Organic dairy production without concentrates: Effects on milk yield, animal health and economics

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Why concentrates?

Performance

Price

On-farm handling

Balance rations
Why no concentrates?

Biology

Feed to food efficiency

Price

Origin of concentrates
Research questions

- Milk performance without concentrates?
- Effects on animal health and fertility?
- Lower milk yield = lower marginal income?
Animals, Materials and methods

- Field data of 2 years from 8 organic dairy farms without concentrates (C0)

- Compared with ~140 organic farms included in a federal program (WG)

- 3 groups depending on annual concentrates per cow
  - WG 1: <975 kg
  - WG 2: 976 – 1,400 kg
  - WG 3: >1,400 kg
# Farm data

<table>
<thead>
<tr>
<th>Item</th>
<th>C0</th>
<th>WG1</th>
<th>WG2</th>
<th>WG3</th>
<th>P - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd size, n</td>
<td>23.0</td>
<td>26.1</td>
<td>26.6</td>
<td>26.8</td>
<td>0.829</td>
</tr>
<tr>
<td>Concentrates, kg/cow/y</td>
<td>7</td>
<td>710</td>
<td>1,237</td>
<td>1,657</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Concentrates, g/kg milk</td>
<td>1</td>
<td>124</td>
<td>189</td>
<td>245</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Breeding value (TMI)</td>
<td>107</td>
<td>120</td>
<td>122</td>
<td>123</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Age at 1st calving, mo</td>
<td>32.4</td>
<td>31.1</td>
<td>30.1</td>
<td>29.4</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Milk performance

- C0: 5,093 kg
- WG1: 5,813 kg
- WG2: 6,597 kg
- WG3: 6,824 kg
Veterinary costs and fertility

<table>
<thead>
<tr>
<th>Item</th>
<th>C0</th>
<th>WG1</th>
<th>WG2</th>
<th>WG3</th>
<th>P - Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinary costs, cent/kg milk</td>
<td>0.51</td>
<td>1.05</td>
<td>1.13</td>
<td>1.06</td>
<td>0.051</td>
</tr>
<tr>
<td>Veterinary costs, €/cow/y</td>
<td>26.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>59.3&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>73.8&lt;sup&gt;c&lt;/sup&gt;</td>
<td>71.1&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>0.001</td>
</tr>
<tr>
<td>NRR 90, %</td>
<td>71.0</td>
<td>61.4</td>
<td>60.8</td>
<td>61.3</td>
<td>0.176</td>
</tr>
<tr>
<td>Insemination index</td>
<td>1.52</td>
<td>1.61</td>
<td>1.62</td>
<td>1.60</td>
<td>0.800</td>
</tr>
<tr>
<td>SCC, x1,000/ml</td>
<td>230</td>
<td>190</td>
<td>168</td>
<td>184</td>
<td>0.067</td>
</tr>
<tr>
<td>Calving interval, d</td>
<td>410&lt;sup&gt;a&lt;/sup&gt;</td>
<td>396&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>393&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>388&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.026</td>
</tr>
</tbody>
</table>
Economics

Marginal income, cent/kg milk

Marginal income, €/cow

C0  WG1  WG2  WG3

C0  WG1  WG2  WG3
Take home messages

- Organic dairy production without concentrates is possible

- Need for adapted dairy production

- Marginal income ≠ milk price * milk performance
Questions?