Drought Preparedness for Cow/calf Producers

Brought to you by:
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U.S. Drought Monitor

Kansas

July 7, 2020
(Released Thursday, Jul. 9, 2020)
Valid 8 a.m. EDT

Intensity:
- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions; local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:
David Miskus
NOAA/NWS/NCEP/CCPs

droughtmonitor.unl.edu
Drought Preparedness for Cow/Calf Producers

- Strategic reduction of grazing pressure
  - Dr. Sandy Johnson, Professor, NWREC, Colby

- Supplementation & Early-Weaned Calf Nutrition
  - Dr. Justin Waggoner, Professor, SWREC, Garden City

- Early Weaning Calf Health Considerations
  - Dr. AJ Tarpoff, Asst. Professor, Dept. of Animal Sciences & Industry

Please use the Question and Answer window in Zoom to post questions to our panelists.
STRATEGIC REDUCTION IN GRAZING PRESSURE

Sandy Johnson
Department of Animal Sciences & Industry
Northwest Research & Extension Center, Colby, KS
Kansas State University
METHODS TO REDUCE GRAZING PRESSURE

• Fewer animals
• Fewer days
• Reduce requirements
• Combination of the above

Long-term – range condition

Short term - cash flow / expenses
WHAT ANIMALS TO DE-STOCK

- Have feed resources for alternative management or can market sooner
- Planned to sell anyway – yearlings, old (cows & bulls), failed convenience traits
- Least value to you – (open, late bred, don’t fit genetic goals)
- Need information to make decisions
# Age and Value of Calf

<table>
<thead>
<tr>
<th>Item</th>
<th>Day of Calving Season</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Weaning Wt</td>
<td>625</td>
</tr>
<tr>
<td>Weaning Value ($151.74 -164.89)</td>
<td>948</td>
</tr>
<tr>
<td>Total Variable Costs*</td>
<td>753</td>
</tr>
<tr>
<td>Net</td>
<td>195</td>
</tr>
</tbody>
</table>

* 2014 -2018 KFMA Spring Cow/Calf Enterprise – State wide
Figure 4. Boning Utility Cows, Sioux Falls: Seasonal Price Index, 2005-2014

Schulz, Iowa Beef Center, 2014
(https://www.extension.iastate.edu/agdm/livestock/pdf/b2-19.pdf)
**Pregnancy Detection Methods**

- **Palpation**
  - Precision declines as pregnancy advances

- **Ultrasound**
  - Best for staging 28 to 100 days

- **Blood Test**
  - 25-29 d post mating, repeated samples to stage
Staging pregnancies 90 days after bull turn out

Cumulative % pregnant

Days of breeding season

May 21

Aug 19

90

60%

70

22%

50

9%

30
STAGING PREGNANCIES AFTER BULL TURN OUT

Cumulative % pregnant

Days of breeding season

May 21

Aug 19
Aug 29
Sept 18

90
110
130

60%
22%

70
50
90

9% 9% 9%

30
50
70
STAGING WITH MULTIPLE BLOOD SAMPLES

Cumulative % pregnant vs. Days of breeding season

Sample 1 – July 10:
- 50 Preg
- 30 Not-preg

Sample 2 – July 30:
- 70 Preg
- 30 Not-preg
COMMERCIALY AVAILABLE TESTS

• BioPRYN (BioTracking LLC, Moscow, ID)
• IDEXX (IDEXX laboratories Inc. Westbrook, ME)
• DG29 (Genex Coperative, Shawano, WI)
**ADDITIONAL VALUE OF STAGING PREGNANCIES**

- Manage cows by stage
- Marketing options
  - AI-sired
  - Fetal sex
  - ? value of pregnant cows
CONSiderations in culling cows

• Take opportunity to identify and cull cows with weaknesses
• Early bred have greater value that later bred
• Seasonal changes in cow market
• Use timely pregnancy diagnosis to stage pregnancies
Supplementation & Early-Weaned Calf Nutrition

