

The history and current state of animal welfare research

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The history and current state of animal welfare research

1. What is the social context of the current animal welfare discussions?
2. Is animal welfare consistent with the scientific method?
3. Are we presenting the information that society is looking for to address animal welfare concerns?
4. What are some questions that deserve the attention of the veterinarians and animal welfare researchers?



Animal welfare research

Research¹: “To seek”

Studious inquiry or examination, esp. investigation or experimentation aimed at

- discovery and interpretation of facts
- revision of accepted theories or laws in the light of new facts
- Practical application of such new or revised theories or laws

¹Mirriam-Webster Dictionary

Historical analysis of the animal protection movement¹

First US animal cruelty law was
1684 in MA

Movements to abolish slavery,
corporal punishment
stigmatized physical violence

Kindness to animals became a
cherished attribute of modern
character – pet ownership,
Boy Scouts, nature-study

Anthropocentric view: “good for
them, good for us”



Unti, B., 2002. *The Quality of Mercy. Organized animal protection in the United States, 1866-1930.* Doctoral Thesis, American University, Washington, DC.



Historical analysis of the animal protection movement¹, 1890-1920

- General shift to professional and scientific reforms at odd with humane movement
 - Rationalization of animal use, utility
- Child protection shifted from rescue efforts to preventive programs – Children’s Bureau formed
- Animal protection focused on anti-vivisection efforts, pound access
 - Conflict with scientists may have delayed evolution of animal welfare science

Unti, B., 2002. *The Quality of Mercy. Organized animal protection in the United States, 1866-1930*. Doctoral Thesis, American University, Washington, DC.

Historical analysis of the animal protection movement¹

Lapse in activity 1920-1950

- WWI/II, Great Depression
- Some wildlife protection activity, naturalists
- “Positivism”

Post-1950s

- “Rights Movement”
- Animals as individuals vs. property



Unti, B., 2002. *The Quality of Mercy. Organized animal protection in the United States, 1866-1930.* Doctoral Thesis, American University, Washington, DC.



How did scientific researchers interface with animal welfare?

- 1926 – University of London Animal Welfare Society, UK formed
- 1938 - Universities Federation for Animal Welfare (UFAW) formed in UK
 - Published first book on laboratory animal husbandry in 1947
- Russell, WMS & Burch, RL (1959). The Principles of Humane Experimental Technique. Methuen, London
 - Concerns about pain & distress, thwarted natural behavior
 - 3R's: Reduce, Refine, Replace

What do we know about current attitudes about animal welfare?

- American Farm Bureau survey of consumers, animal welfare ranks poorly relative to competing concerns¹
 - Importance score 4.15 vs. 23.95 (Poverty), 23.03 (US health care system), 21.75 (food safety)
- However, in this survey consumers also reported
 - “It is important to me that animals on farms are well cared for” – 95% Agree
 - “Farm animals have roughly the same ability to feel pain and discomfort as humans” – 81% Agree
 - Willingness to vote for a law requiring farmers to treat their animals better – 75% Agree

¹Norwood et al., 2007. *Feedstuffs* 42:14.

What do we know about animal keepers and animal welfare?



Yann Arthus Bertrand (France): Animals and their keepers



Yann Arthus Bertrand



Yann Arthus Bertrand



Yann Arthus Bertrand



Yann Arthus Bertrand



Yann Arthus Bertrand



Yann Arthus Bertrand



Yann Arthus Bertrand

Can science inform decision making about animal welfare?



