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
Are Feed Costs too High?

Can we Survive $8 corn?
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Were we better off with cheaper feed?

- **Old days**
  - Ration: $0.08/lb DM
  - Milk: $14

- **Today**
  - Ration: $0.14/lb DM
  - Milk: $20
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

15% dry cows, $3.00/d dry cow feed cost
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
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 $\geq 3.0$, 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>
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<tr>
<th>Milk, $/lb</th>
<th>16% Dairy</th>
<th>Feed $/cwt&lt;sup&gt;1&lt;/sup&gt;</th>
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<sup>1</sup>70 lbs milk, 50 lbs DMI, 15% dry cows

<sup>2</sup>milk price/cwt – feed cost/cwt
Feed Costs: # 1 cost of producing milk

- 50+% of total costs
- What is success?
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
Farming is profitable … is Dairy?

• Is the Dairy, or the Farm making money?
• Would the dairy be better selling cows and growing corn?
• Avoid having the farm profit overwhelm the dairy and disguise an inefficient business.
We must separate Feed Costs from Farming

Should financial statement use market value for feeds or cost to produce?
Market values for feed

- **Corn Silage**
  - Local corn price x factor
    - Factor = Bu/acre divided by tons/acre
  - Add hauling, chopping, packing, plastic, innoculant (~$10/ton)
  - Subtract shelling cost (~0.32/bu)
  - Add shrink (10%)

- **Hay and haylage** – local market prices adjusted for dry matter
What to put on financial statements?

• Some method of determining usage:
  – Accrual adjusted usage from feeding program
  – Purchase/Inventory change
  – Using market value for feeds

• Farming expenses not included in dairy P&L
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
Calculated Two Ways

• Wrong Way
  – Feed cost per cow divided by milk produced
  – Example: 70 lbs milk, $6.00/day feed cost = 6.00/(0.70) = $8.57/cwt

• Right Way
  – Milking and dry total feed costs/cwt milk sold
  – Example: Milking and dry cows consume $100K, dairy sells 12,000 cwts = $8.33/cwt
Feed Cost/cwt – the right way

• 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
Does Feed Cost/cwt on financial statement match your records??

Monitor with Spreadsheet…
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
## IOFC or $/cwt?

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<th>lbs Milk</th>
<th>Lbs DMI</th>
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<td>60.0</td>
<td>$6.67</td>
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Example: July 2012 numbers

- Dairy sells 10,100 cwt milk
- Milking and dry cows consume $108,000 in feed
- Milk cow feed costs $6.80/day
- Tank Average 75 lbs
- Milk price $18.00 (ignoring components)
- **What is Feed Cost/cwt and IOFC?**
Feed Cost/cwt and IOFC

- Feed Cost/cwt the Right way
Feed Cost/cwt and IOFC

• Feed Cost/cwt the Right way
  – $108,000 / 10,100 = $10.80/cwt
Feed Cost/cwt and IOFC

• Feed Cost/cwt the Right way
  – $108,000 / 10,100 = $10.80/cwt

• Feed Cost/cwt the Wrong way
Feed Cost/cwt and IOFC

- Feed Cost/cwt the Right way
  - $108,000 / 10,100 = $10.80/cwt

- Feed Cost/cwt the Wrong way
  - $6.80/75 lbs = $9.07/cwt
Feed Cost/cwt and IOFC

• Feed Cost/cwt the Right way
  – $108,000 / 10,100 = $10.80/cwt

• Feed Cost/cwt the Wrong way
  – $6.80/75 lbs = $9.07/cwt

• IOFC
Feed Cost/cwt and IOFC

• Feed Cost/cwt the Right way
  – $108,000 / 10,100 = $10.80/cwt

• Feed Cost/cwt the Wrong way
  – $6.80/75 lbs = $9.07/cwt

• IOFC
  – 75 x $18 – $6.80 = $6.70
Which is a decision maker?

• Ration Change:
  – $6.80 to $7.05
  – 25 cent increase

• Milk Improved
  – 75 to 77 lbs
  – 2 lb increase
Which is a decision maker?

- **Ration Change:**
  - $6.80 to $7.05
  - 25 cent increase

- **Milk Improved**
  - 75 to 77 lbs
  - 2 lb increase

- **Feed Cost/cwt**
  - Was $9.07
    - $6.80/75 lbs
Which is a decision maker?