Justin Waggoner
Department of Animal Sciences & Industry
Southwest Research & Extension Center, Garden City KS
Kansas State University
4 Forage Scenarios

- Abundant supply of high quality forage
- High quality forage, but limited supply
- Abundant supply of low quality forage
- Low quality forage, limited supply
DROUGHT SUPPLEMENTATION IS NOT NORMAL

• Normal supplementation program
  • Adequate supply low/moderate forage
    • Less than 7% CP
    • Protein 1st limiting

• Drought situation or limited grazing
  • Energy 1st limiting nutrient followed by protein
  • Replace forage with hay or fiber-based supplement
  • Feed combination supplements that supply both energy and protein
Energy Requirement and Supply

E. NERGY EQUIREMENT AND S UPPLY

- **Net Energy Maint., Mcal/d**

Beef NRC, 2000

- Calving
  - 0.35 Mcal/lb forage @ 2.2% BW (10.8 Mcals)

- Weaning
  - 0.65 Mcal/lb forage @ 2.2% BW (20.8 Mcals)
ENERGY REQUIREMENT AND SUPPLY (20% REDUCTION IN FORAGE INTAKE)

Beef NRC, 2000

Calving

Weaning

0.35 Mcal/lb forage @ 1.76% BW (8.6 Mcals)

0.65 Mcal/lb Forage @ 1.76% BW (16.01 Mcals)
SUPPLEMENT SELECTION
# Nutrient Composition

<table>
<thead>
<tr>
<th>Item</th>
<th>DM,%</th>
<th>CP,%</th>
<th>Ca,%</th>
<th>P,%</th>
<th>NEm, Mcal/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>88</td>
<td>9.8</td>
<td>0.03</td>
<td>0.30</td>
<td>1.01</td>
</tr>
<tr>
<td>Corn Gluten Pellet</td>
<td>91</td>
<td>18-21</td>
<td>0.07</td>
<td>0.95</td>
<td>0.88</td>
</tr>
<tr>
<td>Wet Distillers Grain</td>
<td>35</td>
<td>31</td>
<td>0.07</td>
<td>0.81</td>
<td>0.97</td>
</tr>
<tr>
<td>Dried Distillers Grain</td>
<td>89</td>
<td>31</td>
<td>0.07</td>
<td>0.83</td>
<td>0.95</td>
</tr>
<tr>
<td>Alfalfa Hay</td>
<td>91</td>
<td>12</td>
<td>1.41</td>
<td>0.25</td>
<td>0.84</td>
</tr>
<tr>
<td>CRP Hay</td>
<td>89</td>
<td>3.5</td>
<td>0.34</td>
<td>0.09</td>
<td>0.20</td>
</tr>
<tr>
<td>Sorghum Silage</td>
<td>38.4</td>
<td>6.6</td>
<td>0.41</td>
<td>0.28</td>
<td>0.24</td>
</tr>
<tr>
<td>Liquid Suppl.</td>
<td>43</td>
<td>25</td>
<td>1.3</td>
<td>0.24</td>
<td>1.33</td>
</tr>
</tbody>
</table>
How many Mcals of energy are in a ton of?

Corn 1.0 Mcal/lb
DDGs 0.95 Mcal/lb
Alfalfa 0.85 Mcal/lb
CRP hay 0.20 Mcal/lb
SUPPLEMENT SELECTION

• Fiber Vs. Starch
  • Fiber preferred....less substitution...negative effects of starch in the rumen
  • Feed up to 0.3% BW generally without negatively impacting forage intake of energy-based supplements

• Energy and Protein combination supplements

• *During a drought the bottom line is meeting cow requirements for energy and protein*
SUPPLEMENTATION PROGRAMS

• Based on the assumption that animals consume the supplement at the targeted amount....

• Deliver Daily (supplying both energy and protein)

• Delivery methods (hand feeding, bunks, etc.)