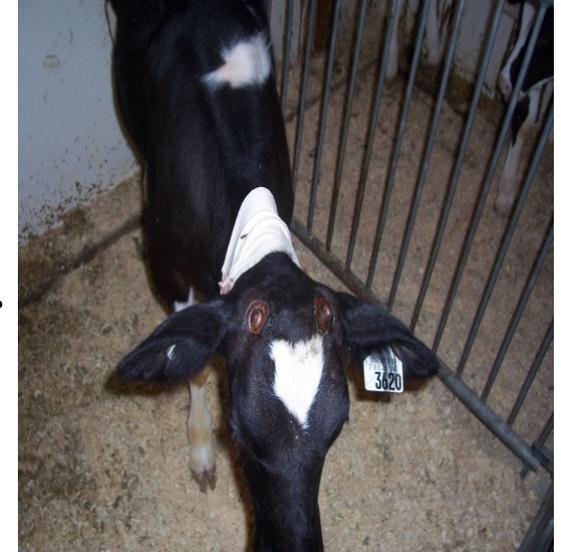
**Affective
states**

Nature

**Biological
function**

Dehorning cattle

- ❑ Horn buds are deadened (disbudding) or erupted horns are amputated (dehorning)
- ❑ Prevents injury to other cattle as well as human handlers
- ❑ Various methods and ages
- ❑ AVMA: procedures that reduce or eliminate pain; viable alternatives should be developed and applied



How do we know what is painful?

