

Low-Stress Dairy Handling Systems

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2011 Missouri Dairy Grazing Conference



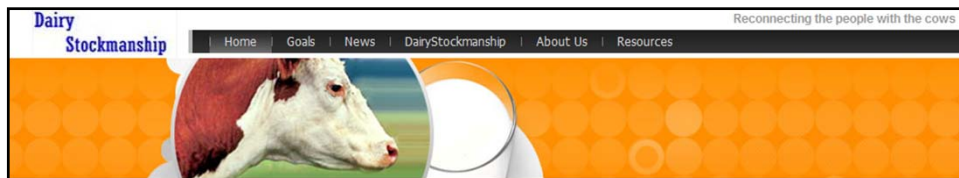
Components of a Cattle Handling System

- The design and maintenance of the facilities
- The cattle handling skills of the people



Poor Handling Skills are the Result of a Disconnection between the People and the Livestock

- Often facilitated by technology
- Lack of awareness by the people



- Our goal is to re-connect stockmanship to the dairy industry
 - Dairy Employees
 - Dairy Veterinarians
 - Dairy Professionals
 - Dairy Owners
- Includes all dairy production systems



HANDLING, MOVEMENT AND TRANSPORTATION

Employees should be properly trained to handle animals with a minimum of stress to the animal, and the consequences of inhumane handling should be known and enforced.

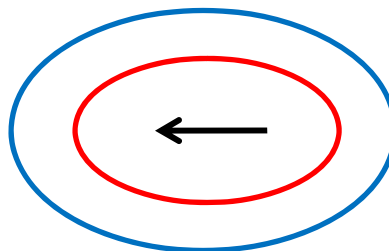


Training Programs should:

1. Be based on sound science
2. Produce the desired results

Stockmanship Principles

- Pressure area surrounds the flight zone



- Apply pressure to animals properly

All behavior is a product of

- Biological variables
 - Species history
 - Biological evolution and genetic makeup
- Environmental variables
 - The present environment
 - Including the internal physiological environment
 - The past environment
 - What has happened to the individual in the past



- Ethologist
 - One who studies animal behavior, as it occurs in a natural environment
- Behaviorist
 - One who studies behavior, in humans or animals



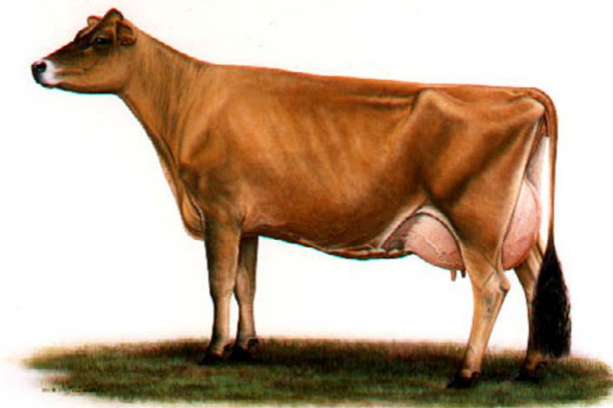
Life History Strategy

- Cattle are herbivores, a prey species that exhibits herding behaviors
- They do not communicate verbally, but rather experience the world with the uniqueness of their 5 senses



Communicate so the Cow Understands

1. Taste
2. Smell
3. Hearing
4. Sight
5. Touch



Taste & Smell

- Taste buds
- Olfactory epithelium
- VomeroNasal Organ
 - Flehman behavior



- Dew drops often form on nose or muzzle
 - Wiped with tongue, sensed by VNO
- Scents that are socially important to animals are derived from waste products: urine, feces, sweat, breath

Hearing

- Humans



- Cattle



- Dogs

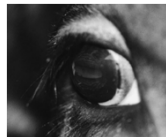


Low -----High
Frequency in Kilohertz

Cattle and Noise

- Evidence shows that cattle are sensitive to auditory contact with humans
- Researchers have found that cattle show a similar aversion, based on avoidance, to hitting as to shouting by humans

Pajor EA, Rushen J, de Passile AMB. Aversion learning techniques to evaluate dairy cattle handling techniques. *Appl Animal Behav Sci* 2000; 69:89-102