• Social behaviors
  • Bunk space (20 inches/cow)
  • Sorting cows (group cows by condition)
SUPPLEMENTATION VS. FEEDING

• Replacing more than 50% of daily forage intake?
  • 1400 lb cow ~ 28 lbs dry forage/day

• May need to replace forage with concentrates
  • Energy density of concentrates greater/economical

• Limit-feeding
  • Restrict intake relative to predicted ad-libitum intake
  • Feed more energy dense diet at 1.8% BW opposed to forage at 2.5% BW, dry basis.
CONVENTIONAL/EARLY WEANING

• Weaning at less than 180 days of age
  • Conventional weaning 180-220 days of age
  • May be implemented as early as 45 days of age (Rasby 2007)

• Practical application
  • Weaning at 100 to 150 days of age
  • Average age ~120 days of age
Effect of weaning on grazing pressure

- 450 lb calf, 120 DOA
  - 6.8 lbs dry forage/d
- Lactating 1400 lb cow
  - 30.3 lbs dry forage/d
- Dry 1400 lb cow
  - 27.3 lbs dry forage/d

Every 4 days that a calf is not grazing = 1 grazing day for the cow
Weaning 30 days early ~ 1 week of grazing
## Body Condition Score of Cows Weaned When Calves Were 100-160 Days of Age

<table>
<thead>
<tr>
<th>Item</th>
<th>Calf Age, d</th>
<th>P-value Unweaned vs. weaned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>115</td>
</tr>
<tr>
<td>BCS&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5.46</td>
<td>5.50</td>
</tr>
<tr>
<td>Final&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.90</td>
<td>5.99</td>
</tr>
<tr>
<td>BCS change</td>
<td>0.43</td>
<td>0.50</td>
</tr>
</tbody>
</table>

<sup>a</sup>Body condition score (scale = 1 to 9; 1 = emaciated, 9 = obese)

<sup>b</sup>Initial BCS measured at 100 days of calf age

<sup>c</sup>Final BCS measured at 220 days of calf age

Bolte et al., 2007
Body Condition Scores at Calving (Calves weaned at 113 ± 17 days in Year 1)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Trt × Year P = 0.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDGD</td>
<td>5.4</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>DDG3</td>
<td>5.4</td>
<td>5.8</td>
<td></td>
</tr>
<tr>
<td>DDG6</td>
<td>5.2</td>
<td>5.9</td>
<td></td>
</tr>
</tbody>
</table>

n = 79 cows

Brad Bennett, M.S. Thesis, 2013
FEEDING MANAGEMENT

• Newly-weaned calves often reluctant to eat and subsequent DM intake is low (1-1.5% BW)

<table>
<thead>
<tr>
<th>Weight</th>
<th>1.0</th>
<th>1.5</th>
<th>1.8</th>
<th>2.0</th>
<th>2.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>350</td>
<td>3.5</td>
<td>5.25</td>
<td>6.13</td>
<td>7.0</td>
<td>8.75</td>
</tr>
<tr>
<td>400</td>
<td>4.0</td>
<td>6.0</td>
<td>7.0</td>
<td>8.0</td>
<td>10.0</td>
</tr>
<tr>
<td>450</td>
<td>4.5</td>
<td>6.75</td>
<td>7.9</td>
<td>9.0</td>
<td>11.25</td>
</tr>
<tr>
<td>500</td>
<td>5.0</td>
<td>7.50</td>
<td>8.75</td>
<td>10.0</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Day 1 ———————————> Day 10-14
Calves observed at the bunk during feedlot receiving period

- Drylot weaned
- Pasture weaned, fence-line contact with dam, plus supplement
- Pasture weaned, fence-line contact with dam

Treatment x time ($P < 0.05$)

