Breeding to Beef Bulls: Costs and Benefits

Colten Green
National Account Manager
Genex Cooperative, Inc.
Modesto, CA
Missouri native

Source: mom (Camden county 7/1/15)
California resident

Source: www.nbcbews.com
Live cattle prices

Source: www.nasdaq.com
## Carcass comparison (NBQA 2011)

<table>
<thead>
<tr>
<th></th>
<th>Bos indicus (n=159)</th>
</tr>
</thead>
<tbody>
<tr>
<td>USDA Yield Grade</td>
<td>2.4&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>USDA Quality Grade</td>
<td>689&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>HCW, lbs</td>
<td>739.0&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Marbling Score&lt;sup&gt;2&lt;/sup&gt;</td>
<td>424&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

1. 1400 = Commercial, 600 = Select, and 800 = Prime
2. 300 = Slight, 500 = Modest, 700 = Slightly Abundant, and 900 = Abundant

abc Different at P<0.05
Demand for quality & marbling

Source: 2011 NBQA
So why don’t we get premiums??

“dairy type carcasses were those in which the conformation and overall muscling were angular and thin in relation to carcass size” NBQA 2011
You can keep your petite filets

Source: 2011 NBQA
How to move from “Dairy Type” to “Beef Type”

Option A: Use of β-Agonist (e.g. Zilmax© or Optaflexx©)

Option B: Use of “terminal cross” sire
Terminal cross

Strengths:
• Dressing %
• Ribeye Area
• ADG
• Homozygous Black & Polled

Strengths:
• Quality Grade
• Marbling
Americans like branded food products

Figure 2-7. Frequency distribution of different certified and marketing programs from the National Beef Quality Audit-2011.
OPPORTUNITY HAS KNOCKED!!

NOW WHAT ARE YOU GOING TO DO ABOUT IT???
Breeds to consider

**Holstein**
- Cross for general market
  - Limflex
  - Simangus
  - Angus (watch the REA)
- Cross for niche market
  - Wagyu
- Undesirable cross
  - *Bos indicus*

**Jersey**
- Cross for general market
  - Limousin
- Cross for niche market
  - Wagyu
- Other options
  - Simangus
  - Gelbvieh
- Undesirable cross
  - Angus
  - *Bos Indicus*
Calving ease concerns

<table>
<thead>
<tr>
<th>L&gt;1 – AN</th>
<th>Fresh</th>
<th>Dead</th>
<th>% DOA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>338</td>
<td>6</td>
<td>1.8%</td>
</tr>
<tr>
<td>L&gt;1 – GV</td>
<td>437</td>
<td>23</td>
<td>5.3%</td>
</tr>
<tr>
<td>L&gt;1 – JE</td>
<td>2,050</td>
<td>63</td>
<td>3.1%</td>
</tr>
<tr>
<td>L=1 – AN</td>
<td>59</td>
<td>2</td>
<td>3.4%</td>
</tr>
<tr>
<td>L=1 – GV</td>
<td>169</td>
<td>12</td>
<td>7.1%</td>
</tr>
<tr>
<td>L=1 – JE</td>
<td>895</td>
<td>45</td>
<td>5.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L&gt;1 – JE</th>
<th>Fresh</th>
<th>Dead</th>
<th>% DOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>L&gt;1 – LM</td>
<td>1,423</td>
<td>33</td>
<td>2.3%</td>
</tr>
<tr>
<td>L=1 – JE</td>
<td>2,023</td>
<td>102</td>
<td>5.0%</td>
</tr>
<tr>
<td>L=1 – LM</td>
<td>448</td>
<td>14</td>
<td>3.1%</td>
</tr>
</tbody>
</table>
Riverview data (JE x LM)

- 98.8% unassisted births & 3% DOA
- Birth weight of 79.6 lbs
- ADG from 0 to 157 days is 2.3 lbs
  - ~440 lbs at 5 months of age

