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Principles for Low Stress Cattle Handling

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Introduction

An understanding of animal psychology combined with well designed facilities will reduce stress on both you and your cattle. Reducing stress is important because stress reduces the ability to fight disease and weight gain. The principles discussed in this book apply to all types of grazing animals. Stress increases weight loss, damages rumen function, and can interfere with reproduction.

An animal's previous experiences will affect its stress reaction to handling. Cattle have long memories. Animals which have been handled roughly will be more stresses and difficult to handle in the future. Animals which are handled gently and have become accustomed to handling procedures will have very little stress when handled. The basic principle is to prevent cattle from becoming excited. Cattle can become excited in just a few seconds, but it takes 20 to 30 minutes for the heart rate to return to normal in severely agitated cattle.

There is an old saying "You can tell what kind of a stock man a person is by looking at the behavior of his cattle." In one feedlot survey, cattle form yards which had a reputation for rough handling were wilder and more difficult to handle at the packer. They also had more bruises and dark cutters. The degree of stress which will be induced by handling and restraint can vary from almost no stress in a tame show animal to very severe stress in a wild range cow. The degree of stress is determined by three major factors -- 1) amount of contact with people, 2) quality of handling (rough vs. gentle) and 3) genetics. Frequent, gentle handling will reduce stress. Genetics is also an important factor. Some genetic lines of cattle are calmer and less likely to panic than others. Cattle with an excitable temperament will take longer to respond positively to gentle handling than cattle with a calm temperament. Most cattle will become less stressed and settle down when they are handled gently. However, there are a few individuals with a bad temperament that may never settle down and are dangerous to restrain and handle. Culling them is often advisable.

Although painful procedures cannot be avoided, a reduction of agitation and excitement will still reduce stress. Cattle remember painful restraint methods such as nose tongs. Handling will be easier in the future if you use a halter to hold the heads and keep electric prod usage to an absolute minimum. If tail twisting has to be used to move a cow up a chute, let go of the tail when the cow makes one step forward to reward her for moving. The tail must be released the instant the cow steps forward, otherwise she will not make the association. Breeding cattle will quickly learn to move when their tail is touched. Timing is very important when using the principle of pressure and release. This principle is used in many situations where cattle, horses and other animals are handled and trained. If an animal is being taught to lead, one should let up and stop pulling when the animal takes one step forward. The principle is to give relief to reward

the animal when it does what you want. When the horse stops, you should stop pulling on the bridle.

Fear of Novelty and Genetics

All grazing animals are visual beings that are motivated by fear. In the wild they are ever vigilant and any novel sight or sound is perceived as a possible danger. Their ears are more sensitive to high pitched noise than human ears and their wide angle vision enables them to scan the horizon for predators while they are grazing. Yelling and whistling at the animals raises their heart rate more than the sound of a gate slamming. Grazing animals are extremely sensitive to rapid sudden movement. People who wave their arms and make sudden jerky movements scare cattle. Slow steady movements are less likely to trigger a fear reaction.

1. Fear of Novelty - Cattle will often balk and refuse to walk over a shadow, puddle, or change in flooring surface. They are wary of abrupt changes in color and high contrast. A coffee cup on the floor of a single file race or a small chain that jiggles on a fence will make them stop. If cattle balk and refuse to move through a facility one needs to get down in the race and pens and see what the cattle are seeing. Some of the most common things which will make cattle stop are: loose chain ends that move, jiggling objects, a coat on a fence, reflections off puddles and seeing people moving up ahead. Calm cattle will look right at the things that they are scared of. If the cattle become excited it becomes impossible to determine why they refuse to walk down a race.

Novelty can be both fear inducing and attractive. Calm cattle in a corral will approach and sniff a paper cup on the ground, but that same cup will cause them to balk and turn back if one attempts to force the animals to walk over it. Cattle are most likely to panic when they are suddenly confronted with a novel sight or sound.

