Opportunities with Animal Performance

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Calf Crop Value = Pounds * $ / pound sold

— Production factors relative to pounds
  • Reproductive efficiency
  • Calf health
  • Growth rate and efficiency

— Factors influencing price
  • Production management
  • Cattle characteristics
  • Marketing skills
Value added calves (VAC)

• Increased value is greater than costs
  – Feed
  – Pharmaceuticals
  – Management
  – Labor
• Historically discussed as
  – Pre-weaning
  – Pre-conditioning
VAC “programs”

- Pounds of calf marketed / cow exposed
  - Keep calves alive
  - Get cows pregnant
  - Select genetics for efficient growth
  - Provide nutrient resources to express growth
Improvement or Prevention?

• In many operations morbidity and mortality prevention are the greatest opportunity for animal performance improvement
Prevention or improvement?

• 500 lb weaning weight * 50 calves = 25,000 lbs
• 25,000 lb / 49 calves = 510 lb weaning weight
  +10 lbs of weaning weight for 2% death loss

• Weaned calves worth $875
  −$875 / 49 = $17.85 / head additional value
Calf health

**Sandhills Calving System**

- Separate calves by age to prevent pathogen transmission from older to younger calves
- Move pregnant cows to new calving pasture to minimize pathogen load and exposure time
Sandhills Calving System

*Start of calving season*
Sandhills Calving System
7-14 days into calving season
Sandhills Calving System
14-28 days into calving season
Sandhills Calving System
28-42 days into calving season
Getting cows pregnant

• For optimum reproduction manage cows to have body condition score from 5 to 7 at calving

• **Unless** abundant nutrients are available after calving

  Short et al., 1990; Hess et al., 2005
Nutrient partitioning in the cow

Diet
High Conc.
Range Forage
Poor Forage

Growth
Nutrient Reserves
(fat, muscle, bone)

Basal Metabolism
Growth
Basic Body Mass
(muscle, bone, fat)

Estrous cycles
Lactation
Pregnancy
Activity
Waste products

Diet

Condition Score
10
9
8
7
6
5
4
3
2
1

Short and Adams, 1988
Pre-calving body condition

Adequate  

Marginal
Pre-calving body condition

Adequate

Too Thin
Creep feeding

• Beneficial when performance limited by
  – Forage quantity
  – Forage quality
  – Milk production

• Range in creep feed conversions
  – 5:1 to 30:1
  – Rule of thumb ~ 10:1
Maintain controlled breeding season

Wean Weight Index %

1st: 104.2
2nd: 99.9
3rd: 85.9
4th: 73.4

21 day period
Defining a breeding / calving season

- Calving during a specified time controlled by
  - Exposure to
    - AI
    - Fertile bulls
  - Cow culling
  - Replacement purchases
  - Pregnancy diagnosis
Value of uniformity

• Finished cattle
  – Marketed in 40 head lots
  – Fed in 40 to 400 head pens

• Feeders
  – Marketed in 66 head lots

• Steers = 50%
Value of uniformity

• Price increases as lot size approaches truck load size
  Shultz et al., 2010

• Price increased $5.35 / cwt for groups of 6 head or greater compared to singles
  Barham and Troxel, 2007

• Focused labor, nutrition and management
Reducing “out” cattle

• De-horning
  – Discounted $1.46 to $3.70 / cwt
  Barham and Troxel, 2007; King et al., 2006; Schultz et al., 2010

• Castration discounts
  – Lighter weights = $5.00 / cwt
  – Heavier weights = $7.00 / cwt
  Schultz et al., 2010
Preconditioning

• Condition calves to enter stocker, backgrounding or feedlot systems

• Focus on health and management to
  – Improve immunity
  – Reduce stress
Preconditioning “value”

• Price increase from $1.94 to $6.64 / cwt
  Advent et al. 2004; King et al., 2006

• Value increase $14 / head
  Dhuyvetter et al., 2005

• Program stringency increases premium
  Advent et al. 2004; King et al., 2006

• $2.75 / cwt for certified program compared to had all their shots
  Bulut et al., 2006
Preconditioning period length

Waggoner et al., 2005
Death loss prevention by preconditioning

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Precon</th>
<th>Non Precon</th>
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<tbody>
<tr>
<td>Cravey, 1996</td>
<td>0.5</td>
<td>2.6</td>
</tr>
<tr>
<td>Roeber et al., 2001</td>
<td>1.1</td>
<td>11.4</td>
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<tr>
<td>Lalman et al., 2005</td>
<td>0.1</td>
<td>3.0</td>
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</table>
Improving performance

Klopfenstein et al., 2007; NE Beef Report

Division of Animal Sciences
College of Agriculture, Food and Natural Resources
## Supplement timing

<table>
<thead>
<tr>
<th>Soybean hull supplement</th>
<th>0 lb</th>
<th>3 lb (Daily)</th>
<th>6 lb (2nd half)</th>
<th>Step Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADG, lb / day</td>
<td>1.38</td>
<td>1.45</td>
<td>1.69</td>
<td>1.63</td>
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</tbody>
</table>

Supplement greater than control ($P < 0.01$)
Late & gradual greater than constant ($P < 0.01$)

Anderson et al., 1988
Land and nutrient use efficiency

<table>
<thead>
<tr>
<th>Item</th>
<th>Control</th>
<th>80 lb Nitrogen</th>
<th>5 lb DDGS</th>
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<tbody>
<tr>
<td>Area, acres</td>
<td>7.2</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Gain / acre, lb</td>
<td>176.0\textsuperscript{a}</td>
<td>269.0\textsuperscript{b}</td>
<td>360.0\textsuperscript{c}</td>
</tr>
<tr>
<td>ADG, lb/d</td>
<td>1.5\textsuperscript{a}</td>
<td>1.5\textsuperscript{a}</td>
<td>2.0\textsuperscript{b}</td>
</tr>
<tr>
<td>N efficiency %</td>
<td>8.9\textsuperscript{a}</td>
<td>21.8\textsuperscript{b}</td>
<td></td>
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</tbody>
</table>

\textsuperscript{abc} Means with different superscripts differ $P < 0.05$

Greenquist et al., 2009; NE Beef Report
## Technology

<table>
<thead>
<tr>
<th>Stocker</th>
<th>ADG, % change</th>
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</thead>
<tbody>
<tr>
<td>De-wormer</td>
<td>17.8</td>
</tr>
<tr>
<td>Implant</td>
<td>12.9</td>
</tr>
<tr>
<td>Fly control</td>
<td>8.1</td>
</tr>
<tr>
<td>Ionophore</td>
<td>7.7</td>
</tr>
<tr>
<td>Sub-therapeutic antibiotic</td>
<td>6.9</td>
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</tbody>
</table>

Lawrence and Ibarburu, 2006
Technology use

• Less than 50% of producers surveyed in 2008 Stocker survey use
  – Implants
  – Ionophores
Technology value

• Implants
  – 33 lbs additional gain
• Ionophore
  – Coccidiosis control
  – 21 lbs additional gain

Lawrence and Ibarburu, 2006
Technology carryover?

• Feedlot carryover effects of nursing calf and stocker cattle implant use are/have
  – “Minimal”
    • Drouillard and Kuhl, 1999
    • Ducket and Andrae, 2001
  – “Little impact”
    • Tatum 2006
Beta-Agonists

• Increase
  – Live weight gain 15-50 lbs
  – Carcass weight 10-30 lbs
  – Dressing percent 0.5-1.4

• Improve feed efficiency ~15%

• Decrease
  – Marbling score
  – % Prime and choice 1.6 to 4.8%
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