The 4–State Dairy Extension Feed Cost Evaluator

V. E. Cabrera, R. Shaver, P. Dyk, J. Salfer, L. Tranel, J. Endress
What is benchmarking?

- Continuous process of measuring a variable and comparing it against same farm or other farms

- PDCA: Plan, Do, Check, Act

- Evaluation of farm performance against own history or industry performance
Knowledge gained by benchmarking helps to build operational plans of improvement.

The search for industry’s better practices leads to achieve superior performance.

Helps farmer to learn from own and other’s strengths and weaknesses.
Why IOFC?

- Most of the dairy revenues and costs are contained in the IOFC
- IOFC responds greatly to market conditions
- IOFC indirectly assesses other farm conditions: health, reproduction, culling, etc.
- Management decisions directly impact IOFC
Why IOFC?

- Proven method to evaluate dairy profitability
- Indicates when a farm:
  - Is profitable
  - Is not profitable
  - Needs improvements
  - Has opportunities of improvement
- Producers perform decision-making based on the IOFC
Why IOFC?

- Enables producers to make informed decisions regarding
  - Purchase feed stuffs
  - Price risk management
  - Ration adjustment
  - Productivity enhancers
  - Breeding schemes
  - Culling protocols
  - Etc.
Why IOFC?

- Other farm revenues and expenses are less variable than IOFC
- Less variable revenues and expenses can be assumed fixed
- Farm needs to operate at least to a break-even level
- A target IOFC can be defined:
  - E.g., $5/cwt milk: That should be the farm minimum IOFC to remain profitable
Challenges of benchmarking IOFC

IOFC = Milk Value – Feed Cost
(Very Simple Concept)

Who really know their farm’s IOFC?

- By groups of cows
- By months (or seasons of the year)

How to estimate meaningful IOFC?
Challenges of benchmarking IOFC

- Even if a farm has historical IOFC, not as much value if it can’t be compared with peers

- Who maintains a systematic approach to collect IOFC?

- Who performs IOFC benchmarking permanently and consistently?

- What is the protocol/framework to estimate, collect, and analyze dairy farm’s IOFC?
How to Benchmark IOFC?

Collect Farm Data

Analyze Farm Data

Compare Farm Data
How to Collect Data?

Collector 1
- Farm 1
- Farm 2

Collector 2
- Farm 1
- Farm 2
- Farm 3
- Farm 4
- Farm 5

Collector 3
- Farm 1
- Farm 2
- Farm 3
How to Collect Data?

Farm 1

Milk Income

Milk Quantity

Milk Price

Feed Cost

Feed Quantity

Feed Price
FARMS
(View & Edit Farms)

FARMS
(View existing farms, add new farms, and delete farms)

IOFC DATABASE

Welcome to IOFC Database. These are the suggested steps for using the system.

1. In this page, you can add or delete farms. To add a farm enter a farm name and select the county where the farm is located and click "Add Farms". To delete a farm, delete the farm name and click save.

2. Once the farms are defined, you can start defining the "Ingredients" on the ingredients page, their DM composition, and prices used on each particular farm.

3. Once the ingredients are entered, you can define the rations for different group of cows in the "Ration" page.

4. Once you have defined all ingredients and rations, you can see the IOFC summary at the "Summary" page. On this page, you would first need to enter the milk production and price.

5. Finally, the feed cost can be calculated with the IOFC Summary. Click on 'Save' to save the details entered.
How to Collect Data?

Feed Cost

- Forage Cost
  - Purchased
  - Homegrown

- Concentrate Cost
  - Purchased
  - Homegrown

- Min–Sup. Cost
  - Purchased
  - Purchased
### Forages

**INGREDIENTS**
Add/Edit Ingredients in the Farm

<table>
<thead>
<tr>
<th>Farm Name</th>
<th>Month</th>
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<tbody>
<tr>
<td>Superior Farm</td>
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<table>
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<tr>
<th>Forage</th>
<th>%DM</th>
<th>Price As Fed $/ton</th>
<th>Price DM $/ton</th>
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<tbody>
<tr>
<td>Corn Silage-Cosi</td>
<td>33</td>
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<td>Hay Forage</td>
<td>85</td>
<td>140</td>
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<tr>
<td>Hay Forage-</td>
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<td>Straw</td>
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<td>Alf Silage-Alsi</td>
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# Concentrates

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<th>%DM</th>
<th>Price As Fed $/ton</th>
<th>Price DM $/ton</th>
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<td>Prefresh conc</td>
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<tr>
<td>Lactating Protein</td>
<td>90.9</td>
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<tr>
<td>TMR Weighback</td>
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<td>Energy Booster</td>
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## Min-Vit., Byproduct

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<th>%DM</th>
<th>$/cwt</th>
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<tr>
<td>Calcium Carbonate</td>
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<tr>
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<td>Yeast</td>
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<td>49.1</td>
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</table>
How to Collect Data?

