Economic Impacts of BVD on the U.S. Cattle Herd

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SURVIVAL

When you are in deep trouble, say nothing, and try to look like you know what you're doing.
C-N-01
02/01/16

80
90
100
110
120
130
140

1956
1961
1966
1971
1976
1981
1986
1991
1996
2001
2006
2011
2016

Mil. Head

JANUARY 1 TOTAL CATTLE INVENTORY
U.S., Annual

2016 = 92 Million Head
+3.2 Percent

Data Source: USDA-NASS
Livestock Marketing Information Center
BEEF COW INVENTORY
U.S., Annual, January 1

Data Source: USDA-NASS
Livestock Marketing Information Center
DAIRY COW INVENTORY
U.S., Annual, January 1

Mil. Head

Data Source: USDA-NASS
Livestock Marketing Information Center
JANUARY 1 FEEDER CATTLE SUPPLIES
Residual, Outside Feedlots, U.S.

Data Source: USDA-NASS, Calculations by Derrell Peel
JANUARY 1 CATTLE ON FEED

Data Source: USDA-NASS, Calculations by Derrell Peel
Cattle Inventory
January 1, 2016, Million Head

- All Cattle and Calves: 91.99
- Beef Cows: 30.33
- Dairy Cows: 9.32
- Beef Replacements: 6.29
- Dairy Replacements: 4.82
- Est. Feeder Supply: 25.91
- Cattle on Feed: 13.18
- Bulls: 2.14
- Calf Crop (2015): 34.31
BVD Impacts All Sectors...in Different Ways

- Beef Cow-Calf
- Dairy
- Stocker/Feedlot
Impacts of BVD: Cow-Calf

• Decreased/delayed conception
  – Early embryonic death
  – Increased calving interval

• Abortion/stillborn
  – Birth defects

• Persistently-Infected (PI) Calves

• Increased calf mortality
  – Weak calves
Beef Calf Crop Percent

Estimated

- 1986
- 1988
- 1990
- 1992
- 1994
- 1996
- 1998
- 2000
- 2002
- 2004
- 2006
- 2008
- 2010
- 2012
- 2014

Graph showing the percentage of beef calf crop from 1986 to 2014 with estimated values.
Impacts of BVD: Dairy

- Decreased/delayed conception
  - Early embryonic death
  - Increased calving interval
- Abortion/stillborn
  - Birth defects
- Persistently-Infected (PI) Calves
- Increased calf mortality
  - Weak calves
- Decreased milk production and quality
  - Increased somatic cell count
- Increased incidence of other health problems
  - Mastitis
Impacts of BVD: Stocker/Feedlot

• Increased morbidity and mortality of PI calves
• Exposure of other animals by PI calves
  – Distribution of PI animals directly impacts total exposure
• Increased virulence of other diseases
  – Bovine Respiratory Disease (BRD)
  – Increased morbidity and mortality
  – Increased treatment costs
  – Increased chronics
Feedlot Death Loss
Percent, 12 month MA

Kansas Feedlot Survey
Changes in Death Loss by Initial BW Over Time

1982-2014: ↑ about 0.042%/yr
1.39%
Percentage of Sick Head Days by Pen, Mean Sick Head Days and Mean Death Loss for Steers by In-Weight Group, 2015
Pen Frequency by Sick Head Day Percentage Categories, 2015