Bailey, 2013
## K-State Early Weaning Feeding Management Program

<table>
<thead>
<tr>
<th>Feeding day*</th>
<th>Weaning Diet (75-85% Concentrate)</th>
<th>Premium grass hay</th>
<th>Feedstuff order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5% of BW</td>
<td>0.5% of BW</td>
<td>diet bottom/hay top</td>
</tr>
<tr>
<td>2</td>
<td>0.7% of BW</td>
<td>0.5% of BW</td>
<td>diet bottom/hay top</td>
</tr>
<tr>
<td>3</td>
<td>0.9% of BW</td>
<td>0.5% of BW</td>
<td>diet bottom/hay top</td>
</tr>
<tr>
<td>4</td>
<td>1.1% of BW</td>
<td>0.5% of BW</td>
<td>hay bottom/diet top</td>
</tr>
<tr>
<td>5</td>
<td>1.3% of BW</td>
<td>0.5% of BW</td>
<td>hay bottom/diet top</td>
</tr>
<tr>
<td>6</td>
<td>1.5% of BW</td>
<td>0.5% of BW</td>
<td>hay bottom/diet top</td>
</tr>
<tr>
<td>7</td>
<td>1.8% of BW</td>
<td>—</td>
<td>diet only</td>
</tr>
<tr>
<td>8 ( \rightarrow )</td>
<td>Increase diet by 0.25 to 0.50 lb per calf</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Remove any uneaten feedstuffs before feeding current day’s diet*
**Diet Characteristics**

- Nutrient density
  - Must be relatively high to offset low intakes

- Familiar feeds (grass hay) not necessarily nutrient dense

- Newly weaned calves may not readily consume novel feeds
  - Limit inclusion of silage, wet byproducts?
Diet Characteristics

- Palatability

- Moisture content (20-30% optimum)
  - Wet byproduct inclusion level

- Calves will sort diet ingredients
  - Stressed cattle more likely to consume concentrates (Lofgreen, 1983)
  - Particle size and ingredient aggregation of the diet
**Facilities**

- Calves should be penned based on body size
  - Limit weight range within pen to ± 50 lbs
- Linear bunk space of at least 12 inches/calf
- Consider bunk and water tank height
- Pen maintenance (holes, dust etc.)
- Consider air-flow and shade
  - Too little shade promotes crowding
Pen Environment

Use panels to reduce pen size

Easily removed when cattle become acclimated

Adapted from KC Olson
PERFORMANCE OF EARLY WEANED CALVES

- Producers often assume that early-weaned calves are lightweight, high-risk calves
  - Low performance potential

- Early weaned calves
  - Utilize concentrate feeds well
  - Similar treatment/pull rates with good management
  - Excellent Feed:Gain
Calf Body Weight on Day of Shipment to Feedyard

Linear Effect of Treatment $P = 0.04$

<table>
<thead>
<tr>
<th>Days Weaned (Calf Age), d</th>
<th>Body Weight (lbs)</th>
<th>Growth (lb/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 (100)</td>
<td>392</td>
<td>1.5</td>
</tr>
<tr>
<td>45 (115)</td>
<td>390</td>
<td>1.6</td>
</tr>
<tr>
<td>30 (130)</td>
<td>401</td>
<td>1.9</td>
</tr>
<tr>
<td>15 (145)</td>
<td>408</td>
<td>2.0</td>
</tr>
<tr>
<td>0 (160)</td>
<td>412</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Bolte et al., 2007
KSU Preconditioning Study: Weaning 100-160 Days of Age

Morbidity During the Weaning Period

<table>
<thead>
<tr>
<th>Days Weaned (Calf Age), d</th>
<th>Morbidity, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 (100)</td>
<td>3.7</td>
</tr>
<tr>
<td>45 (115)</td>
<td>3.7</td>
</tr>
<tr>
<td>30 (130)</td>
<td>1.2</td>
</tr>
<tr>
<td>15 (145)</td>
<td>1.2</td>
</tr>
<tr>
<td>0 (160)</td>
<td>0</td>
</tr>
</tbody>
</table>