<table>
<thead>
<tr>
<th></th>
<th>JExLM No Zilmax</th>
<th>Jersey No Zilmax</th>
<th>JExLM Zilmax</th>
<th>Jersey Zilmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start Wt</td>
<td>1,180</td>
<td>945</td>
<td>1,124</td>
<td>1,032</td>
</tr>
<tr>
<td>ADG</td>
<td>2.73</td>
<td>1.21</td>
<td>3.24</td>
<td>1.53</td>
</tr>
<tr>
<td>Harvest Wt</td>
<td>1,443</td>
<td>1,056</td>
<td>1,422</td>
<td>1,167</td>
</tr>
<tr>
<td>% Prime</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>% Choice</td>
<td>92%</td>
<td>88%</td>
<td>64%</td>
<td>70%</td>
</tr>
<tr>
<td>REA</td>
<td>13.87</td>
<td>11.37</td>
<td>15.74</td>
<td>12.36</td>
</tr>
<tr>
<td>Marbling</td>
<td>600</td>
<td>494</td>
<td>470</td>
<td>497</td>
</tr>
</tbody>
</table>

Trial conducted at UMN and slaughtered by Tyson Foods. Source: Wulfcattle.com
Calving ease concerns

### Holstein dairies (2 herds)

<table>
<thead>
<tr>
<th></th>
<th>Fresh</th>
<th>Dead</th>
<th>%DOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>L&gt;1 HO</td>
<td>4,269</td>
<td>228</td>
<td>5.3%</td>
</tr>
<tr>
<td>L&gt;1 AN</td>
<td>2,113</td>
<td>144</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

### Holstein dairies (4 herds)

<table>
<thead>
<tr>
<th></th>
<th>Fresh</th>
<th>Dead</th>
<th>%DOA</th>
</tr>
</thead>
<tbody>
<tr>
<td>L&gt;1 HO</td>
<td>2,240</td>
<td>81</td>
<td>3.6%</td>
</tr>
<tr>
<td>L&gt;1 LM</td>
<td>306</td>
<td>12</td>
<td>3.9%</td>
</tr>
</tbody>
</table>
Birthweight by breed & sex

- AB: 95.2 lbs
- AH: 93.2 lbs
- HB: 97.2 lbs
- HH: 91.4 lbs
Growth rate comparison

HO x HO heifers
Average Daily Gain = 1.66 lbs/day
Estimated weaning weight (70 days) = 197 lbs

\[ y = 1.6569x + 80.539 \]
\[ R^2 = 0.7658 \]
Growth rate comparison

HO x AN heifers
Average Daily Gain = 2.04 lbs/day
Estimated weaning weight (70 days) = 220 lbs

\[ y = 2.0423x + 77.19 \]
\[ R^2 = 0.8191 \]
Growth rate comparison

HO x AN steers
Average Daily Gain = 2.15 lbs/day
Estimated weaning weight (70 days) = 230 lbs

y = 2.1491x + 79.017
R² = 0.8207
## Mortality comparison

<table>
<thead>
<tr>
<th></th>
<th>HO ENTER</th>
<th>AN ENTER</th>
<th>HO DEAD</th>
<th>AN DEAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>1,505</td>
<td>1,313</td>
<td>2.66%</td>
<td>1.14%</td>
</tr>
<tr>
<td>2014</td>
<td>1,532</td>
<td>1,176</td>
<td>1.76%</td>
<td>2.30%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,037</td>
<td>2,489</td>
<td>2.21%</td>
<td>1.69%</td>
</tr>
</tbody>
</table>
Post transition growth rates

• Truck weights for mixed gendered AxH calves
• ADG from 4 to 7 months was 2.57 lbs

<table>
<thead>
<tr>
<th>Approx Age (days)</th>
<th>Approx Weight (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>127</td>
<td>334</td>
</tr>
<tr>
<td>209</td>
<td>545</td>
</tr>
</tbody>
</table>
IS CROSSBREEDING TO BEEF JUST A FAD?
Replacements/freshening