Cattle can be trained to tolerate novelty and changes in their routine. Cattle in the Phillippines are not afraid of cars and motorcycles because they have seen them since birth while grazing along the roads. The vehicles are no longer novel. Cattle that have never seen horses may become agitated when they are first moved with horses and be calm when moved by handlers on foot. However, animals accustomed to handlers on horseback may panic if suddenly confronted with people on foot. It is important to get cattle accustomed to both people on foot and people on horseback. If new handling procedures are introduced slowly the animals can be trained to accept them. When a new procedure or a new facility is first introduced to the cattle their first experience with new people and equipment should be relatively pleasant. First experiences make a big impression on animals. If the animal's first experience is painful or scary the cattle will have a permanent strong fear memory. It is advisable to train cattle by walking them through new yards, races and chutes prior to restraining them in the squeeze chute or doing painful procedures.

Fear is a very strong stressor. For wild, extensively reared cattle, being restrained in a squeeze chute (crush) can be almost as stressful as branding. In tame dairy cattle, branding is much more stressful than restraint. The highly variable results in many handling and transport

studies is likely to be due to different levels of fear stress in cattle with differing degrees of tameness.

2. Effect of Genetics - Genetic factors will also affect how cattle and other animals will react to handling. Individuals with an excitable temperament are more likely to panic and become agitated when they are suddenly confronted with novelty. I have observed problems with European Continental cross cattle that have no tolerance for novelty. If they are handled quietly on their familiar home ranch or farm they will be quiet and easy to handle. But they become highly agitated when confronted with the novelty and noise of an auction market or slaughter plant. These animals are more likely to injure themselves or handlers when suddenly confronted with novelty. One of the best places to see an animals true genetic temperament is in an auction ring. Genetically excitable animals show their genetic tendency to panic easily when they are suddenly confronted with novelty noise and strange people. Excitable cattle have a temperament that is more like a horse's temperament. They have greater tendency to panic. Cattle are herd animals. Animals isolated by themselves are likely to become highly agitated because they want to rejoin their herd mates. Animals with an excitable temperament become more agitated when separated from the group than animals with a calm temperament. Some animals attack when they become scared. Bulls of many species and bison may attack when they are scared. A total flight animal such as the horse usually jumps rears and flees. A lone bovine in a confronted space can be very dangerous. Attacks are usually motivated by fear in this situation.

It is important for producers to select for temperament. Cattle that become highly agitated at auctions and slaughter plants are dangerous for people to handle and they are more likely to have dark cutting meat. In the U.S. the incidence of dark cutters has more than doubled partly due to genetic lines of cattle with an excitable temperament. A recent study we conducted showed that cattle which went berserk in the squeeze chute had more dark cutters. Cattle with an excitable temperament also had lower weight gains in the feedlot.

Behavior Principles for Handling

Cattle have wide angle vision, they can see behind themselves without turning their heads. However, there is a small blind spot behind their rear (Diagram 1). When a group of cattle move, the animals maintain visual contact with each other. This enables the herd to stay together. An animal following another animal will tend to stay in Positions A and B on Diagram 1. This position is just behind the point of balance at the shoulder. Moving together as a herd helps protect cattle from predators. The strongest dominant animals will be in the middle of the herd and the subordinate animals will be on the outside. Since cattle are a prey species they are ever vigilant and fear novelty. For example, cattle moved to a new pasture may be fearful of cars passing by on the highway, but soon they learn to ignore them.

Understanding the flight zone is the key to easy, quiet handling. The flight zone is the cow's safety zone. When you penetrate the flight zone the animals will move, and when you retreat from the flight zone the animals will stop moving. The size of the flight zone is determined by many factors, such as wildness or tameness, and the angle of the handler's approach. The flight zone will be larger when a handler approaches head on, and it will become

smaller when the animal is confined inside a single file chute. A barrier in between the handler and the cattle reduces the flight distance. A cow passing by you will have a smaller flight zone that a cow coming directly at you. If a cow becomes excited the flight zone will increase. Cattle can be easily moved by working on the edge of the flight zone (Diagram 1). the handler must be close enough to the animal to make it move, but not so close as to cause it to panic and flee. If the cattle start moving too fast, you must back off and get our of the flight zone. The principle is to use pressure and release. When the cow's go where you want them, back out of the flight zone again. When they slow down, enter the flight zone again.

If cows on pasture turn and look at you, you need to approach and put pressure on the edge of the flight zone because you are outside of the flight zone. To keep the animals moving you alternately enter and retreat from the flight zone. When an animal moves for you, you reward her by relieving pressure on her flight zone, but in a few seconds you will invade her flight zone again to keep her going.

