Focusing on Cows in a high cost world

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NCREC Minot, ND
Cow Costs are Increasing in ND

<table>
<thead>
<tr>
<th></th>
<th>Feed Cost</th>
<th>Gross Income/Cow</th>
<th>Total Cost</th>
<th>Calf Weight/Cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>400$</td>
<td>200$</td>
<td>300$</td>
<td>2000 lbs</td>
</tr>
<tr>
<td>2006</td>
<td>450$</td>
<td>250$</td>
<td>350$</td>
<td>2100 lbs</td>
</tr>
<tr>
<td>2007</td>
<td>500$</td>
<td>300$</td>
<td>400$</td>
<td>2200 lbs</td>
</tr>
<tr>
<td>2008</td>
<td>550$</td>
<td>350$</td>
<td>450$</td>
<td>2300 lbs</td>
</tr>
</tbody>
</table>
What cows are most efficient?

- Biological Efficiency
  - pounds of calf produced per unit of feed energy consumed
- Interactions between cow type and feed resources
- Match cows to production environment

<table>
<thead>
<tr>
<th>Breed</th>
<th>DM Intake</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>3500 kg</td>
</tr>
<tr>
<td>Angus</td>
<td>39</td>
</tr>
<tr>
<td>Charolais</td>
<td>27</td>
</tr>
<tr>
<td>Gelbvieh</td>
<td>29</td>
</tr>
<tr>
<td>Hereford</td>
<td>30</td>
</tr>
<tr>
<td>Limousin</td>
<td>33</td>
</tr>
<tr>
<td>Simmental</td>
<td>26</td>
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</table>
Economic Efficiency

Major drivers:

– High herd reproduction and calf survival
– Low culling rate and cow longevity
– Low feed expense and high stocking rate
– High market weights with high value
Direct Expenses - $361

- Pasture: $90
- Harvested Forage: $152
- Fuel Oil Repairs: $45
- Purchased Feed: $36
- Vet & Supply: $28
- Operating Interest: $10
Hay prices in 2008 are expected to be nearly DOUBLE the 1999 price.
Cow Size Considerations

- Big cows eat more

- Therefore
  - You can run fewer larger cows on set resources

- But they tend to
  - Have heavier calves

- So the issue is
  - Are higher costs offset by greater calf weights and value

- And
  - Will smaller calves be in high demand and value
## Equivalent Production and Stocking by Cow Size

<table>
<thead>
<tr>
<th>Cow Wt</th>
<th>TDN</th>
<th>Stocking Rate</th>
<th>Calf Weaning Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>10.3</td>
<td>100 (2.4T)</td>
<td>485 (48.5%)</td>
</tr>
<tr>
<td>1100</td>
<td>11.0</td>
<td>94</td>
<td>520</td>
</tr>
<tr>
<td>1200</td>
<td>11.7</td>
<td>88 (2.7 T)</td>
<td>550 (45.8%)</td>
</tr>
<tr>
<td>1300</td>
<td>12.4</td>
<td>83</td>
<td>585</td>
</tr>
<tr>
<td>1400</td>
<td>13.0</td>
<td>79 (3.0T)</td>
<td>610 (43.6%)</td>
</tr>
<tr>
<td>1500</td>
<td>13.4</td>
<td>75</td>
<td>650</td>
</tr>
<tr>
<td>1600</td>
<td>14.3</td>
<td>72 (3.3 T)</td>
<td>680 (42.5%)</td>
</tr>
<tr>
<td>1700</td>
<td>14.9</td>
<td>69</td>
<td>705</td>
</tr>
<tr>
<td>1800</td>
<td>15.5</td>
<td>66 (3.6 T)</td>
<td>740 (41.1%)</td>
</tr>
<tr>
<td>1900</td>
<td>16.1</td>
<td>64</td>
<td>765</td>
</tr>
<tr>
<td>2000</td>
<td>16.7</td>
<td>62 (3.8 T)</td>
<td>790 (39.5%)</td>
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## Market Cow Weights

