

## Handling, stress and fear in dairy calves

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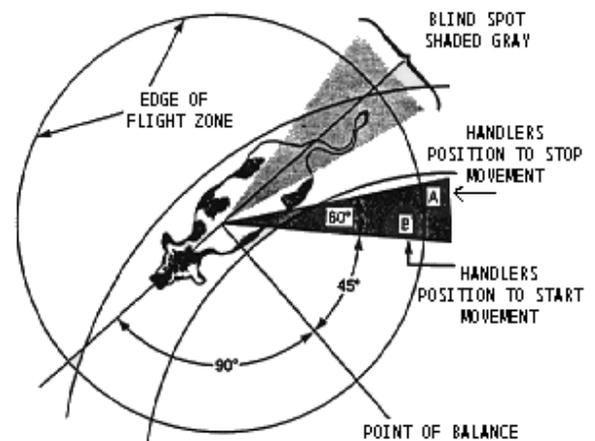
*Disclaimer: The following material presents general guidelines; each farm should develop their own Standard Operating Procedures.*

Good first experiences with limited stress and no fear are important for all animals, especially for calves. Fearful animals display negative behavioral changes and undergo physiological changes as well. For example, studies have shown that the sound of human voices causes increased fear factor and elevates heart rate compared to the sound of gates clanging. It is important to exercise good management practices when handling and moving calves for the first time because they will remember if the handling was positive or negative. The amount of stress they experienced during that situation will also be remembered. For instance, calves whose ears are pulled, hit their head or dragged by their feet, experience high stress and associate human interaction with these negative experiences. These animals will develop a permanent fear of humans and may even grow up to be low producing animals. Handling, transportation, and cold and hot temperatures may also cause physical and psychological stress. This practical guide addresses basic concepts about handling young calves to promote the development of calm and productive animals.

### Flight Zone

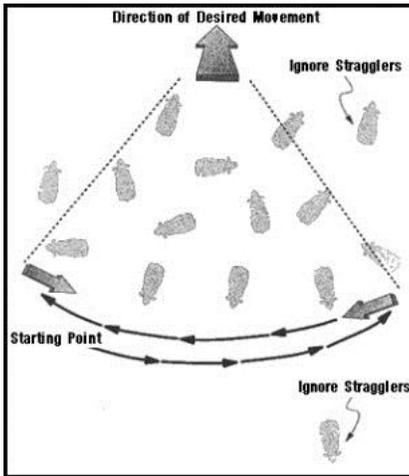
When handling any animals, it is important to remember their flight zone and their point of balance. Flight zone is defined as the animal's personal space is determined by the wildness or tameness of the animal. The flight zone is the area surrounding the animal where the animal is comfortable with its surroundings.

- Completely tame animals have no flight zone, and they can be touched.
- Animals that are not tame have large flight zones and will move away from humans when humans.
- A human can approach a cow at a closer distance when the flight zone is smaller.
- Dairy cows handled gently from birth will have no flight zone. When the handling has been low in stress and a positive experience, dairy calves and cows will have no flight zone.

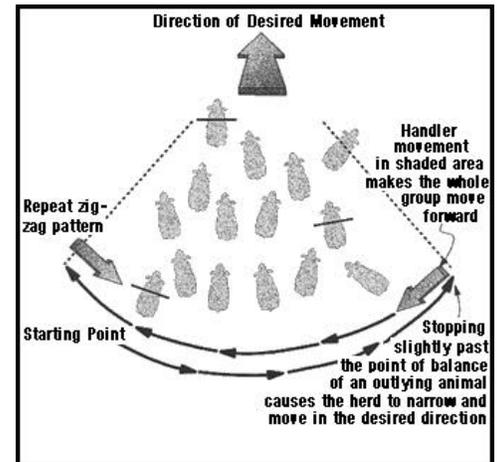


## Point of Balance

Point of balance is the point on the animal when the animal will move forward or backward based on the position of the human. The point of balance is usually the animal's shoulder.



- When humans stand behind the point of balance, toward the back of the animal, the animal will move forward. To move animals forward in an alleyway or chute, it is important to remember to stand behind the point of balance.
- When humans stand in front of the point of balance, toward the head, the animal will move backward
- To move a group of cattle forward, stand behind the point of balance and



move in a zigzag pattern as shown in the diagrams. The arc of the zigzag movement must not exceed a quarter circle. DO NOT CIRCLE AROUND the cattle. The movement should be straight or a very slight arc.

