



Low Stress Cattle Handling

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Introduction

Low stress cattle handling techniques are methods of working cattle using the cattle's natural instincts to move them. Cattle have evolved with the natural instinct or tendency to move away from pressure. A skilled handler can use an animal's flight zone, point of balance, and cattle's natural way of learning; pressure and release, to move cattle without increasing the animal's level of distress during the working process.

There are two main benefits of low stress cattle handling. The first is improved safety for both the handler and the cattle (Detering. 2006, Grandin. 1998). The second is improvement in a multitude of economically relevant traits that include:

- Immunity and response to vaccines (Kim. 2010, Burdick et al. 2011)
- Observation of clinical signs of illness (Hulbert et al. 2011)
- Weaning response (Weary et al. 2008)
- Weight gain (Voisinet et al. 2009)
- Milk yield (Breuer et al 2000) and milk quality (Hemsworth et al 2002)
- Feedlot performance and carcass quality (Reinhardt et al. 2009, Lensink et al. 2009)
- Temperament and workability Hearnshaw et al. 1984, Probst et al 2013)
- Reproductive performance (Kasimanickam et al. 2014).

Temperament

The "fight or flight" in relation to cattle can be described as their response to a perceived threat and how exaggerated that response is due to genetic predisposition or learned behavior. Genetic predisposition can be monitored through docility Expected Progeny Differences, or EPDs. EPDs are defined as the expectation of how offspring of the

listed individual will perform when compared to its constituents or other cattle of similar age (American Angus Association). Selection of more favorable docility EPDs in breeding stock will gradually produce calmer temperaments in our cattle. Learned behavior can originate from watching other cattle or from previous handling experiences (Hearnshaw 1984). We can utilize low-stress cattle handling to encourage calmer temperaments.

Your temperament and cattle working method will largely dictate your cattle's temperament.

There are a few key concepts necessary for effectively executing low-stress cattle handling techniques.

Pressure and release learning

Cattle learn by pressure and release. Cattle instinctively move away from pressure. The handler can apply pressure by moving toward the animal, curling of the tail, or even direct eye contact. It is important apply just enough pressure to encourage the desired result, or desired movement, and then immediately release the pressure. Releasing the pressure is accomplished by stepping away from the animal; allowing more distance between you and the animal, releasing the tail, or merely looking away. This release of pressure rewards the cattle for the correct movement. Repeating the processes will continue the learning experience for the desired results. Too much pressure without suitable periodic release can create confusion and cause cattle to fear you as they do a predator and. This can trigger an increased "fight or flight" response, and, depending upon an individual's temperament, can result in an aggravated response such as charging.

Movement of Cattle to the Point of Least Pressure

Cattle prefer to avoid any external pressure. They want to move past you, preferably behind you, to alleviate pressure put on them by your infringement of their flight zone and the pressure you apply with direct eye contact.

Blind Spot

There is an area directly behind cattle where they cannot see. They also lose sight of you if you stand still for too long, making them nervous if you suddenly move again, so subtle constant motion will help them keep you in their line of view. The grey triangles in figure 1 represent the animal's blind spot. It is important to stay in sight and avoid the blind spot by working cattle from their left or right sides.

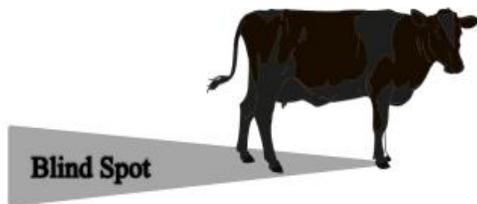


Figure 1. Illustration of the blind spot for cattle.

Flight Zone

This zone is the imaginary area around an animal in which you exert influence any time you enter. When you apply pressure by stepping inside the area of the flight zone, the animal moves away, when you step out of that area, releasing that pressure, the animal slows down or stops. The circle in figure 2 is the animal's flight zone. Figure 2 shows the handler at the edge of this cow's flight zone.