- Animal Group
  - # Animals
    - Milking
      - Forage
      - Concentrate
      - Min-Vit.
    - Dry
      - Forage
      - Concentrate
      - Min-Vit.
# Milk Value

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<th>Farm Name</th>
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<tr>
<td>Person Reporting</td>
<td>Reporter1</td>
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<tr>
<td>Farm Owner/UserName</td>
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<tr>
<td>Number of Cows</td>
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<td>Milking Number of Cows</td>
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<tr>
<td>Milk Bulk Tank Production (lb/cow/day)</td>
<td>3.5</td>
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<tr>
<td>Milk ButterFat(%)</td>
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<tr>
<td>Milk Protein(%)</td>
<td>14.75</td>
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<td>Milk Revenue ($/cow/day)</td>
<td>11.95</td>
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# Rations

**Farm Name**

- Superior Farm 2

## Ration Group Information

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<td>Ration Group 1</td>
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<td>Ration Group 2</td>
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<td>✔️</td>
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<td>Ration Group 3</td>
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## Rations

**Farm Name:** Farm3  
**Month:** April 2010

### Forage

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<tr>
<th>Ingredient</th>
<th>Ration1</th>
<th>Ration2</th>
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<th>Ration6</th>
<th>Ration7</th>
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<td>Hay</td>
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<td>0.41</td>
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### Energy/Protein Supplements

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<th>Ration6</th>
<th>Ration7</th>
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<td>Corn-CG3G</td>
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### Min-Vit & Additive Supplements

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<th>Ration6</th>
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<tr>
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<tr>
<td>Lactating Mineral</td>
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<td>0.69</td>
<td>0.69</td>
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</tbody>
</table>
How to Summarize Data by Farm Animal Groups?

Animal Group

Feed Consumed

Purchased

DMI
Cost

Homegrown

DMI
Cost
## Group Summary

<table>
<thead>
<tr>
<th></th>
<th>Dry Purchased</th>
<th>Dry Home-Grown</th>
<th>CU Purchased</th>
<th>CU Home-Grown</th>
<th>Fresh Purchased</th>
<th>Lact Purchased</th>
<th>Lact Home-Grown</th>
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<tbody>
<tr>
<td><strong>Forage</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>DMI (lb/cow/d)</td>
<td>3.29</td>
<td>0.19</td>
<td>0.89</td>
<td>0.05</td>
<td>0.43</td>
<td>0.02</td>
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<tr>
<td>Cost</td>
<td>21.46</td>
<td>1.28</td>
<td>17.46</td>
<td>1.05</td>
<td>17.97</td>
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<td>18.04</td>
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<td><strong>Energy/Protein Suppl.</strong></td>
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<tr>
<td>DMI (lb/cow/d)</td>
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<td><strong>Min-Vit &amp; Additive Suppl.</strong></td>
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<td>17.46</td>
<td>1.05</td>
<td>17.97</td>
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<td>17.97</td>
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<table>
<thead>
<tr>
<th></th>
<th>Dry Purchased</th>
<th>Dry Home-Grown</th>
<th>2 year Purchased</th>
<th>2 year Home-Grown</th>
<th>hospital Purchased</th>
<th>Lact Purchased</th>
<th>Lact Home-Grown</th>
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<tr>
<td><strong>Forage</strong></td>
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<td>18.71</td>
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<td><strong>Energy/Protein Suppl.</strong></td>
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<td>18.71</td>
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<td><strong>Min-Vit &amp; Additive Suppl.</strong></td>
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<td>4.81</td>
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<td>0.38</td>
<td>4.44</td>
<td>0.38</td>
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<tr>
<td><strong>Total Feed</strong></td>
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<th>Ration 7 Home-Grown</th>
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<th>Ration 9 Home-Grown</th>
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How to Summarize Data by Farm?