When cattle are worked in an enclosed space such as an alley or crowd pen, great care must be taken to avoid deeply penetrating the flight zone. This can result in panic, jumped fences and cattle turning back on the handler. If cattle in an alley start to turn back you must back up and get out of the flight zone; nine times out of ten, they will settle back down.

To move an animal forward you must be behind the point of balance shown on Diagram 1. Moving in front of the point of balance at the shoulder will make the animal go backward. To start movement, approach just behind the point of balance and move into Positions A and B. Cattle can be moved very efficiently by walking quickly past the point of balance at the shoulder (Diagram 2). The handler moves in the opposite direction of desired movement inside the flight zone and in the same direction as desired movement outside of the flight zone. The point of balance at the shoulder is a hard wired instinctual behavior pattern which helps cattle escape from predators. The movement pattern in Diagram 2 works very efficiently for moving cattle into squeeze chutes. A bigger version of this pattern is used on pastures and in large pens.

Avoid remaining in the blind spot while handling animals on a pasture or in a large pen. Staying in the blind spot will cause the cattle to stop and turn and look at you. They want to know where you are at all times. In close quarters you may get kicked if you get in a cow's blind spot.

Slow Is Faster

You must break old habits to fully master quiet animal handling. The first habit to break is whooping, hollering, and running. It will require some time and patience, but your cattle will become quieter and easier to handle as you work with them. The second bad habit is chasing cattle from the rear of the group like an attacking predator. Standing still behind the cattle, puts you in their blind spot. This will cause them to turn and look at you, unless they are scared and fleeing from you. Cattle movements should be under the handler's control and the animals should move at a slow walk. You have to concentrate on moving the leaders. You should spend time walking and riding among your cattle so they do not always associate you with either

feeding or being taken to the corrals. The animals need to learn that you are neither predator or feed wagon. If cattle are fed from a truck, blow the horn as a signal for feeding. This will prevent the animals from chasing the truck every time you drive in the pasture. Cattle should be acclimated to handling with horses, vehicles and people on foot. Feedlot managers have reported problems with excessively wild cattle that have never seen a person on foot. Packers have found that dark cutting meat is more likely if cattle have been handled exclusively by riders on horseback at both the ranch and the feedlot. These cattle panic when a man on foot attempts to move them at the packing plant. Since cattle are fearful of novelty, animals that have never seen a motorcycle will fear it. It is best to get cattle accustomed to different driving methods. Different vehicles and people should be used to train the animals to be less fearful of novelty.

Working in Corrals

Applying and relieving pressure on the flight zone of the leaders will also make it easier to fill and empty corrals. Cattle movements are under your control at all times. It is important for your cattle to learn that you control their movements and they cannot escape from you. Never allow cattle to run wildly out of a corral. Make the animals walk past you at the exit gate. Wait for the cattle to turn and look at you before you walk away from the gate. When a new set of corrals is first used, avoid doing painful procedures. It is advisable to "train" the cattle to the new system and do non-aversive procedures such as weighing or sorting the first time corrals are used.

Cattle will also enter a corral in a more orderly manner if they have to walk by you as they enter. Do not move back and forth. Increase and decrease pressure on the flight zone by moving forward and back, straight into the herd. You must apply enough pressure to keep them form veering away from the fence but not so much as to cause panic.

When you move animals from a pen, do not let them race out. Stand near the gate and work the flight zone of the leaders. The handler moves across the point of balance inside the flight zone in the opposite direction of desired movement to speed cattle up and outside the flight zone in the same direction as desired movement to slow cattle down. To sort cattle out a gate, move forward and backward, advancing towards, or retreating from the cattle. Do not move sideways. If you move sideways they will get by you. By moving forward and backward you can easily separate cows from calves. You increase pressure on the flight zone of the animal you want to hold back and decrease pressure on the flight zone of the animals you wish to let go by. Cattle that the handler wishes to hold back should be stared at. Cattle react to a "predatory" stare. The handler should look down and away from cattle that he/she wants to move out of the pen. Body posture can also be used for sorting. The flight zone is enlarged when the handler faces the cattle with a full frontal posture and the flight zone gets smaller if the handler looks away and presents a narrow sideways profile. This method can be used either in an alley or in a gate. A handy tool for sorting is a stick with a flag or a paddle on the end. Blocking the animal's vision on one side with paddle or flag will cause it to turn.

