Beyond Feed Conversions: a Different Look at Feed Costs

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Concepts

- Benchmarking is a bad idea
  - Goal Setting and tracking makes a lot of sense
- The lowest cost/cwt typically wins
- Most Dairies have 3 enterprises
  - Replacement, Farming, Milking Cows
- Economics trumps Biology
- Margins matter, ratios don’t
What are the Three Enterprises on most Dairies?

- Selling Milk (Milking Cows)
- Supplying Feed (Farming)
- Supplying Replacements

- Is the Farm subsidizing the dairy?
- Need to use accrual adjusted consumption using market values for forages

Top Three Costs of Producing Milk

1. Feed cost/cwt
2. Replacement Cost/cwt
3. Labor cost/cwt

Do you know your cost per cwt??
Does your accounting system put expenses in the proper buckets?
The Big 3 Costs on the P&L

- **Feed**: $11-13 (forages market value)
- **Labor**: $1.50
- **Replacement**: $1.25
- Total costs around $20
  - Feed 60-65%
  - Labor: 7-8%
  - Replacement: 6-7%
  - Total: 75-80%
Are Feed Costs too High?

Can we Survive $8 corn?

Were we better off with cheaper feed?

• Old days
  - Ration: $0.08/lb DM
  - Milk: $14
  - 75 lbs milk, 50 lbs DMI
    • IOFC = $6.50

• Today
  - Ration: $0.14/lb DM
  - Milk: $20
  - 75 lbs milk, 50 lbs DMI
    • IOFC = $8.00
Were we better off with cheaper feed?

- **Old days**
  - Ration: $0.08/lb DM
  - Milk: $14
  - 75 lbs milk, 50 lbs DMI
    - IOFC = $6.50
    - Feed Cost/cwt: $5.93

- **Today**
  - Ration: $0.14/lb DM
  - Milk: $20
  - 75 lbs milk, 50 lbs DMI
    - IOFC = $8.00
    - Feed Cost/cwt: $9.93

Limitations with Feed Cost/cwt

- Ignores milk income
- It may cost more to produce milk of higher value
  - Higher components
  - Quality premiums (low SCC)
- Don't benchmark to other herds!
- Not useful for day to day decisions
Lowering Milking Cow Feed Costs...

1. Minimize Shrinkage and Waste in storage
2. Avoid excessive Weighback and wasted feed at bunk
3. Avoid Overfeeding minerals, vitamins, protein, additives
4. Develop rations that maximize IOFC
5. Get cows pregnant (low DIM)
6. Cull aggressively (few sick cows, low hospital, more milk)
7. Avoid long dry periods (↑% in milk)
8. Minimize Maintenance costs

USDA Milk:Feed Ratio

• Pounds of 16% protein ration equal to 1 lb of milk
  - 51% corn, 8% soybeans, 41% alfalfa hay
• If ratio is ≥ 3.0, it is supposedly profitable to purchase feed to produce milk
**USDA Milk:Feed Ratio**

- If milk is $0.20/lb and feed is $0.10/lb, then the ratio is **2.0**
  - Feed goes down to $0.08/lb, then ratio is **2.5**
  - Feed goes up to $0.12/lb then ratio is **1.67**
- Higher ratio is supposedly better

**Margins matter, ratios don’t**

<table>
<thead>
<tr>
<th>Milk, $/lb</th>
<th>16% Dairy</th>
<th>Feed $/cwt&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Milk-Feed</th>
<th>margin&lt;sup&gt;2&lt;/sup&gt;, $/cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.15</td>
<td>$0.054</td>
<td>$3.86</td>
<td>2.78</td>
<td>$11.14</td>
</tr>
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<td>$0.18</td>
<td>$0.09</td>
<td>$6.44</td>
<td>2.00</td>
<td>$11.56</td>
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<td>$0.21</td>
<td>$0.11</td>
<td>$7.87</td>
<td>1.91</td>
<td>$13.13</td>
</tr>
<tr>
<td>$0.24</td>
<td>$0.13</td>
<td>$9.30</td>
<td>1.85</td>
<td>$14.72</td>
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<td>$0.25</td>
<td>$0.14</td>
<td>$10.02</td>
<td>1.79</td>
<td>$14.99</td>
</tr>
</tbody>
</table>

<sup>1</sup> 70 lbs milk, 50 lbs DMI, 15% dry cows

<sup>2</sup> milk price/cwt – feed cost/cwt
Measuring Feed Economics: financial statement

- Big-picture 10,000 feet
- Feed Cost/cwt
- Answers this question:
  - Is the dairy doing a good job converting feed dollars into saleable milk

Feed Cost/cwt

- Includes milking and dry cows
- No heifers
- Calculated from financial statements
- Impacted by:
  - Factors impacting IOFC
  - Number of dry cows and dry cow ration
  - Hospital
  - Shrinkage
  - Refusals
**Income Over Feed Cost (IOFC)**