Sight

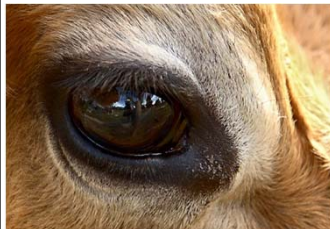
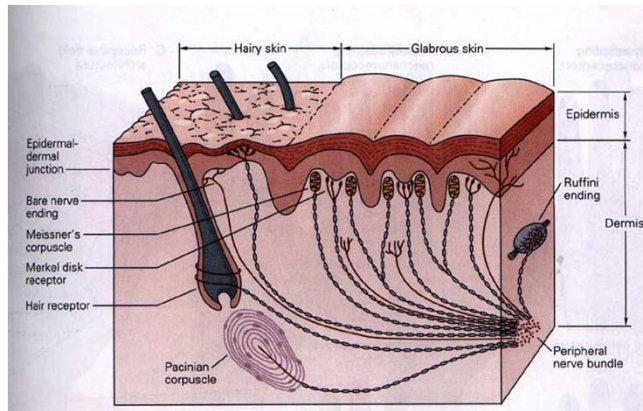


- Primary sense used by grazing animals
- Horizontal, rectangular pupil shape
- Narrow field of vertical vision
- Located on sides of the head and bulbular
- Wide field of vision
- Poor depth perception



Touch Receptors

- Pressure
- Pain
- Warmth
- Cold

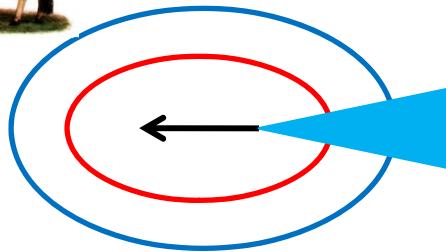


Key message

- We need to be honest with cattle and always let them see where we are
- Cattle will look (listen) to what is what is pressuring them
- *Be aware of the which senses are being stimulated, and work to avoid startle*

The Right Way

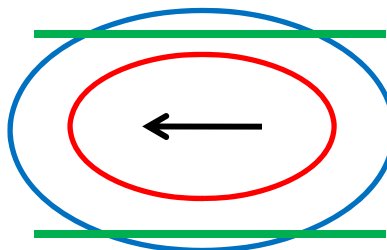
- The Cow cannot see behind her



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The Right Way

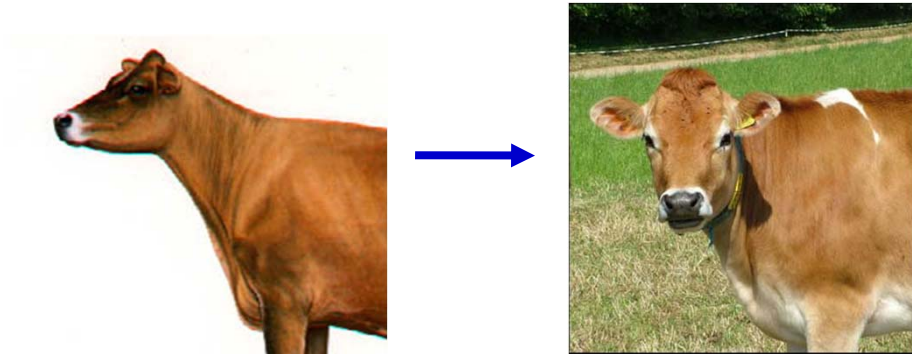
- The best place to let the cow see you is from her side



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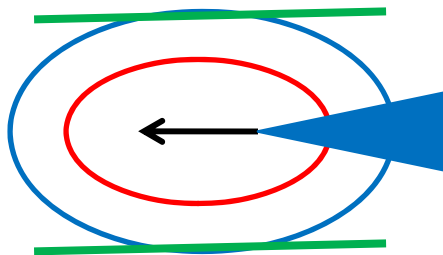
The Right Way

- Notice when a cow looks at you with 2 eyes



Dairy Stockmanship


- Pressure animals where they can see you



- Only 1 person should pressure at a time


Driving a Cow

A diagram illustrating a cow's movement between two vertical red lines. A black arrow points upwards from the center of the space between the lines. A green 'X' is positioned below the arrow, representing the cow's current position.



Driving a Cow

A diagram illustrating a cow's movement towards a single vertical red line. A black arrow points upwards from the center of the space. A green 'X' is positioned to the right of the arrow, representing the cow's current position.