- 100 Fresh
Replacements/freshening

- 100 Fresh
- 48% Female
Replacements/freshening

- 100 Fresh
- 48% Female
- 12% DOA
Replacements/freshening

- 100 Fresh
- 48% Female
- 12% DOA
- 15% HRL

36 replacements for every 100 fresh
Replacements/freshening

• 100 Fresh
Replacements/freshening

- 100 Fresh
- 56% Female
Replacements/freshening

- 100 Fresh
- 56% Female
- 8% DOA
Replacements/freshening

- 100 Fresh
- 56% Female
- 8% DOA
- 10% HRL

47 replacements for every 100 fresh
Replacements/freshening

- 100 Fresh
- 56% Female
- 8% DOA
- 10% HRL

47 replacements for every 100 fresh
Isn’t 11 extra replacements good?

• 500 cow seasonal dairy
  – 185 Lact=1 & 315 Lact>1

• 500 fresh/year
  – 0.36 replacements/freshening * 500 fresh = 180 replacements/year
  – 0.47 replacements/freshening * 500 fresh = 235 replacements/year
Isn’t 11 extra replacements good?

180 Replacements/Year
• Can maintain <40% of herd Lact=1 with good repro
• More milk/cow
• Higher % of livestock in milk
• Less animals on feed
• Less animal housing & labor

235 Replacements/Year
• Will exceed 45% of herd Lact=1 within 2 years
• Less milk/cow
• Lower % of livestock in milk
• More animals on feed
• More animal housing & labor

Development of inventory management plan is crucial!!!
• Proactive > Reactive
Perspective on heifer raising

Source: www.nasdaq.com

<table>
<thead>
<tr>
<th>Year</th>
<th>Medium Holstein Springer</th>
<th>Heifer Calves</th>
<th>Sales Yard</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>$1,000</td>
<td>$210</td>
<td>Norwood</td>
</tr>
<tr>
<td>2012</td>
<td>$1,100</td>
<td>$250</td>
<td>Springfield</td>
</tr>
<tr>
<td>2013</td>
<td>$850</td>
<td>$220</td>
<td>Springfield</td>
</tr>
<tr>
<td>2014</td>
<td>$1,125</td>
<td>$125</td>
<td>Springfield</td>
</tr>
<tr>
<td>2015</td>
<td>$1,750</td>
<td>$400</td>
<td>Norwood</td>
</tr>
</tbody>
</table>

Source: Progressive Dairyman
Inventory management

- 100 Fresh
- **20% Beef**
- 56% Female
- 8% DOA
- 10% HRL

37 replacements for every 100 fresh
Calculating inventory needs

• Calculate replacements needed:
  
  \[ \text{Herd Size} \times \text{Target Cull Rate} \times \text{Buffer} \]

  \text{Example:}
  
  \[500 \times 35\% \times 1.05 = 184 \text{ replacements/year} \]

• Calculate number of breeding eligible cattle at start of breeding season

• Develop semen usage strategy
Semen usage strategy

Times Bred
• Calculations
  – Target of ~20% to beef
  – Conception of 44% on AI 1-3
  – \((1-0.44)^3 = 17.5\%\) OPEN
• Advantages
  – Easy to follow
  – Dairy heifers will come early in calving season
• Disadvantages
  – High % of pregnant to beef culls
  – Low %CR on beef semen

Targeted Group
• Calculations
  – Specify criteria
    • 305me, TBRD, XMAST, etc.
  – Designate target beef % for mating
• Advantages
  – More selective of dams
• Disadvantages
  – Heifers spread across calving season
Genetic advancement

• Impact selection intensity (i) and generation interval (GI) on sire side
• Sexed semen/beef semen allows impact on generation interval & should impact selection intensity

\[ \Delta G = \frac{H^2 \ast i \ast \sigma_p}{GI} \]
Summary

• Dairy’s opportunity to build long-term value for Dairy x Beef cross calves
  – Calving ease not a concern when monitored
• Incorporation of Beef into a semen usage plan aids inventory management & accelerates genetic progress
Questions