- Cow produces 70 lbs/d
- Milk price is $18
- Feed Cost is $5.00/d
- IOFC calculation
  - Milk revenue = 70*0.18 = $12.60/cow/d
  - IOFC = $12.60 - $5.00 = $7.60/d
- Increasing the $7.60/d good, provided cow health not impacted

<table>
<thead>
<tr>
<th>Milk, $/lb</th>
<th>$/lb DM</th>
<th>lbs Milk</th>
<th>Lbs DMI</th>
<th>Feed $/cwt</th>
<th>IOFC, $/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0.20</td>
<td>$0.10</td>
<td>70</td>
<td>46.7</td>
<td>$6.67</td>
<td>$9.33</td>
</tr>
<tr>
<td>$0.20</td>
<td>$0.10</td>
<td>75</td>
<td>50.0</td>
<td>$6.67</td>
<td>$10.00</td>
</tr>
<tr>
<td>$0.20</td>
<td>$0.10</td>
<td>80</td>
<td>53.3</td>
<td>$6.67</td>
<td>$10.67</td>
</tr>
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What About Components?

Tank average: Southwest dry lot dairy
Components drop in summer...

- Is it Heat Stress?
- Or is it Seasonal?

DV Monitors
Diamond V Mills, Cedar Rapids, IA
How can the component drag be economically quantified?
Biological measure of efficiency vs economics

- **Biology**
  - 3.5% Fat corrected Milk
    - 
      \[(0.515 \times \text{milk lbs}) + (13.86 \times \text{fat lbs})\]
  - 4.0% Fat corrected Milk
    - 
      \[(0.40 \times \text{milk lbs}) + (15.00 \times \text{fat lbs})\]
  - Energy Corrected Milk
    - 
      \[(0.323 \times \text{milk lbs}) + (12.82 \times \text{fat lbs}) + (7.13 \times \text{prot lbs})\]
  - Feed efficiency (milk:feed ratio)
    - 
      \[(\text{FCM lbs}) / (\text{dry matter intake lbs})\]

- **Economics**
  - Income Over Feed Cost
    - Value of milk generated relative to cost of feed
    - Value of milk and feed vary with markets
    - Units: \$/cow/day
  - Money Corrected Milk™ IOFC
    - Value of milk generated relative to cost of feed
    - Value of milk and feed held constant over time
    - Units: \$/cow/day
  - Money Corrected Milk™
    - Value of milk produced relative to 3.5% fat, 3.0% protein and static component values
    - Units: pounds per day
### Example

**Herd A**
- 71 lbs milk
- 3.95% fat
- 3.26% protein
- 5.70% other solids

**Herd B**
- 80 lbs milk
- 3.40% fat
- 2.90% protein
- 5.70% other solids

**Who is better?**

### Example

- **Component Prices**
  - Fat: $2.50/lb
  - Protein: $3.00/lb
  - Other Solids: $0.15/lb
Example

- Milk check adjustments
  - Quality: $0.50/cwt
  - Hauling: -$1.00/cwt
  - Promotion: -$0.15/cwt
  - Basis: $2.00/cwt

Which herd is better?

Herd A
- 71 lbs milk
- 3.95% fat
- 3.26% protein
- 5.70% other solids

Herd B
- 80 lbs milk
- 3.40% fat
- 2.90% protein
- 5.70% other solids
### Which herd is better?

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*FCM = 3.5% Fat Corrected Milk*

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<tr>
<td>ECM: 75.4 lbs</td>
<td>ECM: 77.3 lbs</td>
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*ECM = Energy Corrected Milk*
### Which herd is better?

**Herd A**
- 71 lbs milk
- 3.95% fat
- 3.26% protein
- 5.70% other solids
- FCM: 75.4 lbs
- ECM: 75.4 lbs
- MCM: 77.8 lbs

**Herd B**
- 80 lbs milk
- 3.40% fat
- 2.90% protein
- 5.70% other solids
- FCM: 78.9 lbs
- ECM: 77.3 lbs
- MCM: 77.8 lbs

*MCM = Money Corrected Milk*

### Which herd is better?

**Herd A**
- 71 lbs milk
- 3.95% fat
- 3.26% protein
- 5.70% other solids
- FCM: 75.4 lbs
- ECM: 75.4 lbs
- MCM: 77.8 lbs
- Income/day = $15.52

**Herd B**
- 80 lbs milk
- 3.40% fat
- 2.90% protein
- 5.70% other solids
- FCM: 78.9 lbs
- ECM: 77.3 lbs
- MCM: 77.8 lbs
- Income/day = $15.52
### Which Cow is better?

