Results of Organic Dairy Economic Survey

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Objectives

Today discussion

Wisconsin organic dairy farms
General characteristics
Emphasis on feeding

Productivity and profitability
Related to feeding strategies
Materials and methods

Sampling

Wisconsin certified organic producers
2009 DATCP list

Wisconsin certified organic dairy producers
n = 554

Wisconsin active dairy producers
2009 DATCP list

All invited to participate in study
Study year = 2010
Materials and methods

Participating farms

70 Wisconsin certified organic dairy producers
Surveyed between January 2011 and January 2012
Materials and methods

Survey instrument

53 pages long containing 9 sections
1. Business structure
2. People on farm
3. Dairy herd
4. Feeding
5. Pasture
6. Crops
7. Nutrient management
8. Economic parameters
9. Farm satisfaction
Materials and methods

Survey protocol

Face to face interview

• Lasted between 3 and 6 hours
• 2 students

M. Dutreuil

C. Hardie
# General characteristics

## Wisconsin organic dairy farms

### Table 2.1. Land operated and owned by the surveyed Wisconsin organic dairy farms

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total land operated (ha)</td>
<td>17.8</td>
<td>786</td>
<td>85.5</td>
<td>118</td>
<td>124</td>
</tr>
<tr>
<td>Owned, %</td>
<td>0.0</td>
<td>100</td>
<td>69.9</td>
<td>67.0</td>
<td>29.9</td>
</tr>
<tr>
<td>Cropland operated (ha)</td>
<td>0.0</td>
<td>640</td>
<td>49.2</td>
<td>77.6</td>
<td>110</td>
</tr>
<tr>
<td>Owned, %</td>
<td>0.0</td>
<td>100</td>
<td>70.7</td>
<td>61.1</td>
<td>37.4</td>
</tr>
<tr>
<td>Pasture operated (ha)</td>
<td>6.1</td>
<td>146</td>
<td>27.3</td>
<td>40.8</td>
<td>31.4</td>
</tr>
<tr>
<td>Owned, %</td>
<td>0.0</td>
<td>100</td>
<td>100</td>
<td>77.5</td>
<td>32.9</td>
</tr>
<tr>
<td>Woodland(^1) (ha)</td>
<td>0.0</td>
<td>81.0</td>
<td>4.9</td>
<td>13.3</td>
<td>18.6</td>
</tr>
</tbody>
</table>

\(^1\)Only owned woodland was considered in the survey. Also, one farm did not have woodland data available.
General characteristics
Wisconsin organic dairy farms

Average = 69 cows
General characteristics
Wisconsin organic dairy farms

HOL = Holstein
JER = Jersey
CB = Crossbred
### General characteristics

**Wisconsin organic dairy farms**

<p>| Table 2.2b. Milk production characteristics of the surveyed organic dairy farms$^{1,2}$ |
|------------------------------------------|----------|--------|----------|----------|----------|--------|</p>
<table>
<thead>
<tr>
<th>Trait</th>
<th>%</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median</th>
<th>Average</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk production (kg/cow per year)</td>
<td>-</td>
<td>2,356</td>
<td>10,785</td>
<td>6,606</td>
<td>6,368</td>
<td>1,860</td>
</tr>
<tr>
<td>(lbs/cow per year)</td>
<td>-</td>
<td>(5,190)</td>
<td>(23,755)</td>
<td>(14,550)</td>
<td>(14,027)</td>
<td>(4,097)</td>
</tr>
<tr>
<td>Fat content (%)</td>
<td>-</td>
<td>3.47</td>
<td>5.19</td>
<td>3.88</td>
<td>3.98</td>
<td>0.34</td>
</tr>
<tr>
<td>Protein content (%)</td>
<td>-</td>
<td>2.76</td>
<td>3.67</td>
<td>3.04</td>
<td>3.09</td>
<td>0.20</td>
</tr>
<tr>
<td>SCC (x1,000 cells/ml)</td>
<td>-</td>
<td>87.8</td>
<td>707</td>
<td>245</td>
<td>250</td>
<td>99.8</td>
</tr>
<tr>
<td>Length of dry period (d)</td>
<td>-</td>
<td>35</td>
<td>140</td>
<td>60</td>
<td>62.9</td>
<td>15.8</td>
</tr>
<tr>
<td>Used DHIA (% of farms)</td>
<td>50.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

1Fat and protein concentrations and SCC are for January – November.