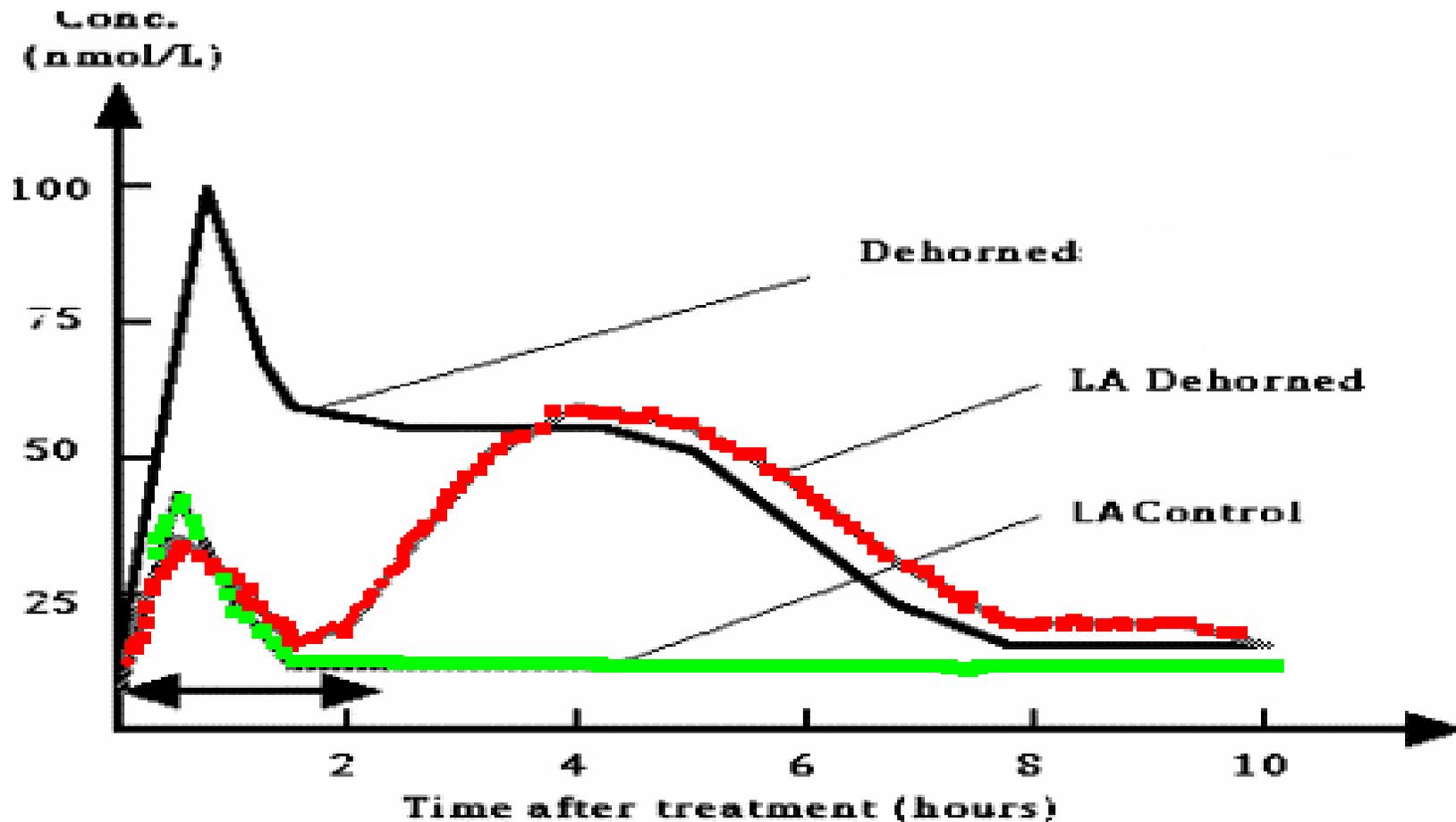




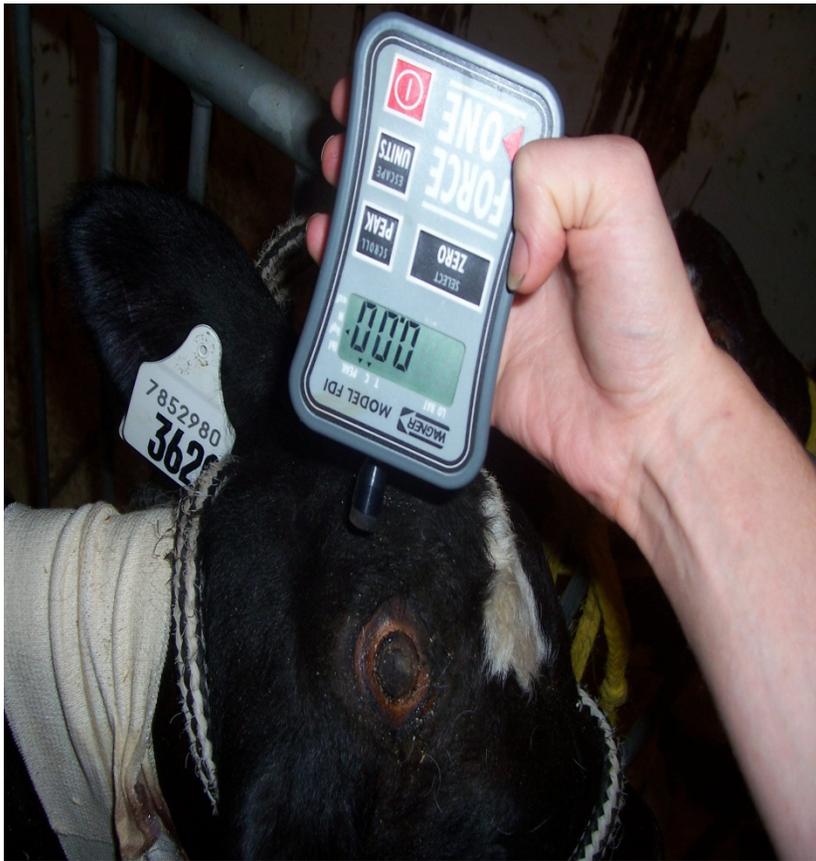
Scientific method

- ❑ Define the question
- ❑ Gather current information
- ❑ Form *a priori* hypotheses and predictions that can be tested and measured
- ❑ Experimental design to reduce bias
- ❑ Collect data and statistical analysis
- ❑ Interpret, form new hypotheses, publish
- ❑ Replication

Cortisol Response to Dehorning



Can some of the pain tests in human medicine translate for veterinary use?