Bolte et al., 2007
KSU Early Weaning Study, 2013

• Angus x Hereford steer calves
  - KSU CCU (113 ± 13 d of age) and WKARC (144 ± 15 d of age)
  - Weaned August 7, 2013

• Drylot weaned
  - Transported to WKARC feedlot (Hays)
    • Fed to achieve 2.2 lbs ADG at a dry matter intake of 2.2% of bodyweight

• Pasture weaned
  - Transported to KSU CCU (Manhattan)
    • Allowed to graze previously ungrazed, native-tallgrass pastures (240 ± 99 acres)

<table>
<thead>
<tr>
<th>Sampling Date</th>
<th>CP*</th>
<th>NDF*</th>
<th>ADF*</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/07/2013</td>
<td>6.7</td>
<td>60.6</td>
<td>41.0</td>
</tr>
<tr>
<td>09/04/2013</td>
<td>6.1</td>
<td>61.1</td>
<td>40.3</td>
</tr>
<tr>
<td>10/02/2013</td>
<td>4.8</td>
<td>66.3</td>
<td>46.3</td>
</tr>
</tbody>
</table>

*DM basis

Preedy et al., 2014
# Weaning Diet Composition

## Ingredient Composition

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>DM, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ground sorghum grain</td>
<td>57.4</td>
</tr>
<tr>
<td>Dried distillers grains</td>
<td>20.1</td>
</tr>
<tr>
<td>Sorghum silage</td>
<td>13.1</td>
</tr>
<tr>
<td>Soybean meal</td>
<td>5.1</td>
</tr>
<tr>
<td>Supplement*</td>
<td>4.3</td>
</tr>
</tbody>
</table>

## Nutrient Composition

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP, % of DM</td>
<td>18.7</td>
</tr>
<tr>
<td>NE&lt;sub&gt;m&lt;/sub&gt;, Mcal/lb</td>
<td>0.85</td>
</tr>
<tr>
<td>NE&lt;sub&gt;g&lt;/sub&gt;, Mcal/lb</td>
<td>0.52</td>
</tr>
</tbody>
</table>

*Supplement contained Ca, urea, ammonium sulfate, Na, Rumensin® 90, and Tylan® 40
## 2013 Performance and Health of Early-Weaned Calves

<table>
<thead>
<tr>
<th>Item</th>
<th>Drylot</th>
<th>Pasture</th>
<th>SEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaning BW, lbs</td>
<td>360.7</td>
<td>359.0</td>
<td>5.07</td>
</tr>
<tr>
<td>Final BW, lbs (56 d)</td>
<td>490.8&lt;sup&gt;a&lt;/sup&gt;</td>
<td>364.9&lt;sup&gt;b&lt;/sup&gt;</td>
<td>5.75</td>
</tr>
<tr>
<td>ADG, lb/d</td>
<td>2.04&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.09&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.042</td>
</tr>
<tr>
<td>Dry Matter Intake, %BW/d</td>
<td>2.20</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Feed:Gain</td>
<td>4.06</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Incidence of fever, %</td>
<td>6.7&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.0&lt;sup&gt;d&lt;/sup&gt;</td>
<td>2.71</td>
</tr>
<tr>
<td>Conjunctivitis, %</td>
<td>0.0&lt;sup&gt;a&lt;/sup&gt;</td>
<td>40.2&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.17</td>
</tr>
</tbody>
</table>

<sup>a, b</sup> Means within rows without common superscripts differ ($P < 0.05$)

<sup>c, d</sup> Means within rows without common superscripts tend to differ ($P = 0.10$)

Preedy et al., 2014
MARKETING EARLY-WEENED CALVES

- Calf value is a function of weight gain post weaning
- Early-weaned calves fit a variety of marketing programs
- Develop a marketing plan
  - https://beefbasis.com/
    - Value of gain/Cost of gain
    - Time of marketing
EARLY WEANING CALF HEALTH CONSIDERATIONS

A.J. Tarpoff
Beef Extension Veterinarian
Kansas State University
**What is the goal?**
WHERE IS THE CALF’S IMMUNE SYSTEM?