2Thirteen farms did not have %fat, %protein, SCC, or DHIA data available.
## General characteristics

### Wisconsin organic dairy farms

| Table 2.2d. Feeding characteristics of the surveyed organic dairy farms |
|-----------------------------|------------------|
| Trait                        | %    |
| Fed mixed feed (% of farms) | 32.9 |
| Fed concentrates (% of farms)| 87.1 |
| Fed soybeans (% of farms)   | 17.1 |
| Fed corn silage (% of farms)| 50.0 |
| Fed kelp (% of farms)       | 48.6 |

| Table 2.2e. Grazing characteristics of the surveyed organic dairy farms |
|-----------------------------|------------------|
| Trait                        | %    | Minimum | Maximum | Median | Average | SD |
| Used leader-follower system (% of farms) | 27.5 | -       | -       | -      | -       | -  |
| Grazed annual crops (% of farms)     | 8.7  | -       | -       | -      | -       | -  |
| Occupancy period (d)               | -    | 0.21    | 30      | 1.00   | 2.25    | 2.27|
| Length of grazing season (d)        | -    | 123     | 257     | 188    | 189     | 29.0|

1One farm did not have leader-follower, grazed annual crops, or occupancy period data available.
Productivity and profitability

Methodology of analysis

Cluster analysis
Compare organic dairy farms based on general characteristics and feeding strategies

Cluster evaluation
Productivity = RHA
Profitability = IOFC
Productivity and profitability

Evaluated variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cluster 1 (n=8)</th>
<th>Cluster 2 (n=5)</th>
<th>Cluster 3 (n=32)</th>
<th>Cluster 4 (n=24)</th>
<th>Total (n=69)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mdn (iqr)</td>
<td>mdn (iqr)</td>
<td>mdn (iqr)</td>
<td>mdn (iqr)</td>
<td>mdn (iqr)</td>
</tr>
<tr>
<td>Clustering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cows per herd</td>
<td>129&lt;sup&gt;a&lt;/sup&gt; (56)</td>
<td>50&lt;sup&gt;b&lt;/sup&gt; (35)</td>
<td>41&lt;sup&gt;b&lt;/sup&gt; (14)</td>
<td>43&lt;sup&gt;b&lt;/sup&gt; (51)</td>
<td>45 (41)</td>
</tr>
<tr>
<td>Percent Holstein&lt;sup&gt;2&lt;/sup&gt;</td>
<td>90&lt;sup&gt;a&lt;/sup&gt; (14)</td>
<td>0.0&lt;sup&gt;b&lt;/sup&gt; (0.0)</td>
<td>89&lt;sup&gt;a&lt;/sup&gt; (25)</td>
<td>6.0&lt;sup&gt;b&lt;/sup&gt; (22)</td>
<td>71 (89)</td>
</tr>
<tr>
<td>Milking frequency&lt;sup&gt;3&lt;/sup&gt;</td>
<td>2.0&lt;sup&gt;a&lt;/sup&gt; (0.0)</td>
<td>1.5&lt;sup&gt;b&lt;/sup&gt; (0.43)</td>
<td>2.0&lt;sup&gt;a&lt;/sup&gt; (0.0)</td>
<td>2.0&lt;sup&gt;a&lt;/sup&gt; (0.0)</td>
<td>2.0 (0.0)</td>
</tr>
<tr>
<td>Cow feeding groups&lt;sup&gt;4&lt;/sup&gt;</td>
<td>2.0&lt;sup&gt;a&lt;/sup&gt; (0.25)</td>
<td>1.0&lt;sup&gt;b&lt;/sup&gt; (0.00)</td>
<td>2.0&lt;sup&gt;a&lt;/sup&gt; (1.0)</td>
<td>2.0&lt;sup&gt;b&lt;/sup&gt; (1.0)</td>
<td>2.0 (1.0)</td>
</tr>
<tr>
<td>Supplemented feeds&lt;sup&gt;5&lt;/sup&gt;</td>
<td>8.0&lt;sup&gt;a&lt;/sup&gt; (2.3)</td>
<td>2.0&lt;sup&gt;c&lt;/sup&gt; (2.0)</td>
<td>6.0&lt;sup&gt;ab&lt;/sup&gt; (2.0)</td>
<td>6.0&lt;sup&gt;b&lt;/sup&gt; (1.3)</td>
<td>6.0 (2.0)</td>
</tr>
<tr>
<td>Concentrates fed&lt;sup&gt;6&lt;/sup&gt;</td>
<td>5.7&lt;sup&gt;a&lt;/sup&gt; (2.8)</td>
<td>2.7&lt;sup&gt;ab&lt;/sup&gt; (2.7)</td>
<td>4.2&lt;sup&gt;a&lt;/sup&gt; (1.4)</td>
<td>1.9&lt;sup&gt;b&lt;/sup&gt; (2.6)</td>
<td>3.6 (2.6)</td>
</tr>
<tr>
<td>Land as pasture (%)</td>
<td>22&lt;sup&gt;c&lt;/sup&gt; (20)</td>
<td>100&lt;sup&gt;a&lt;/sup&gt; (0.0)</td>
<td>31&lt;sup&gt;c&lt;/sup&gt; (14)</td>
<td>49&lt;sup&gt;b&lt;/sup&gt; (28)</td>
<td>36 (24)</td>
</tr>
<tr>
<td>Occupancy period&lt;sup&gt;7&lt;/sup&gt;</td>
<td>1.25&lt;sup&gt;a&lt;/sup&gt; (1.25)</td>
<td>0.50&lt;sup&gt;b&lt;/sup&gt; (0.50)</td>
<td>2.00&lt;sup&gt;a&lt;/sup&gt; (3.25)</td>
<td>0.50&lt;sup&gt;b&lt;/sup&gt; (0.50)</td>
<td>1.00 (2.00)</td>
</tr>
<tr>
<td>Grazing season length (d)</td>
<td>203&lt;sup&gt;a&lt;/sup&gt; (21)</td>
<td>216&lt;sup&gt;a&lt;/sup&gt; (24)</td>
<td>176&lt;sup&gt;b&lt;/sup&gt; (36)</td>
<td>199&lt;sup&gt;b&lt;/sup&gt; (25)</td>
<td>189 (39)</td>
</tr>
</tbody>
</table>