## Handling Newborn Calves

Shortly after birth, dairy calves are given colostrum and handled by humans. Calves that are handled shortly after birth are more confident with human interaction than calves that do not have any or have minimal human interaction the first two weeks of birth.

- Calves that do not have human interaction or the interaction is negative, have a larger flight zone than calves that are positively handled by humans.
- As calves experience handling, whether positive or negative, the interaction is noted by the calf and will be remembered.
- Negative interactions include yelling, hitting, slapping, dragging the animal or rough handling. These actions result in an increased fear of humans, and calves and cows quickly learn to discriminate between humans and their handling behavior.
- No animal should ever be hit or slapped. This is especially important for newborn calves as they learn behavior and carry their experiences as they move into adulthood. Not only will they fear humans in adulthood, but fear of humans accounts for up to a 20% reduction in milk yield.
- Animals that are handled negatively approach humans slower, spend less time with the humans, and have a greater flight distance.
- In growing animals, negative experiences may lead to animals that tend to gain less weight and at a slower rate compared with animals that are handled positively.



## Heat and Cold Stress

### Thermoneutral zone

The thermoneutral zone for healthy cattle is when the animal does not have to expend energy to maintain its normal body temperature. The thermoneutral zone for newborn calves is between 55°F and 70°F (13°C and

21°C). As calves age, their thermoneutral zone increases so they can endure colder temperatures as well as warmer temperatures without expending energy.

- Both cold and heat temperatures outside the thermoneutral zone require added milk and milk replacer for calves. Typically, calves are fed milk and milk replacer to supply the necessary nutrients for maintenance and growth in the thermoneutral zone. However, once temperatures fall outside of the thermoneutral zone, maintenance requirements increase to allow the calves to warm up or cool down based on the temperature.

### ***Heat stress***

- Any temperature above the thermoneutral zone (>70 degrees F [21°C]), requires the calves to have 20-30% more maintenance requirements during heat stress. Consequently, average daily weight gain decreases for each degree above 70°F (21°C).
- Sand bedding also helps dissipate heat better than either straw or wood shavings.
- During the summer months, calf hutches absorb the sunlight and become increasingly hot throughout the day. Calves use the hutches to remove themselves from the sunlight and cool themselves, but in most cases the body temperature and stress of the calves increase when the calves are in the hutches because of the heat absorption. To avoid this, raise the hutch off the ground to allow air movement in, place the hutch in the shade and face the hutch to the north where the cooler breeze can enter the hutch. Shade netting is also an option to prevent over heating of calf hutches as shown in the picture. Always make sure the calves, even newborn calves, have access to fresh water,



### ***Cold Stress***



- Temperatures below 55°F (13°C) when calves are younger than 21 days or 46°F (8°C) for calves older than 21 d will cause a young calf to shiver and use other means to increase heat production which increases their maintenance need.

• To help calves maintain their body temperature during cold winter months, house them inside a barn with straw for bedding. If outside hutches are used, face calf hutches to the south, set up a wind block, and use calf blankets to help maintain their body temperature



### **Transportation**

In many cases, calves are transported to a calf raising facility in their first few days of life. This is an event during which calves may experience severe stress. This stress can cause a suppressed immune system and lead to health issues later in life.



- Factors associated with transportation such as low or high ambient temperature, which is the current air temperature, handling on and off transportation vehicles, stocking density, noise, distance traveled and type of road can be adjusted to reduce the stress of transportation.



- Calves retain heat better during transportation when they are resting –laying down - than when they are standing.
- If transportation stress is reduced to the same level of stress response caused by gentle handling, then calves potentially may become more resilient to future stressors.
- In order to move animals more smoothly, avoid unnecessary distractions such as chains dangling, high pitched noises, clothing on the fence that the animal can see, fan blade movement, changes in flooring and texture, drain gate on floor, reflections, bright lights, and sudden changes in color.
- Avoid moving into dark areas. Areas of darkness are

intimidating for animals because they represent an unknown scenario which increases the stress factor and decreases willingness to move into the dark area.



## Movement

- Newborn calves are still learning their surroundings and haven't learned when or how to move. When moving newborn calves, it is best to use appropriate equipment, such as a wheelbarrow or a special calf cart.
- Once they have adjusted to their surroundings, walk alongside the calf with your hip next to the calf's hip and one hand on the tail to move the calf.



- A calf should never be pulled by its head, ear, leg, tail or any body part when moving from pen to pen or to another location.
- A calf remembers their first human interaction, whether positive or negative, and it impacts their behavior, growth rate and milk production as the animal ages.



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