Flight zones are different for each animal, are not always a perfect circle, and can depend on temperament or other stimuli in the environment. For example, cattle well acclimated to humans may have small flight zones, requiring you to step very close to the animal before you exert influence, or get a response. A nervous animal may have a large flight zone, meaning that you can apply and release pressure even from great distances. Observation is the key to working an animals' flight zone. You

should always remain just at the edge of the flight zone, preventing the application of too much pressure. The intensity of pressure applied to the flight zone will dictate speed. A walk is the desired gait for the least stress.

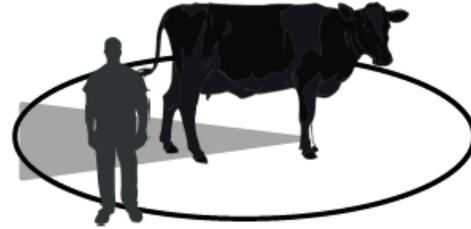


Figure 2. Illustration of a cow's flight zone. The person is standing on the edge of the flight zone.

Point of Balance

This is the positioning of the handler to persuade movement forwards or backwards and left or right, in accordance with the pivot point perceived by the animal. The point of balance depends on the eyesight of the animal but is generally around the shoulder region for forwards/backwards movement and in front of the animal for left/right movement. When you are within the flight zone, walking past the point of balance will encourage the animal to move in the direction of the least pressure, behind your line of sight. In this sense, passing the point of balance persuades the animal to walk past you and behind you as you walk in the opposite direction past their shoulder.

The same principle applies to left or right movement. Figure 3 demonstrates using the point of balance. If you are directly in front of the animal, you will either walk at an angle, on the flight zone, to the right, if the desired direction is left (as the non-highlighted arrows demonstrate in the following diagram) or you will walk to the left of the animal if the desired direction you want the animal to move is right. The highlighted arrows in this figure demonstrate the forward/backwards point of balance. If you start in front of the shoulder and walk past the shoulder to the rear of the animal, they should continue forward.

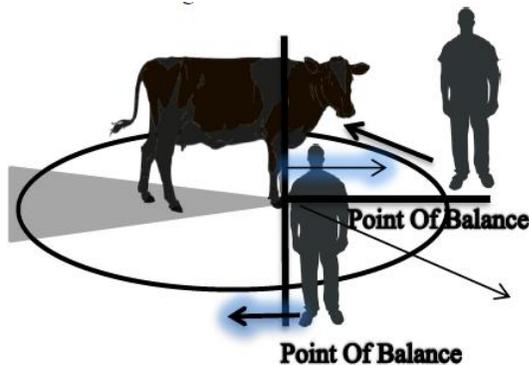


Figure 3. Illustration of a cow's flight zone, blind spot, and point of balance. If the People move with the bold arrows, the cow should move along the fine arrows.

Moving cattle in a pasture

Figure 4 depicts a handler walking past three cows. You may observe that the two grey cows have smaller flight zones and a point of balance that is at the shoulder region and the black cow has a larger flight zone and a point of balance directly behind the eye. As a result, it will take less pressure to move the black cow and get the "flight or fight" response from her. If the handler walks in the direction of the arrow, the cattle should walk forward in the direction they are headed, the direction of least pressure.

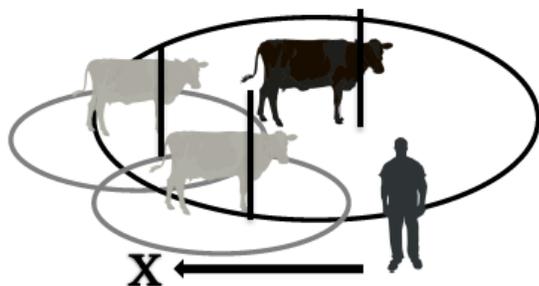


Figure 4 demonstrates that not all cattle have the same size flight zones or have the point of balance at the same spot.

If the three cows were the front of a herd, it is important that the handler does not continue to the back of the herd to "push" the animals forward from where the blind spot is. Instead the handler should remain on the edge of the flight zone at the side of the animals, slightly behind the point of balance to keep the lead animals moving. Once the animal moves in the desired direction, the handler should release that pressure. If the animal stops the handler

can then re-engage the flight zone slightly behind the point of balance to encourage movement again, utilizing the "pressure and release" learning method. Once cattle have been worked successfully with these methods, have learned them, and remain calm during moving, "pressure and release" is less necessary and simply adjusting parallel movement can be used for continuous movement of cattle.