<sup>1</sup>mdn = median, iqr = interquartile range
<sup>2</sup>Percent of cows within each farm that were Holstein
<sup>3</sup>Weighted mean number of milkings per day
<sup>4</sup>Total number of cow feeding groups on the farm
<sup>5</sup>Total number of non-pasture feeds incorporated into the farm’s lactating cow diet
<sup>6</sup>Mean amount of concentrates fed to lactating cows (kg/cow per d)
<sup>7</sup>Number of days lactating cows remained in a paddock before being rotated to new pasture

Kruskal-Wallis test (P ≤ 0.05). Medians within a row not sharing a common superscript are statistically different based on Wilcoxon test with Bonferroni correction (P < 0.05).
Productivity and profitability

Cluster 1 - Lactating herd
Productivity and profitability

Cluster 2 - Lactating herd
Productivity and profitability
Cluster 3 - Lactating herd

Proportion of diet

% pasture
% hay
% haylage
% corn silage
% concentrates
% minerals
Productivity and profitability

Cluster 4 - Lactating herd
### Productivity and profitability

**RHA and IOFC - Lactating herd**

#### Table 3.1b. Cluster and total sample medians (interquartile ranges) for the clustering and evaluated variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Cluster 1 (n=8)</th>
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<th>Cluster 3 (n=32)</th>
<th>Cluster 4 (n=24)</th>
<th>Total (n=69)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHA² (kg/cow per yr)</td>
<td>mdn¹ 6,878ᵃ (1,038)</td>
<td>mdn³ 3,632ᶜ (783)</td>
<td>mdnᵃ 7,457ᵃ (1,754)</td>
<td>mdnᵇ 5,417ᵇ (1,760)</td>
<td>mdn 6,583 (2,520)</td>
</tr>
<tr>
<td>IOFC³ ($/cow per d)</td>
<td>mdnᵃ 10.17ᵃ (2.99)</td>
<td>mdnᵇ 5.76ᵃᵇ (1.62)</td>
<td>mdnᵃ 8.59ᵃ (4.68)</td>
<td>mdnᵇ 5.92ᵇ (2.47)</td>
<td>mdn 7.73 (4.01)</td>
</tr>
</tbody>
</table>

¹mdn = median, iqr = interquartile range  
²Milk rolling herd average (RHA)  
ᵃᵃᵃKruskal-Wallis test ($P \leq 0.05$). Medians within a row not sharing a common superscript are statistically different based on Wilcoxon test with Bonferroni correction ($P < 0.05$).
Productivity and profitability

Milk income

Milk Sold (kg/cow per d)

Milk Price ($/kg)

Feed Expenses ($/cow per d)

Cluster 1
Cluster 2
Cluster 3
Cluster 4
All farms
Productivity and profitability

Cluster 1
Productivity and profitability
Cluster 2

Feed Expenses ($/cow per d)

- • total
- • minerals
- • concentrates
- • forages
- • grazing
Productivity and profitability

Cluster 3

Feed Expenses ($/cow per d)

Proportion of diet

- Minerals
- Concentrates
- Forages
- Total
- Grazing
Productivity and profitability

Cluster 4

Feed Expenses ($/cow per d)

Proportion of diet

- total
- minerals
- concentrates
- forages
- grazing
Productivity and profitability

IOFC

Cluster 1
Cluster 2
Cluster 3
Cluster 4
All farms
Productivity and profitability
Milk fat, protein, and SCC

Cluster 1

SCC
Fat
Protein

Cluster 2

Cluster 3

Cluster 4
Conclusions
Wisconsin organic dairy farming

Two overall feeding systems

1. Highly supplemented, Holstein-based farms (Clusters 1 and 3)

2. Pasture-based, non-Holstein farms (Clusters 2 and 4)

RHA and IOFC
Better on highly supplemented, Holstein-based organic dairy farms
Thanks