When cattle are being handled in a confined area such as a crowding pen or sorting alley, handle small groups. The crowd pen or "tub" should be filled only half full. Overloading the

crown pen is a common handling mistake. The animals need room to turn. A stick with plastic streamers or a plastic bag tied on the end is useful for turning cattle in the crowd pen. Shake the streamers on the right side of the head to turn left and vice versa. Use the animal's natural following behavior to assist with filling chutes. Wait until the single file to the squeeze is almost empty before refilling to utilize following behavior. Avoid the overuse of crowd gates. The crowd gate should follow the cattle not push them. If the cattle are moving, do not shove the crowd gate up on them.

Reduce Balking

If cattle balk and refuse to enter the single file alley, one should remove the distraction that is causing balking instead of resorting to more pressure. Many facilities have too many backstop gates to prevent cattle from backing up. If cattle balk at a backstop gate at the single file chute entrance it should be either tied open or equipped with a remote control rope so that it can be held open for the cattle. In a well designed facility with a curved single file chute the only backstop gate that is really needed should be located two body lengths behind the squeeze chute. This will prevent the leaders from backing out.

Problems with balking tend to come in bunches; when one animal balks, the tendency to balk seems to spread to the next animals in line. When an animal is being moved through a single-file chute, the animal must never be urged forward unless it has a place to go. Once it has balked, it may continue balking. The handler should wait until the tailgate on the squeeze chute is open before using the movement pattern shown in Diagram 2. In most handling facilities, 99 percent of the cattle can be moved into the squeeze chute without electric prod. If the cattle become severely agitated due to excessive prodding, the agitation and frenzy can spread to the other cattle. Severely agitated cattle may secrete a "smell of fear" substance that can be detected by other cattle.

Lone Animal Danger

An animal left alone in the crowding pen after the other animals have entered the single-file chute, may attempt to jump the fence to rejoin its herd mates. A lone steer or cow may become agitated and charge the handler. A large portion of the serious handler injuries occur when a steer or cow, departed from its herd mates, refuses to walk up the single-file chute. When a lone animal refuses to move, the handler should release it from the crowding pen and bring it back with another group of cattle.

Vision and Handling

Grazing animals have poor depth perception when they are moving with their heads up. To see depth they have to stop and put their heads down. This is why they balk at shadows and strange objects on the ground. All grazing herding animals such as cattle, bison and horses are extremely sensitive to objects that make quick rapid movements. A loose chain end hanging down at the entrance of the single file chute can ruin the efficiency of a well designed facility. Loose chain ends must be tied or taped up. A piece of cloth or plastic that flaps will also cause

balking. A single shadow that falls across a scale or loading chute can disrupt handling. The lead animal will often balk and refuse to cross the shadow. If the leader is allowed to investigate the shadows the others will follow the leader after he decides it is safe and crosses the shadow. If you are having problems with animals balking at one place, a shadow or loose chain is a likely cause. Balking can also be caused by a small bright spot formed by the sun's rays coming through a hole in a roof. Patching the hole will often solve the problem. Shades constructed from slatted fence should not be used over working areas. The zebra stripe shadows can cause balking.

Draining grates in the middle of the floor will make cattle balk. A good drainage design is to slope the concrete floor in the squeeze chute area toward an open drainage ditch located outside the fences. The open drainage ditch outside the fences needs no cover and so it is easier to clean. Animals will also balk if they see a moving or flapping object. A coat flung over a chute fence or the shiny reflection off a car bumper will cause balking. Dairy cows that move through a facility every day will learn to walk over shadows and drains because they are no longer novel. However, a dairy cow will balk if she sees a strange piece of paper on the floor or a coat hung over a fence.

