Preconditioning & Calf Health

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University of Arkansas
Department of Animal Science
Overview

• Pre-Con Calf Management
  • Impact of preconditioning
  • Impact of castration
  • Dewormer selection
• Adding value to your calves
• Storing Health Products
• Recent FDA GFI changes
Minimizing disease

- Preconditioning management is one of the most important factors to minimize likelihood of disease.

- Minimizing disease:
  1. Gain more efficiently
  2. Higher valued carcasses
  3. Require less medication
  4. Suffer less death loss
  5. Increase profit potential

- Improves welfare of the animal
## Arkansas Steer Feedout Program

<table>
<thead>
<tr>
<th></th>
<th>Sick</th>
<th>Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>422</td>
<td>1,651</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>2.99</td>
<td>3.12</td>
</tr>
<tr>
<td>Medicine cost/calf, $</td>
<td>36.80</td>
<td>--0--</td>
</tr>
<tr>
<td>Days on Feed</td>
<td>183.5</td>
<td>176</td>
</tr>
<tr>
<td>Net return/calf, $</td>
<td>-75.66</td>
<td>74.99</td>
</tr>
<tr>
<td>Quality grade, %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice</td>
<td>28</td>
<td>45</td>
</tr>
<tr>
<td>Select</td>
<td>48</td>
<td>45</td>
</tr>
<tr>
<td>Standard</td>
<td>13</td>
<td>8</td>
</tr>
</tbody>
</table>
Factors related to disease

• Stressors for calves:
  • Naïve Immune System
  • Weaning
  • Handling
  • Commingling
  • Transportation
  • Environment
Preconditioning Management

- Preconditioned cattle
  - Weaned ≥ 45 days
  - Vaccinated against BRD pathogens
  - Males are Castrated
  - Bunk-broke, Dewormed

- Preconditioned cattle
  - Reduced BRD morbidity (Clark et al., 2006)
  - Improved performance (Seeger et al., 2008)
  - More valuable (~$8.00/cwt)
Impact of Weaning Management

- Total of 528 crossbred bull and steer calves:

  **Preconditioned (PC) Group:**
  - Preconditioned steers (n = 236)
    - From cow-calf ranches in Arkansas
    - Initial BW = 553 lb

  **Auction Market (AM) Group:**
  - Auction market bulls (n = 210) and steers (n = 82)
    - Multiple public auction outlets located in Arkansas
    - Initial BW = 540 lb
Impact of Weaning Management

<table>
<thead>
<tr>
<th></th>
<th>Auction Market</th>
<th>Preconditioned</th>
<th>$P$ value =</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG, lb</td>
<td>1.9</td>
<td>2.67</td>
<td>0.0001</td>
</tr>
<tr>
<td>Morbidity,%</td>
<td>67.2</td>
<td>7.7</td>
<td>0.0001</td>
</tr>
<tr>
<td>3 Treats,%</td>
<td>8.0</td>
<td>3.2</td>
<td>0.002</td>
</tr>
<tr>
<td>Chronics,%</td>
<td>1.1</td>
<td>0.4</td>
<td>0.03</td>
</tr>
<tr>
<td>Med Costs, $</td>
<td>18.49</td>
<td>2.31</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
Impact of Castration?

- Castration impact on performance and morbidity
- 923 bull or steer calves
  - 567 Bulls, 356 Steers
- All included bull and steer calves that were processed similarly during the receiving period and then placed on pasture treatments
- Initial weight = 403 ± 55 lb
- Purchased from AR sale barns
## Impact of Castrating

<table>
<thead>
<tr>
<th>Impact of Castration</th>
<th>Bulls</th>
<th>Steers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of head</td>
<td>567</td>
<td>356</td>
</tr>
<tr>
<td>ADG, Receiving lb*</td>
<td>1.10(^\text{b})</td>
<td>1.36(^\text{a})</td>
</tr>
<tr>
<td>ADG, Total lb* (Approx. 150 days)</td>
<td>1.33(^\text{b})</td>
<td>1.43(^\text{a})</td>
</tr>
<tr>
<td>Morbidity, Receiving %*</td>
<td>55(^\text{a})</td>
<td>47(^\text{b})</td>
</tr>
<tr>
<td>Death loss, %</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

\(^\text{a,b}\) Means in same row with unlike superscripts are significantly different (P < 0.05)
## Arkansas Castration Study

(fall 2011 calves; n= 60)