**Cow A**  
- 90 lbs milk  
- 4.20% fat  
- 3.40% protein  
- 5.65% other solids  
- FCM: 98.7 lbs  
- ECM: 99.3 lbs  
- MCM: 103.3 lbs  
- Income/day = $20.61

**Cow B**  
- 113 lbs milk  
- 3.30% fat  
- 2.60% protein  
- 5.65% other solids  
- FCM: 109.8 lbs  
- ECM: 105.2 lbs  
- MCM: 103.3 lbs  
- Income/day = $20.61
Which cow should be culled?

Cow A
- 40 lbs milk
- 4.50% fat
- 3.40% protein
- 5.65% other solids

Cow B
- 40 lbs milk
- 3.30% fat
- 2.60% protein
- 5.65% other solids
### Which cow should be culled?

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</tr>
<tr>
<td>• FCM: 45.5 lbs</td>
<td>• FCM: 38.9 lbs</td>
</tr>
<tr>
<td>• ECM: 45.7 lbs</td>
<td>• ECM: 37.3 lbs</td>
</tr>
<tr>
<td>• MCM: 47.4 lbs</td>
<td>• MCM: 36.6 lbs</td>
</tr>
<tr>
<td>• Income/day = $9.46</td>
<td>• Income/day = $7.30</td>
</tr>
</tbody>
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### Money Corrected Milk™ IOFC

- Milk-check based income
- Uses constant feed and milk prices over time.
  - Variables include milk, components, dry matter intake
- Good barometer as to how the herd is performing
  - Despite poor market conditions, are my cows performing better or worse than in the past?
Money Corrected Milk™ IOFC

Which Breed is better?
Feed = $0.10/lb DM
fat = $2.50; prot = $3.00, OS = $0.25

Holstein
- 80 lbs milk
- 3.50% fat
- 2.90% protein
- 5.70% other solids
- DMI = 52 lbs

Jersey
- 60 lbs milk
- 4.90% fat
- 3.50% protein
- 5.70% other solids
- DMI = 45 lbs
Which Breed is better?  
Feed = $0.10/lb DM  
fat=$2.50; prot=$3.00, OS = $0.25

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<th>Milk (lbs)</th>
<th>Fat (%)</th>
<th>Protein (%)</th>
<th>Other Solids (%)</th>
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<th>MCM</th>
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<td>Jersey</td>
<td>60</td>
<td>4.90</td>
<td>3.50</td>
<td>5.70</td>
<td>45</td>
<td>74.7</td>
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MCM Conversion: 1.52

Which Breed is better?  
Feed = $0.10/lb DM  
fat=$2.50; prot=$3.00, OS = $0.25

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<td>74.7</td>
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MCM Conversion: 1.66
## Which Breed is better?

**Feed** = $0.10/lb DM

*fat* = $2.50; *prot* = $3.00, *OS* = $0.25

### Holstein
- 80 lbs milk
- 3.50% fat
- 2.90% protein
- 5.70% other solids
- DMI = 52 lbs
- MCM = 78.9
- MCM Conversion: 1.52
- MCM IOFC = **$10.98**

### Jersey
- 60 lbs milk
- 4.90% fat
- 3.50% protein
- 5.70% other solids
- DMI = 45 lbs
- MCM = 74.7
- MCM Conversion: 1.66
- MCM IOFC = **$10.82**

---

## Which Breed is better?

**Feed** = $0.10/lb DM **$0.15/lb DM**

*fat* = $2.50; *prot* = $3.00, *OS* = $0.25

### Holstein
- 80 lbs milk
- 3.50% fat
- 2.90% protein
- 5.70% other solids
- DMI = 52 lbs
- MCM = 78.9
- MCM Conversion: 1.52
- MCM IOFC = **$10.98**
- MCM IOFC = **$8.38**

### Jersey
- 60 lbs milk
- 4.90% fat
- 3.50% protein
- 5.70% other solids
- DMI = 45 lbs
- MCM = 74.7
- MCM Conversion: 1.66
- MCM IOFC = **$10.82**
- MCM IOFC = **$8.57**
Which Breed is better?

Feed = $0.10/lb DM $0.15/lb DM
fat = $2.50; prot = $3.00 $4.00; OS = $0.25

Holstein
- 80 lbs milk
- 3.50% fat
- 2.90% protein
- 5.70% other solids
- DMI = 52 lbs
- MCM = 78.9
- MCM Conversion: 1.52
- MCM IOFC = $10.98
- MCM IOFC = $8.38
- MCM IOFC = $10.70

Jersey
- 60 lbs milk
- 4.90% fat
- 3.50% protein
- 5.70% other solids
- DMI = 45 lbs
- MCM = 74.7
- MCM Conversion: 1.66
- MCM IOFC = $10.82
- MCM IOFC = $8.57
- MCM IOFC = $10.67

Conclusions

- Economics trumps biology
- Components have huge value
- Margins matter, ratios don’t
- Manage and monitor the Big 3 costs
Questions?