Window of Susceptibility

Active Immunity

Passive Immunity

Total Immunity

Conception  Innate Immunity  Birth  Weaning  Puberty

Fully responsive to parenteral vaccines

- Innate Immunity
- Passive (maternal) Immunity
- Active Immunity

**Calf Immune Function**

- Calf completely naïve at birth
- Absorption of Colostrum antibodies
- Calf’s own immune system begins to take over
- Calf begins to have full immune function by 5-8 months of age
- Maternal Antibody declining by branding time 2-4 months of age
How early can you vaccinate??

- Reliable response to vaccine by 2-3 months old
- As early as 1 month with some products
  - Work with your veterinarian for recommendations
A SURVEY OF RECOMMENDED PRACTICES MADE BY VETERINARIAN PRACTITIONERS TO COW-CALF OPERATIONS IN THE UNITED STATES

Fike, G.*, J.C. Simroth†, D.U. Thomson‡, R. Spare§, and A.J. Tarpoff$†

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†Department of Diagnostic Medicine/Pathobiology, College of Veterinary Medicine, Kansas State University, Manhattan, KS, 66506
‡Ashland Veterinary Center, Inc., Ashland, KS 67831
§Department of Animal Sciences and Industry, Kansas State University, Manhattan, KS, 66506
EARLIEST AGE RECOMMENDED FOR WEANING CALVES

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 - 60 days</td>
<td>0%</td>
</tr>
<tr>
<td>60 - 90 days</td>
<td>10%</td>
</tr>
<tr>
<td>90 - 120 days</td>
<td>31%</td>
</tr>
<tr>
<td>120 - 150 days</td>
<td>39%</td>
</tr>
<tr>
<td>&gt; 150 days</td>
<td>5%</td>
</tr>
</tbody>
</table>
**Immune System**

**Helps**
- Quality nutrition
- Clean environment
- Vaccination
- Maturity

**Hurts**
- Stress
  - Weaning
    - Most stressful time in the life of a bovine
  - Changes in feed
  - Extreme weather
  - Management practices
    - Castration
    - Dehorning
  - Transportation
  - Mixing groups of cattle
GOAL: REDUCE COMPOUNDING STRESSORS

Immunity

Vaccination

Weaning
Shipping
Commingling
Change feed

Disease

Disease Challenge
General Guidelines Calves

- Need a functional immune system to get adequate response
- **Biggest concern is BRD**
- **When should be vaccinate?**
  - **Branding time**
    - 3-4 months of age
    - Maternal antibody decline, own immunity increasing
  - **Pre-weaning**
    - This greatly increases the immunity against selected pathogens
- **Weaning?**
  - Does a stressed animal’s immune system function fully?
GENERAL GUIDELINES

• What do we vaccinate against?
  • Clostridial Diseases (7 or 8-way)
    • Don’t forget about tetanus
      • Banding or de-horning
  • 5 way MLV viral
    • Respiratory viruses
  • Respiratory Bacterins
    • Mannheimia/Pasturella/Histophilus
# Recommended Vaccines and Practices for Calves at Branding

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clostridial</td>
<td>96</td>
</tr>
<tr>
<td>IBR</td>
<td>94</td>
</tr>
<tr>
<td>BRSV</td>
<td>91</td>
</tr>
<tr>
<td>PI3</td>
<td>90</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea Type I</td>
<td>78</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea Type II</td>
<td>77</td>
</tr>
<tr>
<td>Mannheimia haemolytica</td>
<td>45</td>
</tr>
<tr>
<td>Moraxella bovis</td>
<td>31</td>
</tr>
<tr>
<td>Pasturella multocida</td>
<td>26</td>
</tr>
<tr>
<td>Histophilus somni</td>
<td>18</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>5</td>
</tr>
<tr>
<td>Others not listed</td>
<td>5</td>
</tr>
<tr>
<td>Mycoplasmal pneumonia</td>
<td>1.5</td>
</tr>
<tr>
<td>Vibriosis</td>
<td>0.7</td>
</tr>
</tbody>
</table>