Moving cattle in a field is very similar to moving cattle in a pen and down an alleyway. Keep in mind that cattle are herd animals. If you move enough of the front of the herd, the rear will follow as a general rule.

Moving cattle in a pen

Figure 5 portrays the handler working from the front of the herd by the gate. Cattle have a tendency to watch the handler, so once they have left the pen they will usually turn in a direction where they can still view the handler. Using this natural tendency can be beneficial when emptying a pen with a desired direction. When the handler enters a pen to empty it, they should enter the pen in a location that will encourage the cattle to wrap around the handler and head in the desired direction. The handler will walk past the point of balance on each cow encouraging them to walk past them and out the gate.

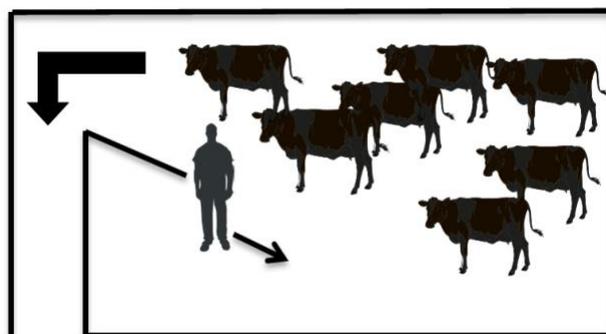


Figure 5. Illustrates a handler emptying a pen of cattle by staying near the gate and using the point of balance.

It is important to stay close to the gate and keep the front of the herd moving, preventing a bottleneck from forming, which stops the flow. If you move to the rear of the herd to push the cattle out of the pen, a bottleneck will form, flow will stop, and confusion and anxiety will set in for the cattle

Parallel Movement

Figure 6 shows movement with the animal, at the point of balance and on the edge of the flight zone in the same direction it is travelling is considered parallel movement. This movement can be used to slow or stop an animal. The idea behind parallel movement slowing or stopping the animal is that the handler is balancing the point of balance. Slightly staying behind this pivotal point will keep the animal moving, increasing your pace to position yourself on the point of balance will slow it, and stepping slightly in front of the point of balance you should be able to stop the animal. If you step inside the flight zone or get too far in front of the point of balance, you may turn the animal. Your goal in walking parallel to the animal should be to pass its point of balance for the purpose of slowing or stopping it, but handlers should not confuse this technique with the practice of walking parallel with the cow and permanently staying behind an animal's shoulder simply to keep it moving forward.

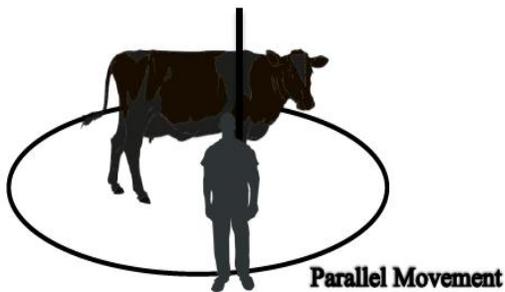


Figure 6. Demonstrates where a handler should stay during parallel movement to encourage an animal to stop or slow down movement.

Moving Cattle Down an Alley Way

Figure 7 relies upon the same concepts. The handler will start from the front, walk past the point of balance of the front or lead animal, and keep that animal moving. The cattle must be able to see you. If your front animal is not moving, the cattle behind her cannot move either. Do not constantly walk past the lead animal if they do not move. This will desensitize the animal to the movement and decrease the effectiveness of the technique. If the animal does not move when you walk past

it, next time touch your hand to their shoulder region and slide it along their back toward their tail to encourage movement. Cattle have thick skin and may need more stimulus than just your hand, so a curry or show comb can be used for additional stimuli. As a last resort, you can curl the tail and hold it. Immediately release that pressure once the desired direction of movement is achieved, even if only a step. This is the “pressure and release” learning method, and the animal understands the release as a reward shaping its behavior towards the desired result.

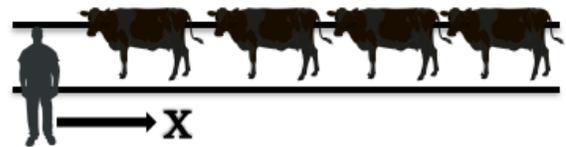


Figure 7. Illustrates how a handler should position themselves and walk to move cattle down an alley way.

