit cattle from being able to see the handlers and respond to their movements. Solid sides are usually not necessary if cattle handling skills are adequate. Open-sided and straight-sided systems are much more economical to build, and can be utilized just as effectively as curved and solid sided handling facilities.

Facilities should also be designed to optimize cattle traction. Alleyways, crowd pens, crowd alleys, squeeze chutes, loading chutes and the exit area in

front of a squeeze chute are all areas that need excellent traction. Cattle remain calmer when they are able to obtain solid footing. Slipping upon exiting a squeeze is a common cause of bruising and injury to cattle.

Crowd pen

The crowding pen can represent the most stressful portion of a working facility. If stress occurs in this area, it is because the handlers are not working the area correctly. Regardless of design, the crowding pen is a pass-through part of the facility. Only bring the number of cattle that will fit in the crowd alley to the crowd pen. **Never hold cattle in the crowd pen.** The loss of movement will require excessive force be used on the cattle to reestablish flow causing stress and risk of injury.

The most common designs for crowding pens today are tubs, V's or Bud boxes. Of those three, only the tubs are truly a component of the working facility that can crowd animals through use of a crowd gate. Bud boxes and V's

Handling Facility Dimensions for Corral and Working Facilities

Holding Area (sq. ft. per head)	
Cows	20
Calves	14
Crowding Pen (sq. ft. per head)	
Cows	12
Calves	6
Crowd Alley with Fixed Sides	
Width	28 to 30 inches
Length (minimum)	20 feet
Crowd Alley with Adjustable Sides (recommended)	
Adjustable Width	18 to 32 inches
Length (minimum)	20 feet
Crowd Alley	
Recommended height (minimum)	50 inches
Depth of post in the ground (minimum)	30 inches
Corral Fence	
Recommended height	60 to 66 inches
Depth of post in the ground (minimum)	36 inches
Ramp Height for:	
Stock trailer	15 inches
Semi tractor-trailer	48 inches
Double-deck trailer	100 inches
Loading Chute	
Width	26 to 30 inches
Length (minimum)	12 feet
Rise, inches per foot	3 1/2

require pressure be put on the animals through body position and driving aids to direct the cattle out of the enclosure. The common denominator to all of them is that they work only as good as the handlers putting cattle through them.

It also needs to be said that all tubs, V's and boxes are not created equal and it requires an understanding of cattle behavior and proper use of the flight zone and point of balance to make them work properly. This is a complicated area of discussion and cannot be covered in-depth in this publication. Additional information can be obtained through <http://www.ranchtv.org> or <http://beef.tamu.edu>.

Best Management Practices – Cattle handling

1. Develop a complete understanding of cattle behavior, flight zone and point of balance.
2. Work as quiet as possible, using body position and line of sight to move cattle. Keep noise, such as yelling, whistling and machinery to an absolute minimum.
3. Facilities do not have to be elaborate in design, but should be constructed with a good understanding of cattle behavior and out of durable materials.
4. Handling facilities should be inspected for broken gates, latches and anything that could be dangerous to people or cattle prior to each working.
5. Have adequate holding and sorting pens to accommodate routine management of cattle.
6. Minimize the use of cattle prods (hotshots, sticks, pipe, etc.) that can cause stress and bruising. Do not allow anyone to carry a hotshot with them at all times. Reserve its use as a last resort in getting cattle to move.
7. Use driving aids, such as sorting sticks, paddles, whips, or flags for their intended purpose. They should not ever be used to strike an animal.
8. Use a crowding pen as a pass through part of the facility. Cattle should never be stored in the crowding pen.