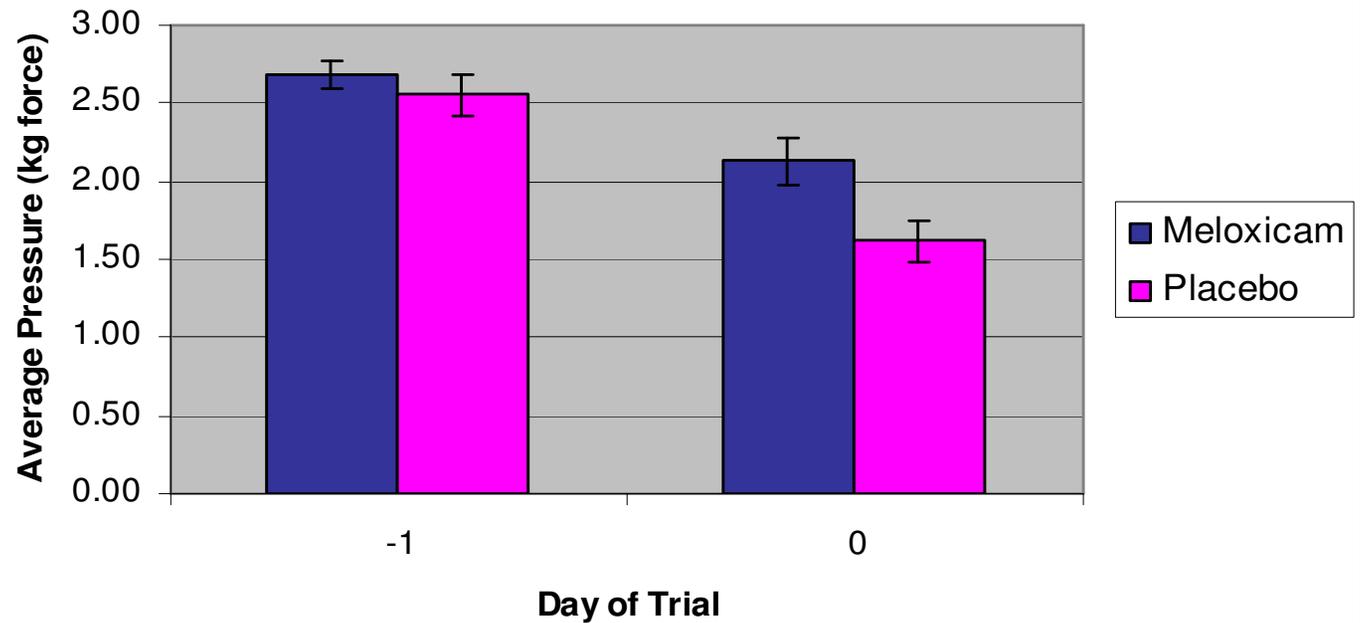


- Pressure algometer
 - Withdrawal reflex
 - Novel method in bovines

- 4 hours after dehorning
- 4 sites around each horn bud

- H_0 : Pain sensitivity \uparrow after dehorning & NSAID-treated calves less sensitive

Pain Sensitivity (Treatment P=0.004)



Anneliese Heinrich, MSc

Refining techniques for inter- and intra-observer reliability



FDA approval requires field trials on multiple sites

Head restraint made reliable, simple technique for assessing pain responses

Significant differences in pain sensitivity for at least 52h after disbudding

Conveying specific information



- Sonograms and playback experiments
- Alarm calls vary according to ground or aerial predators
- Roosters only call if hens, chicks present
- Specific food calls reflect quality

Honest signaling



Sonograms reveal that piglet distress calls vary according to “need”

- Hunger, Pain (castration), Isolation
- Calls vary in pitch, frequency, volume

Taylor & Weary, 2000. Vocal response of piglets to castration: identifying procedural Sources of pain. *Appl. Anim. Behav. Sci.* 70: 17-26.

Dawkins, M: Battery hens name their price. Anim. Behav.



Are broilers lazy or in pain?



- Gait scores improve when carprofen (an analgesic drug) is included in diet
- Train chickens to associate one feeder with carprofen diet, and another feeder with regular diet
- When given a choice, lame chickens will select diet containing carprofen, but non-lame chickens do not

How can we avoid being anthropomorphic?