If the animal stops, apply pressure again, releasing immediately when movement is achieved. Once the lead animal is in its final position and the following animals have somewhere to go, you can repeat the same process with them, although herding instinct should move them along with the lead animal. Do not overcrowd or ask the animals to move if they have nowhere to go. This will create confusion and increase the distress of the animals.

The Weaning training process (Bud Williams 1990)

This activity trains the cow/calf pairs to calmly move past the handler to reduce stress during the weaning process. The cow/calf pairs should be quietly brought in from the field to a holding pen. Figure 8 depicts one handler working from the front of the herd near the exit gate should quietly move the group into an adjacent pen. The whole group of cow/calf pairs should be quietly moved from the first pen to the second pen with the key concept being to teach the cattle to **walk** past the handler. This may require the handler to walk further into the pen to reach the point of balance of the remaining animals encouraging them to exit the pen. If an animal moves too quickly, the handler should back up with that animal, using parallel movement to slow the

animal down. If the cattle were not calm after the first attempt, the whole group should be moved back to the first pen following the same procedure with the same concept – one handler working the front of the group starting near the exit gate, teaching cattle to walk past the handler. When all animals move calmly, the last step can be attempted. Starting the process over, the cows are permitted to move to the second pen again, and the calves remain in the first pen. Handlers gently step in front of each calf that tries to exit to the second pen with the cows.

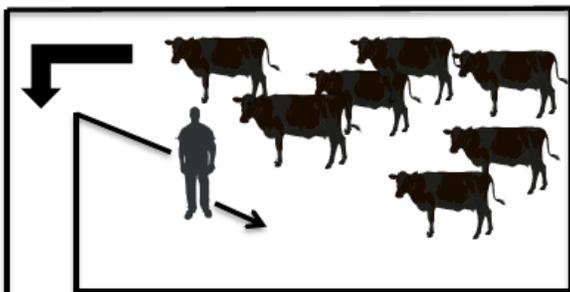


Figure 8. Illustrates the first steps in weaning training. The handler stays at the gate and uses the point of balance to move the front of the herd out of the pen.

It is highly beneficial to have two handlers for this step. Figures 9 and 10 show how using two handlers can be beneficial. The additional handler should be positioned at the gate to have a second chance of stopping calves and to keep the cows from coming back. It is important to not move faster than a walk. If any calves mistakenly are let by during the sorting process, there should be no attempt to stop them, unless easily done at the walk. The handler or another handler can go retrieve the calf and bring it back to the original pen at a walk.

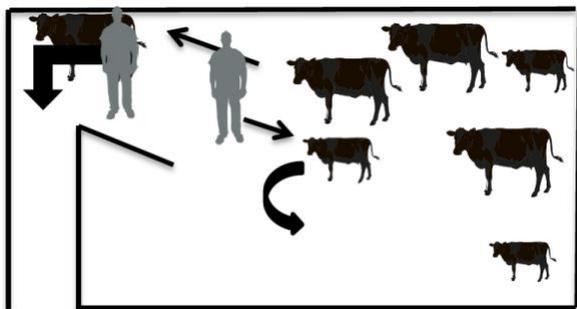


Figure 9. Depicts using two handlers to move cattle out of a pen, but leaving calves.

Walking alongside an animal behind the point of balance will keep it moving to avoid your pressure, but much like pushing the herd from behind, this is not an efficient way to promote forward movement over distances in a low stress system. Cows will become either rushed and/or nervous, negating the calming effects of low stress handling, or will revert to their tendency to turn around to keep the handler in their sight. Therefore, some release of pressure periodically is necessary to keep anxiety to a minimum while continually progressing.

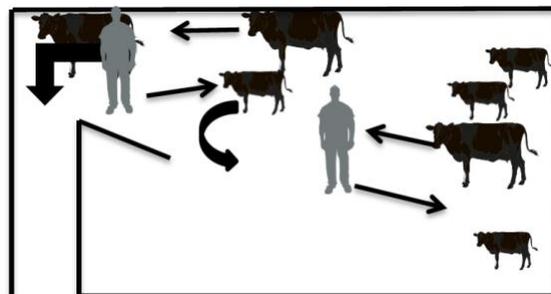


Figure 10. Demonstrates that one handler may need to move further in the pen to remove stragglers and the handler in the gate still assists to keep calves in the pen.

