Beef Cattle Welfare

- Current welfare concerns in the beef industry:
  - Weather extremes (Heat/Cold Stress)
  - Pain associated with standard husbandry practices
  - Negative handling
  - Transitional effects
  - Slaughter and euthanasia
  - Technology use
Beef Cattle Welfare

Current welfare concerns in the beef industry:

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- Negative handling
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- Technology use
Beef Cattle Welfare

- Early August 2013 – concerns & questions surfaced regarding the feeding of technologies
- National Cattlemen’s Beef Association (NCBA) meeting
  - Zilmax (zilpaterol hydrochloride; Merck Animal Health)
  - Beta-adrenergic agonist (‘Beta agonist’; BAA)
  - Feed additive for finishing cattle:
    - Improve feed efficiency
    - Increase lean muscle mass
Beef Cattle Welfare

- Early August 2013 – concerns & questions surfaced regarding the feeding of technologies
  - National Cattlemen’s Beef Association (NCBA) meeting
    - Multiple packers and animal welfare experts expressed concerns related to
      - Poor mobility of cattle moving through packing plants
      - Possible lameness issues
      - Animals appear stressed, lethargic, ‘tender-footed’, stiff, and not wanting to move
Mobility of cattle arriving at packing plants
Merck Suspends Sales of Cattle Supplement Zilmax in U.S., Canada

By Kelsey Gee

Merck & Co. (MRK)'s animal health division said Friday it would temporarily suspend sales of its widely used feed additive Zilmax in the U.S. and Canada.

Zilmax is a growth-promoting drug that is fed to cattle in the final weeks before slaughter, and can add about 2%, or 24 to 33 pounds, to an animal's weight.

The announcement follows Tyson Foods Inc.'s (TSN) decision last week to suspend purchases of cattle fed Zilmax. Tyson said in a letter to suppliers it would stop buying such cattle effective Sept. 6, because it is concerned Zilmax may have been a factor in some cattle showing up at its slaughter plants unable to walk or to move.
We at Merck Animal Health pride ourselves on being a responsible company that puts animals and consumers first. The benefits and safety of Zilmax® (zilpaterol hydrochloride) are well documented and the product has a 30+ year history of research and development and rigorous testing. Worldwide regulatory agencies have reviewed extensive data on Zilmax and have concluded that use of Zilmax, according to the label, is safe in cattle. It is important to understand these data included rigorous animal health safety and well-being studies – conducted by university experts – that found the behavior and movement of cattle fed Zilmax is normal.

It is Merck Animal Health’s policy to vigorously pursue all reported adverse events whether or not they are deemed related to the product. It is a responsibility we take very seriously. We are confident in the totality of our data and the safety of the product and the well-being of the animals that receive it.

In response to recent questions about Zilmax, we’re announcing our Five-Step Approach to Ensuring Responsible Beef and educating our customers and interested groups who are involved in animal husbandry and well-being.
Cargill’s view on Zilmax being pulled from the market

Zilmax, produced by Merck Animal Health and Food and Drug Administration and given to cattle to improve growth rates and increase yields harvested. Given a situation where the husbandry and post-harvesting information from each animal is important.

Zilmax is part of a class of growth-promoting food products called beta-agonists which are used to improve growth rates in cattle. Under pressure from animal rights groups, regulations, and competitors, Cargill decided to discontinue selling Zilmax.

More Packers To Stop Taking Zilmax™-Fed Cattle

Steve Kay, Cattle Buyers Weekly

Aug 26, 2013

Cattle Buyers Weekly reports that sources say that JBS and National Beef Packing plan in the coming days to join Cargill and Tyson in not buying cattle fed the beta-agonist Zilmax™. Tyson made its announcement Aug. 7 due to animal welfare concerns over lameness in cattle arriving at their processing plants, and Cargill posted its notice on its website late last week.
Beef Cattle Mobility

- Tool: Animal-based measures
  - The trait of interest is directly observed by the evaluator when viewing animals
  - Typically this is accomplished using a scoring system
  - Severity scales reflect the condition of that trait
  - Scale requires the evaluator to assign a score (number) to the trait observed
  - In the BAA case, its mobility (pattern of locomotion)
- Many animal-based measures are used today to evaluate/audit the condition of animals, facilities, handling, management, etc.
Beef Cattle Mobility

For the goals of assessing potential welfare effects of BAA

• Measuring cattle mobility has become widely accepted
• But no such tool existed last year

What is mobility?