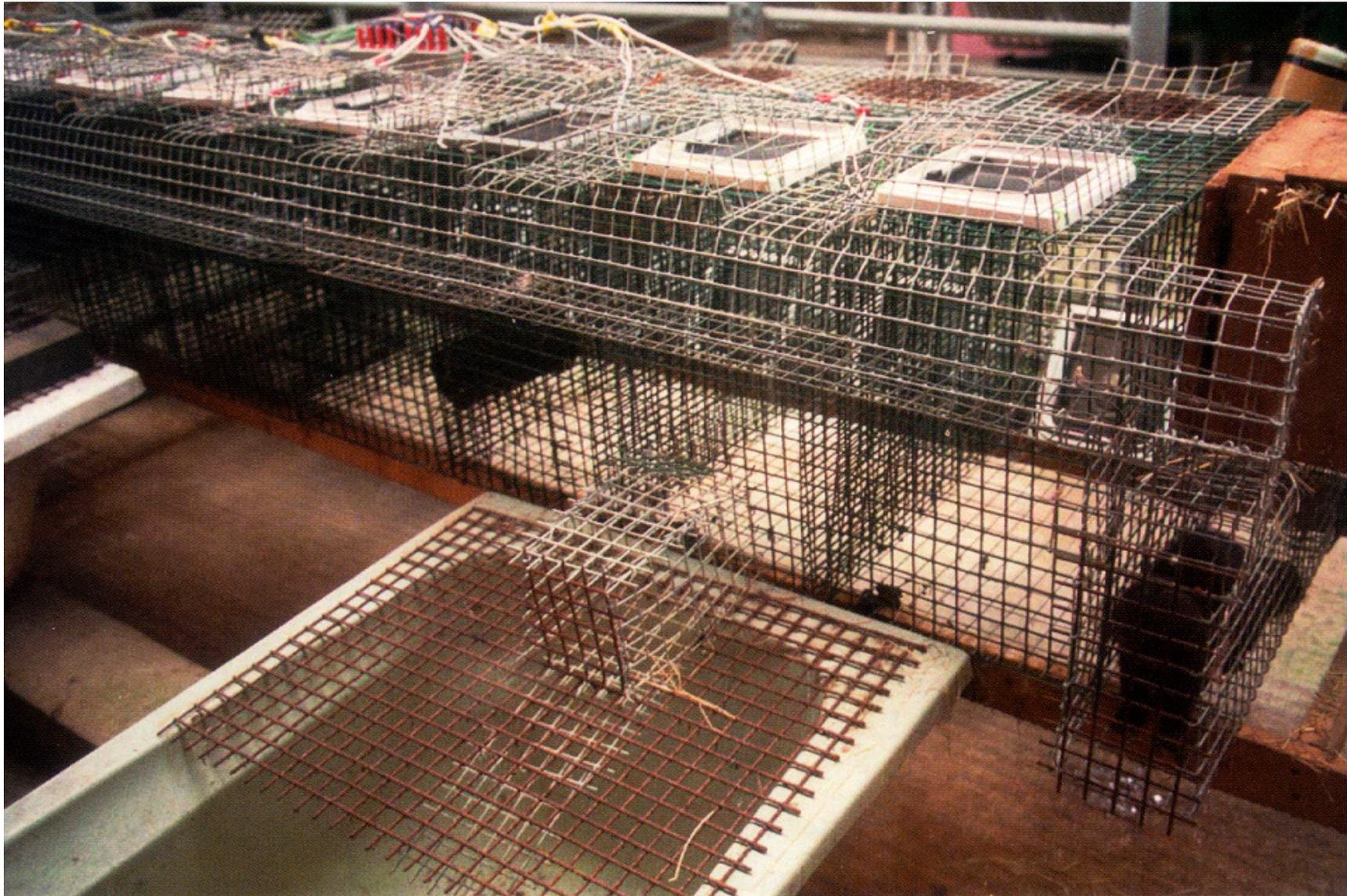
Consumer demand paradigm to test preferences & motivation

- How much are you willing to pay?
- Elastic/inelastic demand

What resources do mink value?

- Where do they spend the most time?
- How often do they visit these resources?





Mason, G., Cooper, J.J. and Clareborough, C., 2001.
Frustrations of fur-farmed mink. *Nature*, 410:35-36.

