Facing Cow Management Decisions with the New Cost of Production on Southeast Dairy Farms

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Topics

1. New cost of production
2. Cow management decisions
   - breeding, dry-off, culling
3. Marginal thinking
   - Feed cost example
4. Prediction of future milk prices
Prices Received, Soybeans, US

Dollars per Bu

Year


National Agricultural Statistics Service - Agricultural Prices, 08.29.2008
Feed cost / cwt milk

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total operating cost / cwt milk

Feed costs
Veterinary and medicine
Bedding and litter
Marketing
Custom services
Fuel, lube, and electricity
Repairs
Other operating costs
Interest on operating capital

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total operating cost / cwt milk

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total allocated overhead cost / cwt milk

- Hired labor
- Opportunity cost of unpaid labor
- Capital recovery of machinery and equipment
- Opportunity cost of land (rental rate)
- Taxes and insurance
- General farm overhead

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total allocated overhead cost / cwt milk

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total cost / cwt milk

USDA-ERS - Monthly milk cost of production (09/05/2008)
Total cost and milk price / cwt milk

USDA-ERS & USDA-AMS (09/05/2008)
USDA milk-feed price ratio

“number of pounds of 16 percent protein-mixed dairy feed equal in value to 1 pound of whole milk”

http://future.aae.wisc.edu (09/05/2008)
Cow management decisions

- Breeding
- Dry-off
- Culling
Milk production, dry matter intake, feed efficiency

Days in milk

lbs/day

Milk

Dry matter intake

Feed efficiency
Income over feed cost / day

Milk sales ($22/cwt) - dry matter cost

Income over feed cost (IOFC) varies with days after calving, with different dry matter costs impacting the outcome. The graph shows four different dry matter costs: $8, $10, $12, and $14, each represented by a different line. The highest IOFC is observed in the early days after calving, with a peak at around 140 days for the $8 dry matter cost, and a peak at around 100 days for the $14 dry matter cost. As the days after calving increase, the IOFC decreases, reflecting the declining income over feed cost.
Relative IOFC / day

IOFC on day 305 is set to $0
Feed cost / cwt milk

Dry matter cost / 100 lbs

Days after calving
Break-even milk yield

Milk yield needed to pay for 42 lbs of dry matter

Diagram showing the relationship between milk yield and dry matter cost for different milk prices.

- $19 per cwt
- $22 per cwt
- $25 per cwt

Dry matter cost, $/100 lbs vs. Milk yield, lbs

Corrected
Higher feed cost

- Feed efficiency more important
  - Early part of lactation curve
  - Cows should spend more time in early lactation → early conception more important

- Higher break-even milk yield
  - Earlier production dry-off
  - Earlier culling open cows
Marginal thinking

- Feed cost example
Scenario 3:
Your Nutritionist Gives You Two Rations/Production Levels to Choose From:

<table>
<thead>
<tr>
<th>Milk Level</th>
<th>DMI (lbs)</th>
<th>TMR Cost/ lb</th>
<th>Feed Cost</th>
<th>Feed Cost/ Cwt</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 lbs</td>
<td>48.8</td>
<td>$0.12</td>
<td>$5.70</td>
<td>$7.13</td>
</tr>
<tr>
<td>90 lbs</td>
<td>53.1</td>
<td>$0.13</td>
<td>$6.91</td>
<td>$7.68</td>
</tr>
</tbody>
</table>

Milk is selling for $20/ cwt

Which one is more profitable?
Scenario 3:
Your Nutritionist Gives You Two Rations/Production Levels to Choose From:

<table>
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<td>$10.30</td>
</tr>
<tr>
<td>90 lbs</td>
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<td>$0.13</td>
<td>$6.91</td>
<td>$7.68</td>
<td>$11.09</td>
</tr>
<tr>
<td>10 lbs = $2.00</td>
<td>4.3</td>
<td></td>
<td>$1.21</td>
<td></td>
<td>$0.79</td>
</tr>
</tbody>
</table>

Although the actual feed cost AND feed cost/ cwt Milk is selling for $20/ cwt, The better choice here is the 90 lb production with the higher feed cost.

Average cost of production or cost/ cwt can me very misleading

Source: Fetrow, Overton, Eicker
Predicting future milk prices

- Accuracy of prediction of future uniform milk prices in Florida from Class III and IV futures markets

De Vries and Feleke, Journal of Dairy Science, accepted
F.O. 6 Uniform Milk Price

Uniform milk price is function of 17 inputs:

- Announced and advanced butter prices
- Product prices for cheese, butter, dry whey, non-fat dry milk
- Utilization of Class I, II, III, IV skim milk
- Utilization of Class I, II, III, IV butterfat
- Class I price differential
- Class III and Class IV cash prices

Prices and utilization announced every month by USDA
Class III, Predicted and Actual

- 6 mo ahead
- 3 mo ahead
- 1 mo ahead
- Actual

Month

$ / cwt

2003 | 2004 | 2005 | 2006
Prediction Method

- Class III and IV cash prices:
  - futures prices
- Announced butter prices, advanced butter prices, advanced Class III skim milk price, advanced Class IV skim milk price, advanced Class I butterfat price; function of:
  - futures Class IV price, last announced Class IV price, last announced Class III price, last announced butter price, last advanced butter price, advanced butter price
- Utilization skim milk, utilization butterfat:
  - Holt-Winters method (historical utilization)
Uniform Prices: Predicted and Actual

- **6 mo ahead**
- **3 mo ahead**
- **1 mo ahead**
- **Actual**

$ / cwt

Month

2003 2004 2005 2006
Tampa Uniform Price, Predicted - Actual, $/cwt
Class III and IV prices, butter prices, utilizations predicted
(2003-2006)

MAD = median absolute deviation: 1.482 median $ |x_i - \bar{x}|$
Tampa Uniform Price, Predicted - Actual, $/cwt
Class III and IV prices predicted; butter prices and utilizations assumed known (2003-2006)

MAD = median absolute deviation: 1.482 median |x_i - \tilde{x}|
Tampa Uniform Price, Predicted - Actual, $/cwt
Butter prices and utilizations predicted; Class III and IV prices assumed known (2003-2006)

MAD = median absolute deviation: 1.482 median |x_i - \bar{x}|
Conclusions

• Predicted uniform prices are increasingly inaccurate farther into the future.
  - Uncertainty is large even a few months ahead

• Majority of prediction error due to inability of CME futures market to predict Class III and IV cash prices accurately.
Thank You

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