<table>
<thead>
<tr>
<th>In-Weight Group</th>
<th>0 – 0.5%</th>
<th>0.6 – 1.0%</th>
<th>1.1 – 1.5%</th>
<th>1.6 – 2.0%</th>
<th>2.1 – 2.5%</th>
<th>2.6 – 3.0%</th>
<th>&gt; 3.0%</th>
<th>Total Pens</th>
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<tr>
<td>700</td>
<td>18</td>
<td>13</td>
<td>9</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>53</td>
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<tr>
<td>Cum. %</td>
<td>34.0%</td>
<td>58.5%</td>
<td>75.5%</td>
<td>81.1%</td>
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<td></td>
<td>9.4%</td>
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<td>750</td>
<td>33</td>
<td>22</td>
<td>11</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>84</td>
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<tr>
<td>Cum. %</td>
<td>39.3%</td>
<td>65.5%</td>
<td>78.6%</td>
<td>85.7%</td>
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<td></td>
<td>4.8%</td>
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<td>10</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>0</td>
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<td>71</td>
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<tr>
<td>Cum. %</td>
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<td>80.3%</td>
<td>90.1%</td>
<td>94.4%</td>
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<td></td>
<td>2.8%</td>
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<tr>
<td>Total</td>
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<td>45</td>
<td>27</td>
<td>12</td>
<td>8</td>
<td>7</td>
<td>11</td>
<td>208</td>
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<tr>
<td>Cum. %</td>
<td>47.1%</td>
<td>68.8%</td>
<td>81.7%</td>
<td>87.5%</td>
<td></td>
<td></td>
<td>5.3%</td>
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</table>
## Worst Case Lots, Steers

### 2015

<table>
<thead>
<tr>
<th></th>
<th>In-weight Group, avg. lbs.</th>
<th>Sick Head Days, %</th>
<th>Death Loss, %</th>
<th>Days on Feed</th>
<th>Month Placed</th>
<th>ADG</th>
<th>Feed to Gain, Dry lbs.</th>
<th>Origin</th>
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<td>37.04</td>
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<td>20.0</td>
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<td>Aug</td>
<td>1.6</td>
<td>12.82</td>
<td>Ranch-direct</td>
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<td>3</td>
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<td>7.51</td>
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<td>174</td>
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<td>175</td>
<td>Dec</td>
<td>3.01</td>
<td>6.31</td>
<td>Auction</td>
</tr>
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</table>
Economic Impact of BVD

• Estimates vary widely
  – Different populations; epidemiological, clinical and economic assumptions; and methodologies

• Estimates:
  – Beef cows, $20-30/cow
  – Dairy cows, $45-55/cow
  – Stocker/Feedlot, $20-45/feeder animal
  – Industry Total: $1.54-2.59 Billion
    • All cattle and calves: $17-28/head
Challenges to BVD control

- Failure to recognize disease
  - Incidence rates (average versus concentrations)
  - Built into production benchmarks
- Failure to recognize costs
  - Lost reproduction or production
- Little incentive to identify and remove PI animals
- Source versus incidence of impact
- Testing cost and specificity
- Nature of the disease
  - Many types and mutations
  - Vaccination efficacy
- Impact on other diseases
  - BVD role in BRD
Economics of BVD Control

• Marginal benefits versus marginal costs
  – Animal level
  – Management level
    • Herds and pens
  – Industry level
    • Incidence of costs and benefits

• Averages versus targeted

• Eradication?
  – Epidemiological considerations
  – Economic considerations
Benefits of BVD Control

• Removal of PI animals at cow-calf level benefits entire industry
  – Reduce costs and increase production
  – Premium for PI-free
    • Eliminate need for testing at stocker/feedlot level
• Broad-based testing is expensive and may not be justified in all cases
  – Low incidence rate means many negative herds incur expensive
  – Identify high risk herds for testing
  – New and improved testing
• Vaccinations
  – More comprehensive and increased efficacy
Components of BVD Control

• Education
  – Awareness of disease and impacts
  – Records

• Testing
  – Especially high risk and problem herds
    • Continued improvement in testing technology

• Vaccinations
  – Increased efficacy

• Biosecurity
  – Maintain progress
What’s Next?

Objectives
Final Thoughts

• Roadblocks to BVD control
  – Costs and benefits by sector

• Solution
  – Market?
    • PI-free premiums
    • Economics of testing and vaccinations
  – Industry?
    • Coordination across sectors
    • Industry-funded programs?
  – Public?
    • Comprehensive Programs
    • Regional – “Disease-Free Zones”
    • Public value...esp. for eradication
THANK YOU!