- Milking
  - Feed Consumed
    - Purchased
      - DMI
      - Cost
    - Homegrown
      - DMI
      - Cost

IOFC
## Farm Summary

<table>
<thead>
<tr>
<th>Summary</th>
<th>Milking</th>
<th>Dry</th>
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<tbody>
<tr>
<td>DMI (lb/cow/day)</td>
<td>54.2</td>
<td>25.97</td>
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<td>MILK/DMI</td>
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<td>FCM/DMI</td>
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<td>ECM/DMI</td>
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<td>PURCHASED FEED COST ($/cow/day)</td>
<td>2.41</td>
<td>0.83</td>
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<td>HOME GROWN FEED COST ($/cow/day)</td>
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<td>SUPPLEMENT FEED COST ($/cow/day)</td>
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<tr>
<td>TOTAL FEED COSTS ($/cow/d)</td>
<td>4.46</td>
<td>1.99</td>
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<td>INCOME OVER PURCHASED SUPPLEMENT COST (IOPSC) ($/cow/day)</td>
<td>15.21</td>
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<td>INCOME OVER PURCHASED FEED COSTS (IOPFC) ($/cow/day)</td>
<td>12.81</td>
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<tr>
<td>INCOME OVER FEED COSTS (IOFC) ($/cow/day)</td>
<td>10.76</td>
<td></td>
</tr>
</tbody>
</table>
How to Analyze Data Geographically and Temporarily?

- Region User
- Iowa

- Farm
  - Farm 1
  - Farm 2

- Months
  - May
  - Jun
  - Jun
Analyses
Analyses

Farm Parameters | Min | 25%tile | Mean | 75%tile | Max
--- | --- | --- | --- | --- | ---
Milk Bulk Tank (lb/cow/day) | 65 | 60 | 68.9 | 76 | 85
Milk Fat (%) | 3.4 | 3.5 | 3.53 | 3.6 | 3.6
Milk Protein (%) | 3.1 | 3.1 | 3.16 | 3.2 | 3.3
Milk Price ($/cwt) | 13.8 | 13.8 | 14.37 | 14.8 | 15.2
Milk Revenue ($/cow/day) | 7.59 | 8.88 | 9.92 | 11.33 | 12.92

Summary

| DMI (lb/cow/day) | Min | 25%tile | Mean | 75%tile | Max
--- | --- | --- | --- | --- | ---
| 41 | 49 | 51.2 | 56 | 59 |

| Energy Costs ($/cow/day) | Min | 25%tile | Mean | 75%tile | Max
--- | --- | --- | --- | --- | ---
| 1.26 | 1.44 | 1.56 | 1.67 | 1.79 |

| Dry
--- | --- | --- | --- | --- | ---
| 25 | 33.25 | 39 |

Download Summary
Net Summary
Farms Analyzed 10
Analyses

Graphical Representation
(Click on the Data Point for more information)

Milk Price

Milk Revenue

DMI Milking

DMI Dry

Home Grown Feed Costs

Purchased Feed Costs

- Milking
- Dry
Analyses
## Analyses

### 4-STATE DAIRY EXTENSION FEED COST EVALUATOR

#### Farms
- Farm1
- Farm2
- Farm3
- Farm4
- Farm5

#### Milking Cows
- Less than 100
- 100 to 350
- 350 to 500
- Greater than 500

#### Month
- June 2010
- May 2010
- April 2010

#### Comparison Farms
- Cabrera
- Dyk

### Analysis

(Perform Analysis on Multiple Farms)

- **Selected Farms:**
  - Farm1
  - Farm2
  - Farm3
  - Farm4
  - Farm5

- **Cows:**
  - Less than 100
  - 100 to 350
  - 350 to 500
  - Greater than 500

- **Month:**
  - June 2010
  - May 2010
  - April 2010

### Options

- Standardized
- Farm/Mailbox

- **Analyze**
- **Clear Selections**
A Case Study

- 9 Wisconsin farms

- April Data

- Same Geographical Area
  - Fond Du Lac
  - ~ 12,000 cows
  - 25% cows in County

- Collected by: Paul Dyk
Farm6 = $8.59/cow/day

Highest = 10.76

Lowest = 7.46

Why the big differences?
Feed Costs (Milking) ($/cow/d)