**Vaccination Methods**

- **Killed**: 12%
- **Modified Live (MLV)**: 88%
- **Probiotics**: 75%
- **De-wormer**: 64%
- **Injectable**: 84%
- **Paste/oral**: 18%
- **Pour on**: 38%
### Recommended Vaccines and Practices for Calves Before Weaning

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBR</td>
<td>99</td>
</tr>
<tr>
<td>BRSV</td>
<td>98</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea Type I</td>
<td>96</td>
</tr>
<tr>
<td>Bovine Viral Diarrhea Type II</td>
<td>96</td>
</tr>
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</tr>
<tr>
<td>Mannheimia haemolytica</td>
<td>77</td>
</tr>
<tr>
<td>Histophilus somni</td>
<td>45</td>
</tr>
<tr>
<td>Pasteurella multocida</td>
<td>42</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>10</td>
</tr>
<tr>
<td>Moraxella bovis</td>
<td>9</td>
</tr>
<tr>
<td>Others not listed</td>
<td>4</td>
</tr>
<tr>
<td>Mycoplasmal pneumonia</td>
<td>2</td>
</tr>
</tbody>
</table>

- **Califhood implant: % 58**
- **De-wormer: % 76**
- **Injectable: % 74**
- **Pour on: % 45**
- **Pastel/oral: % 30**

**Modified Live (MLV): 90%**

**Killed: 10%**
ANAMNESTIC RESPONSE?

Amount of antibody in serum (titer)

1st vacc.  7 14  2nd Vacc.
Or exposure  7 14

Anamnestic response

Tizzard, 1996
VACCINE RESPONSE

Figure 11

Most animals produce an immune response which confers adequate protection.

These few animals produce a very good immune response: they will be well protected.

These few animals produce a poor immune response and hence will be poorly protected.

Magnitude of immune response

Percentage of vaccinated animals
WEANING

• The most stressful period in the life of beef cattle
• Decrease the stress?????
  • Handle the cattle prior to weaning
  • Soft weaning
    • Fence-line/ 2-stage wean
  • Acclimate cattle to new environment
    • Water bowl/feed trough/new fence lines
    • Prior to weaning?
Timing is everything
Effects of intact males on arrival

• Bulls have 140% higher morbidity rates than steers
• Bulls have 142% higher mortality rates than steers
• Bulls have 163% higher railer rates than steers

Renfro et al., 2004
Castration methods selected as best option for calves at:

97% veterinarians recommend that calves get a tetanus vaccine when banding is recommended as castration method.
Parasite Control

- GI Nematodes
  - Injectable/Pour-on/Oral deworming products

- Coccidiosis
  - Be prepared to combat this in weaned calves
  - Coccidiostats/Treatments

- External parasites
  - Flies/ticks
IS PRECONDITIONING FOR YOU

• Do you have the facilities?
• Do you have the time?
• Do you have the labor?
• Do you understand the costs/benefits?
• Have you found a specific marketing opportunity?
SUPERIOR
Livestock Vaccination Programs

Management requirements:
- Please consult your veterinarian or health advisor when selecting the vaccine that qualifies for these programs.
- Always read and follow vaccine label instructions.
- Use endotoxin-tolerant vaccines to help manage immune response.
- Prior to application, ensure there are no infectious diseases.
- Examine the health of the livestock before application and treat if necessary.

VAC 24
VAC 24 is a 2-in-1 vaccine for cattle and goats. It provides:
- TＡＢＡ Cattle & Goats, Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a first-line vaccination in dairy herds for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.

VAC 34
VAC 34 is a 3-in-1 vaccine for cattle and goats. It provides:
- Bovine, Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a first-line vaccination in dairy herds for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.