This process reduces the weaning stress response of the calves (Ligon 2014). For the best results, it should be done each time the cows are worked pre-weaning; the cows and calves remain separate until the cows are finished being processed. The calves can either be returned to the original pasture or held in a separate pen until the cows have been worked. Times that cows and calves are worked prior to weaning can include, but are not limited to, vaccinating, deworming, artificial insemination synchronization, breeding, and pregnancy checking.

Other Applications of Low Stress Handling in the Beef Industry

The concept of teaching cattle to walk past the handler is also beneficial for other segments of the beef industry. The method can be used in the stocker/backgrounder stage as well as the feedlot. Not only will this procedure help the cattle become calmer after arrival, but it can also help the cattle become acquainted with their surroundings, the water trough, and the feed bunk as they are moved to

those areas. It will also introduce the cattle to low stress methods, the desired responses and familiarize them to their handlers. If cattle are familiar with their handlers and calm due to the low stress methods they will be more apt to forgo their survival instincts of hiding signs of illness. The weakest member of a herd is the most susceptible to fall victim to predation in the wild. Therefore, unhealthy individuals may hide clinical signs of being sick (Hulbert et al 2011). However, with low stress handling methods, animals are comfortable with their surroundings and periodic observation by handlers. Therefore, they will be more likely to express those clinic signs. This will allow those animals to be identified and treated in a timely manner, decreasing mortality and treatment costs.

It is important that cattle do not view handlers as a threat or as predators.

Key Concepts

- Use a pressure/release system
- Use the edge of the flight zones
- Use careful steps into and out of the edge of the flight zone to apply pressure. Backwards steps to release pressure or simply standing still and allowing the animal to increase the distance between you and them, releasing pressure are important tools to help cattle learn what you want them to do.
- Observe reactions to the handler and adjust as necessary.
- Minimize the use of voice, hands, sticks, or prods.
- When handling cattle, keep hands at your side.
- Remember that direct eye contact is a form of pressure.
- When a line of sight is available, move an animal forward by beginning near its front and walking past it towards its rear.
- Never walk directly towards an animal. Walk past it to encourage their movement in the desired direction.
- To keep animal calm, use the lowest amount of pressure necessary to achieve a task, and escalate pressure only as required.
- Walk at all times and use calm, methodical movements.

- Do not revert to pushing animals forward by walking behind them.

When moving cattle through an alleyway

- When line of sight is available, begin in front of the animal and walk past it to the rear of the animal.
- To encourage forward movement, use hand contact at the shoulder and stroke toward the distal end of the animal.
- As a last resort, curl the tail and release pressure immediately upon movement in the correct direction.

Demonstrational Handling Video Links

- [Low Stress Cattle Handling: Emptying a Pen of Cattle: Weaning Training Part 1](#) (Teaching cattle to walk passed a handler) [Spanish version](#)
- [Low Stress Cattle Handling: Emptying a Pen of Cattle: Weaning Training Part 2](#) (Teaching cattle to walk passed a handler) [Spanish version](#)
- [Low Stress Cattle Handling: Sorting Cows and Calves: Weaning Training Part 3](#) [Spanish version](#)
- [Low Stress Cattle Handling: Loading an Alleyway](#) [Spanish version](#)
- [Low Stress Cattle Handling: Moving cattle along an Alleyway](#) [Spanish version](#)