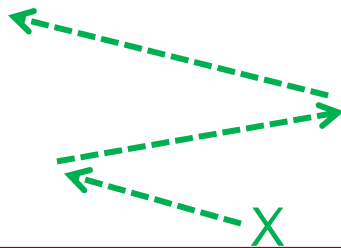


Driving a Cow



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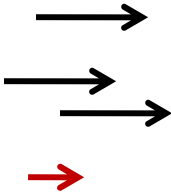
Driving a Cow



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The Right Way

- Walking with animals will slow them down

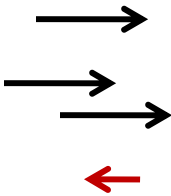


- Cows walk 2 mph, People walk 3-4 mph



The Right Way

- Walking opposite direction speeds animals up



Low Stress Handling Systems

- Informally, this is how to work cattle with low-stress methods
- Formally, this is the study of cow behavior and her stress response
 - We can apply the sciences of behavior analysis and stress biology



Low Stress Handling Systems

- What is Low Stress?
- What is High Stress?
- What is Stress?
- What is Distress?
- What is Eustress?



What is Stress?

- Ask a dozen people to define “stress” and you would likely get 12 different answers
- If we struggle to define stress, how can we possibly measure it?

Definitions

- **Stressor** = event threatening or potentially threatening the homeostatic balance
- **Stress Response** = the bodies attempt to re-establish the homeostasis after encountering a stressor

2011 Trends in Stress Biology

Stress Response

Robert Sapolsky

- Stress response evolved as adaptive
- Consequences of the stress response can be maladaptive
- There is a “cost” to mounting a stress response



Stress Related Disease

Sapolsky

- Stress does not make you sick
- *“Stress makes you more likely to get diseases that make you sick”*



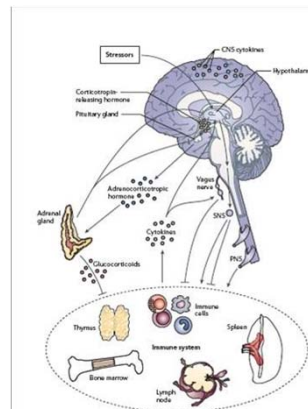
Testing for stress

- There is no litmus test for stress



Measuring the Stress Response

- Neuroendocrine system (HPA)
- Autonomic Nervous System
 - Sympathetic
 - Parasympathetic
- Immune System
- **Behavior**



All behavior is a product of

- Biological variables
 - Species history
 - Biological evolution and genetic makeup
- Environmental variables
 - The present environment
 - Including the internal physiological environment
 - The past environment
 - What has happened to the individual in the past

Examples Getting Cows Into the Milking Parlor

The flowchart illustrates the field of Microbial Endocrinology. At the top, 'Microbiology' and 'Neurobiology' are connected by arrows to 'Microbial Endocrinology'. 'Microbiology' includes 'Low inoculum' and 'Gut environment'. 'Neurobiology' includes 'Stress-induced neurohormone release', 'Catecholamines as prototypical examples', and 'Enteric nervous system'. 'Microbial Endocrinology' branches into three areas: 'Bacterial hormone production' (GABA, Somatostatin), 'Growth' (Food-borne pathogens: *E. coli* O157:H7, *S. enterica*; Commensals: *E. coli*), and 'Virulence factors' (Attachment factors, Toxins, Autoinducers). The text 'Evolution as a theme throughout' and 'TRENDS in Microbiology' are at the bottom.

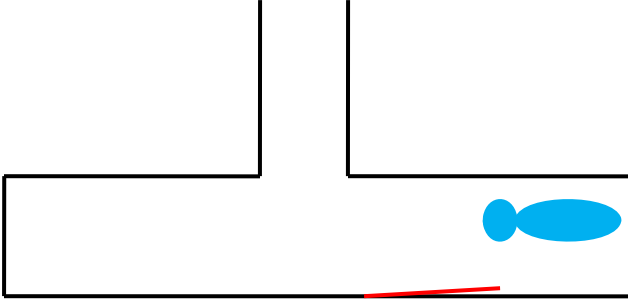
A 3D white figure is sitting on a large blue question mark, symbolizing inquiry or a question.

TRENDS in Microbiology Vol.12 No.1 January 2004


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Bud Box Technique for Moving Cattle Safely and Efficiently

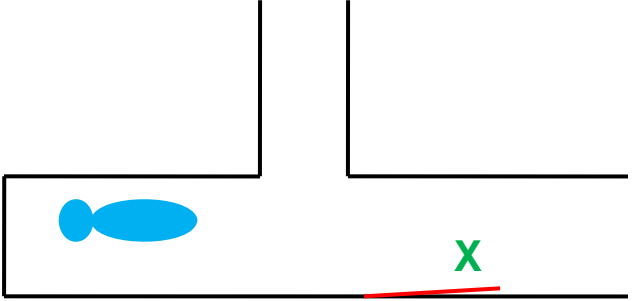
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The Bud Box