➤ Gait or motion of cattle
➤ The pattern of movement of the limbs of cattle during locomotion
Cattle locomotion scoring has recently been developed for detecting lameness in cattle (2013) • Systematic approach: identify & manage cattle lameness
• Lameness is an important issue in beef cattle and an animal welfare concern
• Designed specifically for beef cattle
• Helps beef operations ↓ the prevalence of lameness
• Visual evaluation system helps identify, diagnose, and treat lameness

Goal: Lameness and lesion identification for prevention, management, and treatment protocols
Beef Cattle Mobility

• “Step-Up™ Management Program”

Normal Lameness

Mild Lameness

Slight head bob

Moderate Lameness

Severe Lameness

Pronounced head bob
# Beef Cattle Mobility

<table>
<thead>
<tr>
<th>LAMENESS SCORING</th>
<th>MOBILITY SCORING</th>
</tr>
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<tbody>
<tr>
<td>Gait</td>
<td>Stride length</td>
</tr>
<tr>
<td>Head bob</td>
<td>Obvious stiffness</td>
</tr>
<tr>
<td>Stride length</td>
<td>Difficulty taking steps</td>
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<tr>
<td></td>
<td>Discomfort &amp; limping</td>
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<tr>
<td></td>
<td>Keep up with herd</td>
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<tr>
<td></td>
<td>Response to handlers</td>
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<tr>
<td></td>
<td>Description</td>
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<tr>
<td>---</td>
<td>-------------</td>
</tr>
<tr>
<td>1</td>
<td>‘Normal. Walks easily with no apparent lameness or change in gait’</td>
</tr>
<tr>
<td>2</td>
<td>‘Keeps up with normal cattle when the group is walking; will exhibit 1 or more of the following: stiffness, shortness of stride, or slight limp’</td>
</tr>
<tr>
<td>3</td>
<td>‘Lags behind normal cattle when the group is walking; will exhibit 1 or more of the following: obvious stiffness, difficulty taking steps, obvious limp, or exhibiting obvious discomfort’</td>
</tr>
<tr>
<td>4</td>
<td>‘Extremely reluctant to move even when encouraged by a handler’</td>
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Beef Cattle Mobility

- Mobility Scoring – as it relates to Zilmax welfare concerns
  - Currently used to score groups of cattle
    - Feedyards and packer
    - Arrival to facilities / unloading
    - When cattle are weighed, moved, loaded
  - Currently used to score individual cattle
    - Controlled scientific studies
    - Cattle individually treated, weighed, etc.
    - Can score cattle live or record with cameras
The effects of technology use in feedlot production systems on behavior and mobility of finishing steers

B. C. Bernhard¹, C. L. Maxwell¹, B. P. Holland², C. R. Krehbiel¹, C. J Richards¹ and M. S. Calvo-Lorenzo¹

¹Oklahoma State University, Stillwater; ²Merck Animal Health, De Soto, KS

3 treatments (n=8 pens/trt):

(1) Natural (NAT)

(2) Conventional (CONV)

(3) CONV + ZH (CONV-Z)
### Beef Cattle Mobility Study at OSU (2013)

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Normal – Long, fluid stride; Even rhythm and weight bearing on all four feet</td>
</tr>
<tr>
<td>2</td>
<td>Slightly hesitant and stiff (shuffling); Moves with group</td>
</tr>
<tr>
<td>3</td>
<td>Obviously stiff and sore-footed; Reluctant to move; Cannot keep up with the herd</td>
</tr>
<tr>
<td>4</td>
<td>Extremely reluctant to move; Animal will refuse to move even when encouraged by a handler; Any steps are short and very unsteady</td>
</tr>
</tbody>
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[https://www.youtube.com/watch?v=37XYUdIDbcI&feature=youtu.be](https://www.youtube.com/watch?v=37XYUdIDbcI&feature=youtu.be)
Beef Cattle Mobility Study at OSU (2013)

**Loading (OSU Feedyard)**

- Observer

http://www.youtube.com/watch?v=F8wcEPpvbVk

**Unloading (Packing Plant)**

- Observer
Mobility Scoring

$P = 0.93$

$SEM = 0.02$
Mobility Scoring

- 3s + 4s @ Loading: P = 0.99
- 3s + 4s @ Unloading: P = 0.14
- Cattle Missed @ Loading: P = 0.61
- Cattle Missed @ Unloading: P = 0.03
Conclusions

- The industry is coming together to address concerns related to welfare and technology use
  - Technology industries
  - Producers
  - Packers

- Veterinarians
  - Scientists
  - Beef Industry

- Sustainability is a important theme in livestock production
  - Demand for food that is
    - abundant, nutritious, and affordable
    - minimized environmental impact / natural resources
    - humane animal treatment