- Ration Change:
  - $6.80 to $7.05
  - 25 cent increase
- Milk Improved
  - 75 to 77 lbs
  - 2 lb increase

- Feed Cost/cwt
  - Was $9.07
    - $6.80/75 lbs
  - Now $9.16
    - $7.05/77 lbs
Which is a decision maker?

- Ration Change:
  - $6.80 to $7.05
  - 25 cent increase
- Milk Improved
  - 75 to 77 lbs
  - 2 lb increase
- Feed Cost/cwt
  - Was $9.07
    - $6.80/75 lbs
  - Now $9.16
    - $7.05/77 lbs
- IOFC
  - Was $6.70
    - 75*18-$6.80
Which is a decision maker?

- **Ration Change:**
  - $6.80 to $7.05
  - 25 cent increase
- **Milk Improved**
  - 75 to 77 lbs
  - 2 lb increase

- **Feed Cost/cwt**
  - Was $9.07
    - $6.80/75 lbs
    - Now $9.16
      - $7.05/77 lbs
- **IOFC**
  - Was $6.70
    - 75*18-$6.80
    - Now $6.81
      - 77*18-$7.05
What About Components?
Components drop in summer….

- Is it Heat Stress?
- Or is it Seasonal?
DV Monitors
Diamond V Mills, Cedar Rapids, IA

Fat%
Figure 4. Fat% and Prot% from Cole (2009)

Week of lactation

- % fat
- % prot
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)
    - \((\text{FCM lbs}) / (\text{dry matter intake lbs})\)
Biological measure of efficiency vs economics

- 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?

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

Herd B:
- 80 lbs milk
- 3.40% fat
- 2.90% protein
- 5.70% other solids
- FCM: 78.9 lbs

**FCM = 3.5% Fat 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

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

**ECM = Energy Corrected Milk**
Which herd is better?

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<thead>
<tr>
<th>Herd A</th>
<th>Herd B</th>
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<tbody>
<tr>
<td>71 lbs milk</td>
<td>80 lbs milk</td>
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<td>3.95% fat</td>
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<td>FCM: 75.4 lbs</td>
<td>FCM: 78.9 lbs</td>
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<td>ECM: 75.4 lbs</td>
<td>ECM: 77.3 lbs</td>
</tr>
<tr>
<td>MCM: 77.8 lbs</td>
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*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

Cow B
- 113 lbs milk
- 3.30% fat
- 2.60% protein
- 5.65% other solids
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?

**Cow A**
- 40 lbs milk
- 4.50% fat
- 3.40% protein
- 5.65% other solids
- FCM: 45.5 lbs
- ECM: 45.7 lbs
- MCM: 47.4 lbs
- Income/day = $9.46

**Cow B**
- 40 lbs milk
- 3.30% fat
- 2.60% protein
- 5.65% other solids
- FCM: 38.9 lbs
- ECM: 37.3 lbs
- MCM: 36.6 lbs
- Income/day = $7.30
What is the limitation of using IOFC?

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<th>$/lb DM</th>
<th>Lbs Milk</th>
<th>Lbs DMI</th>
<th>Feed $/cwt</th>
<th>IOFC, $/day</th>
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<td>90</td>
<td>60.0</td>
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<td>$12.00</td>
</tr>
</tbody>
</table>
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
Southwest dairy

2006 to 2011

Graph showing the production of milk per cow from January 2006 to December 2011. The graph compares different metrics including Tank Avg, MCM, DMI, and MCM IOFC.
Southwest dairy

2006 to 2011

MCM IOFC
MCM Conv

GPS DAIRY CONSULTING LLC
What is the benchmark for Feed Conversions (Milk:Feed)?

- Milk lbs/DMI
- 1.5?
- 1.7?
- What is numerator?
  - Fat corrected milk?
  - Energy corrected milk?
  - Money Corrected Milk™?
- Should be corrected for Economics, not biology
Goals for Feed Efficiency?

<table>
<thead>
<tr>
<th>Milk Production (Lbs/cow per d)</th>
<th>Target GFE</th>
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<tr>
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<td>1.58</td>
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<tr>
<td>90.0</td>
<td>1.63</td>
</tr>
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</table>

BW = 1,500; fat = 3.6%; protein = 3.1%; other solids = 5.7%

Normand St. Pierre, 2011

What about Days in Milk?
What about Value of Milk?
Conclusions

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