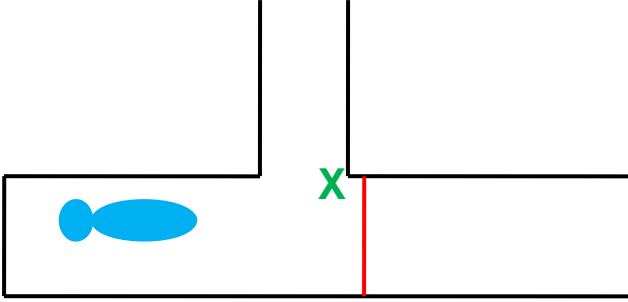
The diagram shows a black outline of a rectangular box with a notch at the top. A horizontal line runs across the bottom of the box. A blue fish-like object is positioned on the right side of this line. A red line segment is drawn below the horizontal line, starting from the left edge and extending towards the right. A green 'X' is located to the right of the horizontal line.



The Bud Box




The diagram is identical to the one above, but the blue fish-like object is now positioned on the left side of the horizontal line. The red line segment and the green 'X' remain in the same positions.

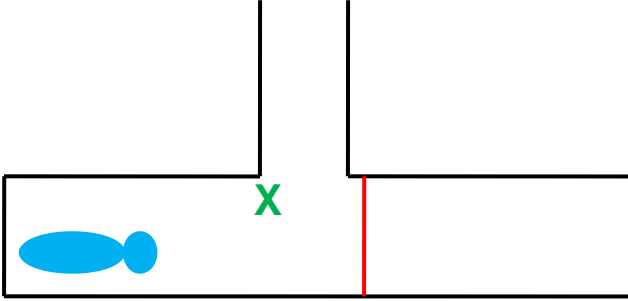


The diagram shows a cross-section of a bud box. On the left side, there is a blue bud. A vertical line is drawn in the center, with a green 'X' above it. A red vertical line is drawn on the right side of the box.

The Bud
Box




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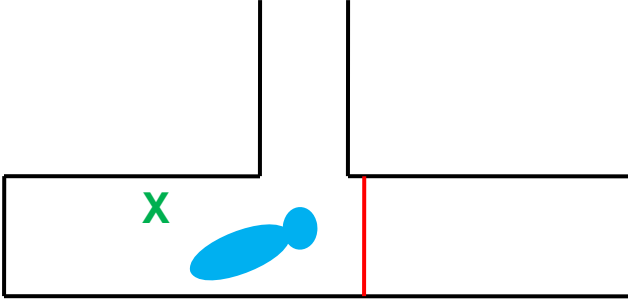


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The Bud
Box




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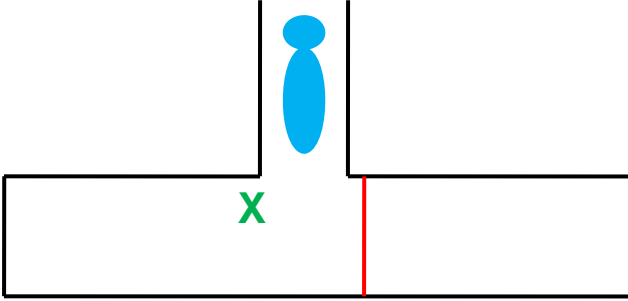


The diagram shows a cross-section of a bud box. A blue bud is positioned on the left side of the box, to the left of a vertical red line. A green 'X' is located on the left side of the box, above the bud. The box is divided into two sections by the red line.

The Bud
Box




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The diagram shows a cross-section of a bud box. A blue bud is positioned on the right side of the box, to the right of a vertical red line. A green 'X' is located on the left side of the box, below the red line. The box is divided into two sections by the red line.

The Bud
Box



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Bud Box Design

- 14 x 20 to load a chute
- 14 x 30 to load a truck
- Same size
 - Regardless of the animal size
 - Regardless of the number of animals
- Exit opening wide enough for 1 animal



Components of a Cattle Handling System

- The design of the facilities
 - The maintenance of the facilities
- The cattle handling skills of the people



Dairy Stockmanship

- Every interaction between people and their livestock is important
 - Positive experiences/conditioning
 - Negative experiences/conditioning
- Be aware of the behaviors you are training your animals to perform



Interactions with Youngstock

- The concept of “Brain Plasticity”
- Important periods in behavioral development
 - Pre and Post-natal periods
 - Adolescence
- Condition the appropriate behaviors for an adult lactating cow in your production system



THANKS!

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