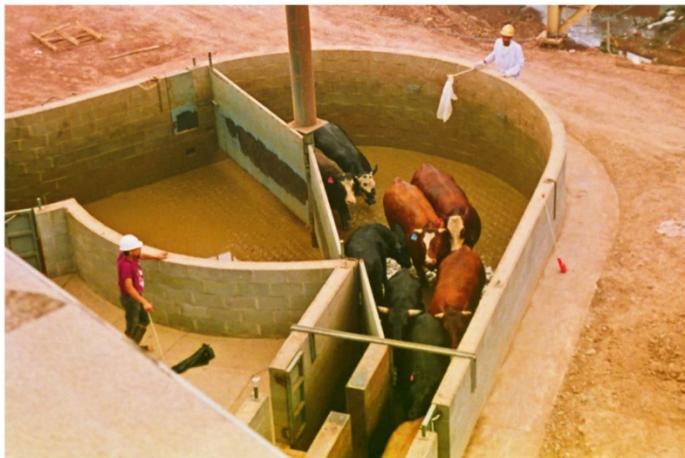


Epidemiology approach to welfare

- Opposite approach from laboratory-based experiments
 - Laboratory experiments designed to minimize variability
 - Epidemiology desires variability in response with the goal of understanding interactions

- Field-based epidemiology experiments for welfare
 - Identify benchmarks of prevalence for comparisons between farms and comparisons over time
 - Identify risk factors
 - Assess quality of interventions

Assessing welfare in “real world”: Slaughter plant audits



Good handling - the crowd pen is only half full

- Temple Grandin began doing slaughter audits in the 1990s for the USDA & retailers

- Benchmarking
 - Vocalizations
 - Slips, falls, balks
 - Stunning

- Improving facility design & training programs
 - Behavior indicators
 - Meat quality
 - (Line efficiency)
 - (Worker safety)

Iowa Animal Care Response



- Task force established June 2008-IVMA, ISU CVM, State Veterinary Office, ARLI

Coordinate efforts for animal cruelty, emergency response

- Training program for DVMs and law enforcement about IA cruelty statutes (launch IVMA Feb. 10 '09 meeting)
- Coordinate response and education with commodity groups, extension agents, shelters

Dr. Suzanne Millman (Chair), ISU CVM

Dr. Tom Johnson, IVMA

Dr. David Schmitt, State Veterinarian

Dr. Jim West, IVMA President

Mr. Tom Colvin, Animal Rescue League

Mr. Josh Colvin, Animal Rescue League

Ms. Carol Griglione, Animal Rescue League

Caring for Compromised Cattle

Caring for
COMPROMISED CATTLE

BEAA Beef Quality IBC Iowa Beef Center

CARING FOR COMPROMISED CATTLE



TRANSPORT CANDIDATE

- Walks easily- not lame
- Healthy
- All withdrawal times met
- Body condition score of 2.5 or higher



DOWNER CANDIDATE

- Sick- fever greater than 104°
- Withdrawal times not met
- Thin- body condition score less than 2.5
- Cancer eye, blind in both eyes
- Animal can not be humanely loaded and transported
- Broken leg, lameness



If cattle become non-ambulatory, which means they cannot rise from a recumbent position or cannot

DECISION MAKING STEPS TO PREVENT DOWNER COWS

The following steps taken by producers will assist in the early detection of problems and allow producers to properly address them in a timely manner.

- PREVENTION- Facility designs, choice of equipment, low stress handling, herd health programs and biosecurity will help to prevent many cattle health problems.
- OBSERVATION- Cattle should be observed several times a day, especially at feeding. Early detection of sickness and timely treatment are key in minimizing discomfort to the animal.
- TREATMENT- Treatment should be administered as soon as possible to prevent the animal's condition from deteriorating. Consult with your veterinarian to develop a sound treatment program and herd health protocol.
- SEPARATION- Segregate sick or compromised cattle into designated "hospital" pens to allow close observation and treatment of the animal.
- TRANSPORT- Once it's determined animals are fit for transport, decide where and when to ship them, ensuring all withdrawal times have been met.
- EUTHANIZE- All animals unfit for transport or unfit for human con-



Summary: History and current state of animal welfare research

- The scientific method is important to understand the nature of welfare issues at the individual and population levels, and identify possible solutions
 - Interdisciplinary approaches
 - Fundamental research in laboratory
 - Applied research in field conditions

- The ethical framework for what we **ought** to do about animal welfare will be decided by society, based on relationships to competing concerns such as cost, product quality, public safety, etc