We have big cows

<table>
<thead>
<tr>
<th>Cow Type</th>
<th>Weight</th>
<th>Price</th>
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<tbody>
<tr>
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<td>1140</td>
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<td>CHAR-COW</td>
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<td>CHAR-COW</td>
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<tr>
<td>CHAR-COW</td>
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<td>$65.25</td>
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<tr>
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<tr>
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<td>1990</td>
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<tr>
<td>HOLST-COW</td>
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</tr>
<tr>
<td>RED-COW</td>
<td>1715</td>
<td>$54.00</td>
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</table>
Steer P430

- Begin Weight 750
- 1-4-06 Weight 1115
- Final Weight 1470
- DOF 182
- ADG 3.96
- Fat Depth .36
- Marbling Score 5.14
- Grade Ch-
- Feeding Cost $360.00
- Flat Price Net $49.20
- Flat Price Rank 3
- Grid Price Net $83.45
- Grid Price Rank 1
- Popularity Rank 5
Rationale for moderate Cow Size

• Run more lower requirement cows on land base
  – Lessen overhead per calf
  – Opportunity for greater market weight per herd

• Terminal crossing used to maintain calf value
  – Smaller cow bred to high growth carcass merit sire
  – Large market topping calf

• Better adapted to periods of stress and restricted feed

• More uniform calves in with fewer grid outliers
Controlling Cow Size

- Use moderate frame sires to produce heifers (<FS 6)
- Balance YW and $B$ EPD with $WW$, $E$, STAY, MTW
- Cull replacement heifers for large outliers
- Develop heifers modestly on high roughage diet (target breeding wt 55-65% mature wt)
Cow Milk Considerations

High milk increases weaning weight
• Higher milk requires more nutrients
High productivity means higher maintenance
• High milking cows need better feed
  – 1200 lb low milk cow
    27 lbs - 59 TDN 9.7 CP
  – 1200 lb high milk cow
    30 lbs - 63 TDN 11.3 CP
• Even maintenance feed is higher
• Milk production takes priority over reproduction

• Longevity By Milk Production
  (in the herd after 6 yrs)
  
  medium milk  57%
  high milk  46%
Optimizing Milk Production

- Be knowledge available of feed quality
- Evaluate herd reproduction and culling
  - What is pregnancy %
  - What is the Milk EPD of sires of young cows falling out
  - What is the Milk EPD of sires of old matrons
- Use AAA Optimal Milk Module to target appropriate Milk EPD
- Balance selections with Stay EPD
Composition Considerations

- Little relationship between marbling and maternal traits

- Lean types tend to be older at puberty, have reduced fertility and increased calving difficulty

- Increased muscling may have little effect on maternal traits but slightly antagonistic with marbling

- Fat cover must be offset with muscling to maintain cutability
$W$ Index

Multi trait selection cow calf profit differences

$BW$ estimates weaned calf crop percentage

$WW$ contributes to revenue

Milk contributes both to revenue and feed cost

Mature Size estimate incorporates expense of cow maintenance

$B$ Index

Multi trait selection feedlot profit differences

Feedlot performance

Carcass merit
Wanted: easy fleshing cows suited to greater grazing and less feeding to reduce feed, fuel and labor costs

- Moderate or low maintenance requirement (early maturing, moderate size, moderate milk)
- High capacity capable of high roughage intake
- Predisposed to deposit excess energy as fat reserves
- At times of low needs will put on flesh with abundant but fairly low quality forage
pairs grazing planted cover crop and volunteer barley on November 20, 2008
Grazing Corn Residue

- Grain > husk & leaf > stalk
- Fence, water, shelter
- TDN 70 – 40 %
- CP 8 – 4 %
- Minimal supplements for dry cows
  - Salt and mineral
  - Protein once grain is gone
  - Hay when weather is bad
- 20 to 60 days grazing per acre
- Mud & snow reduce access and create waste
Dec 18, 2008 -5F + wind chill
Cows Grazing Cereal Residue
Swath Grazing annual forage

- Late seeded forage windrowed in Sept prior to killing frost
- Oats, Barley, Millet, Sudex
- Extend grazing with quality forage into Nov-Dec
- 70-90 days per acre
- Ration out in 14 day lots
- TDN 53-60%  CP 7-11% supports lactating cow
- Cows use 4-5% DM/day
- Have emergency feed
Bale Grazing