Cattle have a tendency to move toward the light. If you ever have to load livestock at night, it is strongly recommended that frosted lamps that do not glare in the animal's face be positioned inside of the truck. However, loading chutes and squeeze chutes should face either north or south; livestock will balk if they have to look directly into the sun. Animals are attracted to light, but they will not approach blinding light. Sometimes it is difficult to persuade cattle to enter a roofed working area. Persuading the animals to enter a dark, single-file chute from an outdoor crowding pen in bright sunlight is often difficult. Cattle are more easily driven into a shaded area from an outdoor pen if they are first lined up in single file. Movement into a building can often be improved by installing white translucent panels in the walls. These will let in lots of shadow free light. Problems with getting animals to move into a darker building are most likely to occur on a bright sunny day. A facility that works poorly on a bright sunny day may work well at night or on a cloudy day. The ideal illumination inside a building for moving cattle should resemble a bright cloudy day.

Many people make the mistake of placing the single-file chute and squeeze chute entirely inside a building and the crowding pen outside. Balking will be reduced if the single-file chute is extended 10 to 15 feet outside the building. The animals will enter more easily if they are lined up single file before they enter the dark building. The wall of the building should NEVER be placed at the junction between the single-file chute and the crowding.

Do Not Dead End Your Chute

Livestock will balk if a chute appears to be a dead end. Sliding and one-way gates in the single-file chute must be constructed so that your animals can see through them, otherwise the animals will balk. This is especially important at the junction between the single-file chute and the crowd pen. The sides of the single-file chute and the crowding pen should be solid. The crowding pen gate also should be solid so that animals cannot see through and turn back towards

herd mates they just left. Palpation gates, however, should be solid so that cattle do not see a person standing in the chute.

When a curved chute is used it must be laid out properly so that it does not appear to be a dead end. A cow standing in the crowd pen must be able to see a minimum of two body lengths up the chute. Cows will balk if the chute is bent too sharply at the junction between the crowd pen and the single-file chute. This is one of the worst design mistakes. Diagram 3 illustrates an efficient curved facility that is easy to lay out. The round crowd pen (tub) in this facility works efficiently because cattle moving through the tub think they are going back to where they came from. It consists of three half circles laid out along a layout line. The radius points of all three half circles are on the layout line. A 16 (4.8m) ft. inside radius for the curved single-file chute is recommended. A 12 ft. (3.5m) radius is the absolute minimum unless a straight section is installed at the junction between the crowd pen and the chute.

Why a Curved Chute Works

A curved chute works better than a straight chute for three reasons. First, it prevents the animal from seeing the truck, the squeeze chute, or people until it is almost in the truck or squeeze chute. Shields for handlers to hide behind and remote controlled gates can also be used to prevent cattle from seeing people up ahead. A curved chute also takes advantage of the animal's natural tendency to circle around the handler. When you enter a pen of cattle or sheep you have probably noticed that the animals will turn and face you, but maintain a safe distance. As you move through the pen, the animals will keep looking at you and circle around you as you move. A curved chute also takes advantage of the natural behavior of cattle to go back to where they have come from.

A well-designed, curved single-file chute has a catwalk for the handler to use along the inner radius. Another design that is getting popular is to make the outer radius of the single file chute completely solid and the inner radius has a 4 foot high solid side. The catwalk is eliminated and the handler works by penetrating and then retracting from the flight zone. The crowd pen or “tub” should have a catwalk and a solid fence that prevents the cattle from seeing out. The handler should always work along the inner radius. The curved chute forces the handler to stand at the best angle and lets the animals circle around him. The solid sides block our visual distractions except for the handler on the catwalk or walking on the ground along the inner radius. The catwalk should run alongside of the chute and NEVER be placed overhead. The distance form the catwalk platform to the top of the chute fence should be 42 (100 cm) inches. This brings the top of the fence to belt-buckle height on the average person.

Restraint Principles

Cattle sometimes become severely stressed and agitated in a conventional squeeze chute. This is due to deep invasion of the animal's flight zone by the operator and other people that can be seen through the open barred sides. Stress could be reduced by installing rubber louvers on the open barred sides. Six to eight inches (15 to 20 cm) wide louvers made from rubber conveyor belting are installed on the drop down bars on a 45 degree angle. The bars can still be

opened, but incoming animals cannot see out as they enter. People that handle bison and deer have used solid sides on squeeze chutes for many years. Try experimenting by covering up the sides of the squeeze chute with card board. The most important part to cover is the back half nearest the tailgate. Bison squeeze chutes also have a solid gate located about 3 ft. (1m) to 4 ft. (1.2m) in front of the headgate. A solid top is recommended for bison. This gate prevents the animal from attempting to run through the headgate. Many cattle sustain shoulder and neck injuries when they hit the headgate too hard. Cattle should walk into and out of the squeeze chute at a walk. Quiet handling will pay by reducing injuries and weight gain losses due to shoulder and neck pain. One large Colorado feedlot reported that sickness was greatly reduced when they handled animals more gently in the squeeze chute. Bruises and neck injuries also secrete "stress" substances onto the animal's system. At a Kansas feedlot cattle got back on feed more quickly when they were handled gently.