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References

- American Angus Association. 2014. Expected Progeny Differences. www.angus.org.
- Breuer, K., Hemsworth, P. H., Barnett, J. L., Matthews, L. R., Coleman, G. J. 2000. Behavioural Response to Humans and the Productivity of Commercial Dairy Cows. *Applied Animal Behaviour Science*. Vol. 66: 273-288.
- Burdick, N. C., Randel, R. D., Carroll, J. A., and Welsh Jr., T. H. 2011. Interactions between Temperament, Stress, and Immune Function in Cattle. *International Journal of Zoology*. Volume 2011, Article 373197.
- Detering, H. 2006. Ranch Safety through Low-Stress Cattle Handling. *The Cattlemen*. Dec. 2006; 93, 7: pg 10.
- Grandin, T. 1998. Review: Reducing Handling Stress Improves Both Productivity and Welfare. *The Professional Animal Scientist*. Vol. 14: 1-10.
- Hearnshaw, H., Morris, C. A. 1984. Genetic and Environmental Effects on a Temperament Score in Beef Cattle. *Australian Journal of Agricultural Research*. Vol. 35: 723-733.
- Hemsworth, P. H., Coleman, G. J., Barnett, J. L., Borg, S., Dowling, S. 2002. The Effects of Cognitive Behavioral Intervention on the Attitude and Behavior of Stockpersons and the Behavior and Productivity of Commercial Dairy Cows. *Journal of Animal Science*. Vol. 80: Issue 1; ISSN: 0021-8812.
- Hemsworth, P. H. 2003. Human-Animal Interactions in Livestock Production. *Applied Animal Behaviour Science*. Vol. 81: 185-198.
- Hulbert, L. E., Carroll, J. A., Burdick, N. C., Randel, R. D., Brown, M. S., Ballou, M. A., 2011. Innate Immune Responses of Temperamental and Calm Cattle After Transportation. *Veterinary Immunology and Immunopathology*. Vol. 143: 66-74.
- Kasimanickam, R., Asay, M., Schroeder, S., Kasmanickam, V., Gay, J.M., Kastelic, J. P., Hall, J. B., Whittier, W. D. 2014. Calm Temperament Improves Reproductive Performance in Beef Cattle. *Reproduction in Domestic Animals*. Doi: 10.1111/rda.123436. ISSN 0936-6768.
- Kim, M., Yang, J., Upadhaya, S. D., Lee, H., Yun, C. Ha, J. K. 2010. The Stress of Weaning Influences Serum Levels of Acute-Phase Proteins, Iron-binding Proteins, Inflammatory Cytokines, Cortisol, and Leukocyte Subsets in Holstein Calves. *Journal of Veterinary Science*. Vol. 12 (2): 151-157.
- Lensink, B. J., Fernandez, X., Cozzi, G., Florand, L., Veissier, I. 2001. The Influence of Farmers' Behavior on Calves' Reactions to Transport and Quality of Veal Meat. *Journal of Animal Science*. Vol. 79: Issue 3: 642-652.
- Ligon, J. M., 2014. The Effects of Low Stress Cattle Handling And Weaning Training on Post-Weaning Weight Gain and Calf Activity. Thesis: Master of Science, Virginia-Maryland Regional College of Veterinary Medicine.
- Probst, J. K., Hillmann, E., Leiber, F., Kreuzer, M., Neff, A. S. 2013. Influence of Gentle Touching Applied Few Weeks Before Slaughter on Avoidance Distance and Slaughter Stress in Finishing Cattle. *Applied Animal Behaviour Science*. Vol. 144: 14-21.
- Reinhardt, C. D., Busby, W. D., Corah, L. R. 2009. Relationship of Various Incoming Cattle Traits with Feedlot Performance and Carcass Traits. *Journal of Animal Science*. Vol. 87: 3030-3042.
- Ribeiro, J. M. de C. R., Brockway, J. M., Webster, A. J. F. 1977. A Note on the Energy Cost of Walking in Cattle. *Animal Production*. Vol. 25: 107-110. Doi: 10.1017/S0003356100039118.
- Voisinet, B. D., Grandin, T., Tatum, J. D., O'Conner, S. F., Struthers, J. J. 1997. Feedlot Cattle with Calm Temperaments have higher Average Daily Gains than Cattle with Excitable Temperaments. *Journal of Animal Science*. Vol. 75: 892-896.

Weary, D. M., Jasper, J., Hotzel, M. J. 2008.
Understanding Weaning Distress. Applied
Animal Behaviour Science. Vol. 110: 24-41.

Williams, B. 1990. Bud Williams Stockmanship
School: Stockmanship DVD. Stockman Grass
Farmer Grazing Conference.
www.stockmanship.com.

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