- Bales placed on pasture or farmland in fall
- Organized in rows to meet ration quality needs
- Electric cable allocates hay
  - 2-3 days for hay
  - 3-4 days hay and straw
- Approx 38 lbs/cow/day, 1300 lb cow
- I bale for 20 cows
- Soil improvement
- Shelter from wind can be temporary or existing trees
- Problems: wildlife degradation, spring residue on fields, cattle tearing down fences
Overhead Expenses - $132/cow

- Cow Depreciation: $57
- Facility Equipment Depr.: $32
- Interest: $16
- Utilities: $9
- Hired Labor: $9
- Insurance: $9
Maternal Heterosis
Advantage of the Crossbred Cow

- Higher pregnancy rates
- Greater calf survival
- Heavier weaning weights
- Better maintain condition
- Longevity
- Blend breed strengths
- Up to $70 per cow

With discipline to select for Appropriate type, size and milk to match resources
Crossbreeding works

- Increases in lifetime production due to maternal heterosis have been estimated at up to 1.44 calves when calving first as 2 year olds (Cundiff et al., 1992) defined as cumulative 200 day weight

- Nunez et al., (1991) crossbred cows had lower probabilities of being culled than straightbreds (Angus, Hereford, Shorthorns)

- Davis et al. (1994) reported F1 cows averaged 1.2 year longer lifespan than straightbred cows
  - Net profit per cow exposed increased ~$75
# Crossbreeding Systems

<table>
<thead>
<tr>
<th>System</th>
<th>%Heterosis</th>
<th>%Advantage</th>
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<tbody>
<tr>
<td>2 breed rotation</td>
<td>67</td>
<td>16</td>
</tr>
<tr>
<td>3 breed rotation</td>
<td>87</td>
<td>20</td>
</tr>
<tr>
<td>Rotation terminal</td>
<td>67 + 100</td>
<td>24</td>
</tr>
<tr>
<td>AB Composite</td>
<td>50</td>
<td>12</td>
</tr>
<tr>
<td>AABC Composite</td>
<td>63</td>
<td>15</td>
</tr>
<tr>
<td>ABCD Composite</td>
<td>75</td>
<td>17</td>
</tr>
</tbody>
</table>

Rotational–terminal systems are extremely effective with rotational breeding of heifers and young cows, terminal mating once 5 or 6 years of age but hard to implement in small herds.

Composite breeding does not have as high of level of heterosis but is simpler and allows for more breed complimentarity.
In Conclusion - My Budgeting

- Assumption
  - $10,000 pasture rent
  - $11,000 hay cost
  - $2,500 supp cost
  - $10,000 overhead
  - 90% base weaning rate
  - 50% of maternal heterosis
  - $30/cow vet

<table>
<thead>
<tr>
<th>size</th>
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<th>1500</th>
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<tbody>
<tr>
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<tr>
<td>Base</td>
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<tr>
<td></td>
<td>525</td>
<td>625</td>
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<tr>
<td></td>
<td>1.10</td>
<td>1.02</td>
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<td>70</td>
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<td>.93</td>
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<tr>
<td>Sires</td>
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<td>685</td>
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<tr>
<td></td>
<td>.94</td>
<td>.88</td>
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</tbody>
</table>
Thank You
Reasons for big cows

• The market generally likes big growthy cattle which are worth more per head
• Feedlot economic drivers are carcass weight, ADG, grid price, health
• Retain heifers of bulls selected for high growth which is correlated with greater mature weight
• Develop heifers under favorable nutrition and for moderately high gains
• Add value to market cows by feeding and fleshing to maximize value
Cow Longevity
(fertility + soundness + survival)

Hybrid vigor
Milking potential
Calving ease

Feed Cost
(amount x price)
- Cow size
- Harvest cost
- Grazing
- Stocking rate

Calf Value
(weight x price)
- Size & growth
- Cow milk
- Purchased feed
- Carcass merit
- Feeding merit

Calf Value
(weight x price)
- Size & growth
- Cow milk
- Purchased feed
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- Feeding merit