Farm6 = $4.36/cow/day
3rd Lowest
Feed Costs (Milking) ($/cow/d)

- Farm1
- Farm2
- Farm3
- Farm4
- Farm5
- Farm6
- Farm7
- Farm8
- Farm9

Homegrown
Purchased

3rd Lowest
Dry Matter Intake (Milking) (lb/cow/d)

Farm6 = 52.7 lb/cow/d

5th highest
Milk Bulk Tank (lb/cow/d)

Farm6 = 85 lb/cow/d
3rd lowest
Feed Efficiency

Rank = 8
Milk Price ($/cwt milk)

Farm6 = $15.24/cwt milk

Lowest
Milk Components

- Milk Butterfat (%): 3.7, 3.5, 3.3, 3.1, 2.9, 2.7, 2.5
- Milk Protein (%): 2.5, 2.7, 2.9, 3.1, 3.3, 3.5, 3.7

Rank=1: Farm7
Rank=4: Farm2

Farm1, Farm2, Farm3, Farm4, Farm5, Farm6, Farm7, Farm8, Farm9
Milk Revenue ($/cow/d)

Farm6 = $12.95/cwt milk
2nd Lowest
4-STATE DAIRY EXTENSION FEED COST EVALUATOR
UWEX-DAIRY MANAGEMENT

ANALYSIS
(Perform Analysis on Multiple Farms)

Farm
Farm1
Farm2
Farm3
Farm4
Farm5

Milking Cows
Less than 100
100 to 350
350-500
Greater than 500

Month
April 2010

Include in Analysis
Ingredient
Corn Silage Cosi
Hay Forage
Corn CGG
SoybeanMeal SBM
Milk Price

%DM

Effective Price As Fed ($/ton)
Price As Fed ($/ton)
Price DM ($/ton)

$/cwt

Analyze
Clear Selections
Farm Reported Prices

Highest = 10.76

Lowest = 7.46

Rank = 8
Corn Silage=36%, $103.14/t DM

Rank=8
Hay Forage = 46%, $135.36/t DM

Rank = 8
Corn Grain = 76%, $169.41/t DM
Milk Price = $16.5/cwt milk
Best Prices (milk, corn silage, hay forage, corn grain)

Rank=6
Farm6 Improvement Plan

- Look for better milk price
  - Negotiate a better price
  - Good milk components relatively and lowest price received

- Improve feed efficiency
  - Look ways to enhance production at the DMI level
  - Maintain milk production reducing DMI
  - Check feed quality

- Reduce feed costs
  - Homegrown and Purchased
  - Forages and Concentrates
Dairy Management UW-Extension

Dairy Management site is designed to support dairy farming decision-making focusing on model-based scientific research. The ultimate goal is to provide user-friendly computerized decision support systems to help dairy farms improve their economic performance. Dr. Victor Cabrera focuses on model-based decision support in dairy cattle and in dairy farm production systems. Dr. Cabrera’s primary interest is to improve cost-efficiency and profitability along with environmental stewardship in dairy farms by using simulation techniques, artificial intelligence, and expert systems. Dr. Cabrera’s research and Extension programs involve interdisciplinary and participatory approaches towards the creation of user-friendly decision support systems. As an Extension Specialist, Dr. Cabrera works in close relationships with county-based Extension faculty, dairy producers, consultants, and related industries.

Management Tools

Tools include a suite of dairy management tools that are user-friendly, interactive, robust, visually attractive, and self-contained. All tools have clear or self-explanatory instructions and technical support available.

Click on the Tool title to learn more.

Feeding

- Dodger_Operator
- Dome_OuterFeed_Supplement Cost
- 4-State Dairy Extension Feed Cost Evaluator

Benchmarks feed costs and income over feed cost (IOFC) for a group of participating herds.

Excel Spreadsheet (Open)
Documentation (Open)
Database Database System (Open)
Dairy Feeder - View the Video

- Corn Feeding Strategies
- Dairy Ration Feed Additive Break-Even Analysis

Links

- Home
- Tools
- Projects
- Publications
- Presentations
- LGM-Dairy
- Links

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Wisconsin Dairy Feed Cost Evaluator

- Available to anyone interested in evaluating Feed Costs and IOFC:
  - Track farm trends over time
  - Compare farms in a region
  - Compare across regions

- Contribute to database → Use available data
Thanks