<table>
<thead>
<tr>
<th></th>
<th>Steers</th>
<th>Bulls</th>
<th>( P = )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth Weight, lb</td>
<td>74</td>
<td>73</td>
<td>0.66</td>
</tr>
<tr>
<td>Weaning Weight, lb</td>
<td>475</td>
<td>480</td>
<td>0.81</td>
</tr>
<tr>
<td>ADG, lb</td>
<td>1.8</td>
<td>1.8</td>
<td>0.64</td>
</tr>
<tr>
<td>Post Weaning Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56 days ADG, lb</td>
<td>2.25</td>
<td>2.04</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Steers cut at birth, Bulls cut at weaning
Perception of Preconditioning

• Study by Oklahoma State
• Survey 17 feedlot managers that were members of TCFA
• Questioned perceived performance differences between precondition vs. non-preconditioned calves
## Preconditioning Perceptions

<table>
<thead>
<tr>
<th></th>
<th>Preconditioned</th>
<th>Non-Precond</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Sick</td>
<td>9.2</td>
<td>36.4</td>
</tr>
<tr>
<td>% Death Loss</td>
<td>1.5</td>
<td>4.3</td>
</tr>
<tr>
<td>ADG (lbs/day)</td>
<td>2.9</td>
<td>2.6</td>
</tr>
<tr>
<td>Feed conversion</td>
<td>6.3</td>
<td>6.9</td>
</tr>
<tr>
<td>% Choice</td>
<td>50.4</td>
<td>35.8</td>
</tr>
<tr>
<td>% Outs</td>
<td>2.5</td>
<td>6.9</td>
</tr>
</tbody>
</table>

TCFA managers est. increased worth of $5.25/cwt. over non-precon calves
Profit on Precon Sales

- Colorado State University Study
  - Analyzed data on 2.7 million head in preconditioned calf sales over 9 yr period
  - Calves marketed through Superior Livestock
  - Prices increased up to $6.69 / cwt.
  - Lots sold through Precon sale increased from 12% to 51% over the 9 year period of this analysis
Vaccine Protocol

- Requirements may differ at sale
- Process 2-4 wks before wean or at wean
- 5-way: IBR, BVD Types 1&2, PI-3, BRSV
- Blackleg – 7 way or 8 way
- Past./H.somnus
- Dewormer
- ID tag
- Castrating, dehorn
- Revac. in 2-6 wks.
What About Deworming?

Dewormer Studies

Life Cycle: Cattle Parasites

- Infected calf
- Worm eggs in feces
- Developmental cycle in fecal pat
- Egg hatches
- Infective $L_3$
- $L_1$, $L_2$

Rainfall is necessary to maintain development and survival of larvae and disperse them onto pasture grass.

Re-infection
- Susceptible calf

New Infection

Susceptible calf
Parasite Production Losses

• Annual loss = $165 per head according to ISU study of internal parasite control is not utilized (Lawrence & Ibarbura, 2006)

• Decreased Intake & Anorexia
  • Lower gains & milk production
  • Poor BCS, Poor reproductive efficiency

• Blood and tissue loss
  • Reduced immune competence
  • Lower feed conversion
  • Irritation & Introduction of secondary pathogens
## Dewormer Classes

<table>
<thead>
<tr>
<th>Chemical Family</th>
<th>Active Ingredients</th>
<th>Trade name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholinergic Inhibitors</td>
<td>Levamisole</td>
<td>LEVAMISOLE®</td>
</tr>
<tr>
<td>Benzimidazole or “White”</td>
<td>Albendazole, Fenbendazole, Oxfendazole</td>
<td>VALBAZEN®, PANACUR &amp; SAFEGUARD SYNANTHIC®</td>
</tr>
</tbody>
</table>
| Macrocyclic Lactone or “Endectocide” | 1. **Avermectins**  
Ivermectin  
Doramectin  
Eprinomectin  
2. **Milbemycins**  
Moxidectin | IVOMEC® & Generics  
DECTOMAX®  
EPRINEX®  
CYDECTIN® |
Recent UA Study

- Stocker cattle – Fall Study
- 200 head receiving study
- Compared the following:
  - Ivomec Plus ®
  - Noromectin Plus ®
  - Valbazen ®
UA Study

- Stocker cattle from NW AR salebarns
- 50 head placed on concrete
- Compared the following:
  - Cydectin® injectable
  - Ivomec® injectable
2012 UA Study

- Spring stocker study on calves that were dewormed previous fall

- Compared single or combo therapy

  1. Noromectin Pour-On
  2. Ivomec Pour-On
  3. Cydectin Pour-On
  4. SafeGuard
  5. Nor + SG
  6. Ivo + SG
  7. Cyd + SG
  8. Control Group
Growth performance in preweaned beef calves

- 85 days
- Began Mar 2010 & end May 2010
- Fall-born calves - Savoy

Animals:
- 87 calves ($BW = 304.5 \text{ lb})$
- Born bet. Sep - Nov 2009
- Natural nematode infections
- 2 Treatments: Moxidectin & Controls
### Gain Summary (lb)