VAC 45
VAC 45 is a 4-in-1 vaccine for cattle and goats. It provides:
- Brucellosis (Bovine), Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a first-line vaccination in dairy herds for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.

SelectVAC
VAC PRECON
VAC PRECON is a pre-cocking vaccine for cattle and goats. It provides:
- Brucellosis (Bovine), Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a pre-cocking vaccine in dairy herds for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.

PrimeVAC
PrimeVAC is a pre-cocking vaccine for cattle and goats. It provides:
- Brucellosis (Bovine), Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a pre-cocking vaccine in dairy herds for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.

Certified
This document is a certified health document for cattle and goats. It provides:
- Brucellosis (Bovine), Foot-and-Mouth Disease (FMD) Vaccine, and IBR and IBR/TaT. For use as a certified health document for infectious bovine rhinotracheitis (IBR) and transmissible agoud antigen (TaT) in goats.
PREMIUM ASSOCIATED WITH LOTS QUALIFYING FOR VAC 34* IN SELECT YEARS

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of Total Lots</th>
<th>Premium/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>11%</td>
<td>$1.35/cwt</td>
</tr>
<tr>
<td>2000</td>
<td>20%</td>
<td>$1.76/cwt</td>
</tr>
<tr>
<td>2005</td>
<td>46%</td>
<td>$2.45/cwt</td>
</tr>
<tr>
<td>2010</td>
<td>51%</td>
<td>$1.93/cwt</td>
</tr>
<tr>
<td>2018</td>
<td>50%</td>
<td>$3.07/cwt</td>
</tr>
</tbody>
</table>

*Includes VAC 34 and VAC 34+
Premium Associated with Lots Qualifying for VAC 45* in Select Years

82,793 total lots

*Includes VAC 45 and VAC 45+

<table>
<thead>
<tr>
<th>Year</th>
<th>% of Total Lots</th>
<th>Premium/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>3%</td>
<td>$2.47/cwt</td>
</tr>
<tr>
<td>2000</td>
<td>7%</td>
<td>$3.66/cwt</td>
</tr>
<tr>
<td>2005</td>
<td>21%</td>
<td>$6.64/cwt</td>
</tr>
<tr>
<td>2010</td>
<td>27%</td>
<td>$4.93/cwt</td>
</tr>
<tr>
<td>2018</td>
<td>29%</td>
<td>$6.19/cwt</td>
</tr>
</tbody>
</table>
Value (Indiana 11 Year Study)

- $26.04 to $116.48 profit return ($80.70 average)
- Returns were primarily due to added weight sold (63% of return)
- Premium for lower health risk (37% of return)

Hilton and Olynk, 2011
VALUE

- 2011 review of Value-Added Management on Calf prices
- 2010 calf sales
  - Weaned steer calves with certified health program
    - $7-$10 per cwt premiums

Zimmerman et. al.
MARKETING

• Precon specific sales
  • Precon featured calves
  • Private treaty?
• Documented/verified
• Biggest mistake:
  • Sell animals without extra effort to ensure value is realized by the buyer
LINKS-RESOURCES

• Weather Outlooks
  • https://www.cpc.ncep.noaa.gov/

• Kansas Mesonet
  • http://mesonet.k-state.edu/ (main page)
  • http://mesonet.k-state.edu/agriculture/animal/ (comfort index)

• Drought Monitor and Grass-Cast
  • https://droughtmonitor.unl.edu/ https://grasscast.unl.edu/

• KSU Beef Webinar Recordings (www.KSUBeef.org)
  • Managerial Tools and Tips in an Uncertain Climate and Market
    https://youtu.be/IDdTfmYfoaY
  • Troubleshooting Uncertain Times in the Beef Industry
    https://youtu.be/dEm24kIWMiY

• www.Beefbasis.com
THANK YOU!

QUESTIONS?

Please complete post event survey at: https://tinyurl.com/KSUBeeFDrought

Please use the Question and Answer window in Zoom to post questions to our panelists.
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