The best squeeze chutes have squeeze sides that close in evenly on both sides. This keeps the animal in a balanced position. Animals will often panic if they slip or feel off balance.

Below is a list of the principles of low stress restraint for grazing animals:

1. Block vision to prevent the animals from seeing people deep in their flight zone.
2. Block vision of an escape route, but cattle entering a restraining apparatus must see lighted area. They will not walk into a dark space.
3. Slow steady pressure applied by a restraint device is calming and sudden jerky motion causes excitement and agitation.
4. Optimum pressure - a restraint device must apply sufficient pressure to provide the feeling of being held, but excessive pressure that causes pain must be avoided.
5. Cattle will stand more quietly and remain calmer if they can see another animal within 1 m (3 ft.) of them but they may lunge and become excited if they see herd mates many meters away. They become excited because they want to rejoin their herd mates.

Trouble Shooting Handling Problems

To solve a handling problem one must determine the cause of the problem. Difficulties can arise from any one or more of the following factors:

1. Facility design problem such as a dead ended chute (race).
2. Small distractions that cause balking which can be easily corrected (see list).
3. Too many animals placed in the crowd pen. Fill it half full.
4. Handlers who get the animals agitated, excited and scared.
5. Animal temperament problem caused by flighty excitable genetics.
6. Problems with lighting and a chute entrance that is too dark.

You must determine whether you have a basic design problem, a small distraction that can easily be fixed, or an animal or handling technique problem.

DIAGRAMS

Diagram 1 - Flight Zone

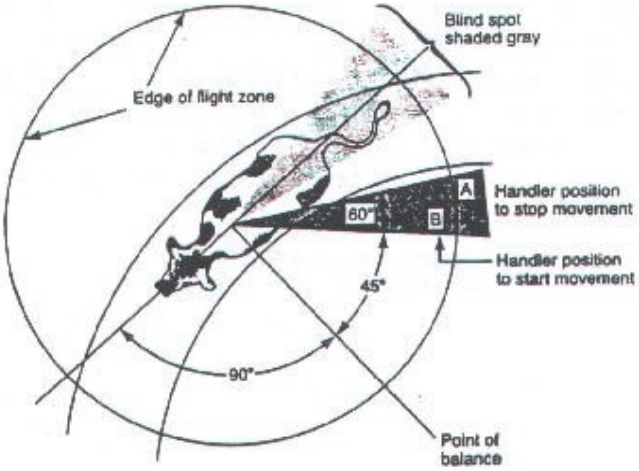

Diagram 2 - Handler movement pattern to keep cattle moving into a squeeze chute or restrainer

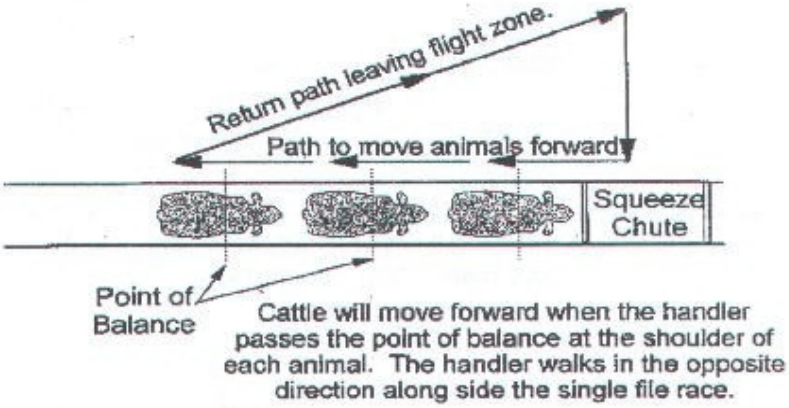

Diagram 3 - Basic curved handling facility