#### Pre-weaning (d 0-85):

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Gain</th>
<th>ADG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treated with Cydectin Injectable</td>
<td>158.5</td>
<td>1.86</td>
</tr>
<tr>
<td>Untreated Controls</td>
<td>147.6</td>
<td>1.74</td>
</tr>
</tbody>
</table>

$P = 0.14$
Options for Adding Value to Calves

- Other opportunities to add value to calves besides Preconditioning programs:
- Survey in 2010 of 38,346 lots sold in 14 AR salebarns
## Factors Affecting Calf Price

<table>
<thead>
<tr>
<th>Management</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steers</td>
<td>116.16</td>
</tr>
<tr>
<td>Bulls</td>
<td>109.85</td>
</tr>
<tr>
<td></td>
<td>-6.31/cwt</td>
</tr>
<tr>
<td>Polled</td>
<td>109.36</td>
</tr>
<tr>
<td>Horned</td>
<td>101.33</td>
</tr>
<tr>
<td></td>
<td>-8.03/cwt</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genetics</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Musc. Score 1</td>
<td>Base</td>
</tr>
<tr>
<td>Musc. Score 2</td>
<td>-8.94/cwt</td>
</tr>
<tr>
<td>Musc. Score 3</td>
<td>-32.41/cwt</td>
</tr>
<tr>
<td>Large Frame</td>
<td>Base</td>
</tr>
<tr>
<td>Medium Frame</td>
<td>-0.55/cwt</td>
</tr>
<tr>
<td>Small Frame</td>
<td>-22.10/cwt</td>
</tr>
</tbody>
</table>

### Group Dynamics

<table>
<thead>
<tr>
<th>Lot size</th>
<th>$/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot size = 1</td>
<td>107.81</td>
</tr>
<tr>
<td>Lot sz. 2-5 hd</td>
<td>110.52</td>
</tr>
<tr>
<td>Lot sz. &gt;6 hd</td>
<td>112.60</td>
</tr>
</tbody>
</table>
Storing Health Products

- Product Storage
- Does Your Refrigerator Keep Vaccines at the Proper Temperature?
- Vaccine Products require bet. 35 – 45º F
- University of Arkansas - Recent study surveying refrigerators
- WatchDog Temp Data Logger
Does Your Refrigerator Keep Vaccines at the Proper Temperature?

- 239 refrigerators surveyed
- Data every 10 min for 48 hrs
- Total of 68,832 data points
- Where?
  - Retail Store/Co-ops = 18%
  - Producer/farm = 75%
  - Vet Clinics = 7%
Does Your Refrigerator Keep Vaccines at the Proper Temperature?

Temp. between 35-45° F
- > 95% of time = 26.4%
- 95-66% of time = 20.5%
- 65-36% of time = 16.3%
- 35-5% of time = 12.6%
- < 5% of time = 24.3%

Of the 68,832 data points

<table>
<thead>
<tr>
<th></th>
<th>Above 45°</th>
<th>Below 35°</th>
<th>Bet. 35-45°</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>13.8%</td>
<td>32.5%</td>
<td>53.7%</td>
</tr>
<tr>
<td>Av.</td>
<td>51.5°</td>
<td>31.5°</td>
<td>38.6°</td>
</tr>
</tbody>
</table>

• When health products are stored improperly, the effectiveness is compromised.
Keeping track of your refrigerator temperature
Recent FDA GFI #213

- FDA-CVM announced Dec. 11, 2013 a focus on VFDs for cattle feed antibiotics
- In regards to growing concerns with development of antibiotic resistance
- Directed to Pharmaceutical companies to change “production use” labeling (improved growth, gain and efficiency)
- 3 year period before current labels will expire
Example changes that may occur:

CTC no longer labeled for improved BW gain and feed efficiency in calves

Could keep label indications for BRD, anaplasmosis, and footrot

GFI #213 will eliminate “production use” (highlighted in yellow) wording and doses.
FDA’s GFI #213

- Example products included:
  - CTC = chlortetracycline (Aureomycin, Pennchlor)
  - Oxytetracycline (Terramycin, Pennox)
  - Sulfa powders or liquid (DiMethox, Sulfamet, SulMet)

- Examples of products not included:
  - Bacitracin (GainPro)
  - Lidlomycin (Cattlyst)
  - Ionophores (Rumensin, Bovatec)
In the future, producers may be required to obtain a prescription, or VFD, from a veterinarian for antimicrobial drugs used as feed additives.

A VFD could not be obtained for uses not contained on the product’s label.

Producers stand to get the potential for new more effective medications that can be used in the feed to manage disease events.
Check out UA Animal Science Blog:

www.arkansas-livestock.com