Reproductive Efficiency and Management in Cattle

Part #1

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How Does Poor Reproductive Efficiency Affect Dairy Farm Operating Income?
How Does Poor Reproductive Efficiency Affect Dairy Farm Operating Income?

- Long days open and long calving intervals:
  - Less milk is shipped and thus, cash flow is reduced
Cost of Poor Reproductive Management

- Every undetected cost approximately $60

- Every day a cow remains open past 100 DIM (postpartum):

  Cost = ~ $ --------------------------
Table 2. Change in daily milk yield, days in milk, 305-day ME milk, and reproductive performance for Holstein herds – stratified by calving interval

<table>
<thead>
<tr>
<th>Item</th>
<th>&lt;13</th>
<th>13 to 13.9</th>
<th>14 to 14.9</th>
<th>15 to 15.9</th>
<th>16 to 16.9</th>
<th>&gt;16.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of herds</td>
<td>174</td>
<td>1,416</td>
<td>1,856</td>
<td>919</td>
<td>290</td>
<td>161</td>
</tr>
<tr>
<td>Average herd size</td>
<td>83</td>
<td>159</td>
<td>160</td>
<td>157</td>
<td>125</td>
<td>165</td>
</tr>
<tr>
<td>Daily milk yield (lbs.)</td>
<td>66.5</td>
<td>67.1</td>
<td>64.2</td>
<td>60.3</td>
<td>57.3</td>
<td>53.5</td>
</tr>
<tr>
<td>Days in milk</td>
<td>156</td>
<td>178</td>
<td>197</td>
<td>216</td>
<td>236</td>
<td>262</td>
</tr>
<tr>
<td>Voluntary waiting period (days)</td>
<td>56</td>
<td>57</td>
<td>56</td>
<td>57</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>Days to 1st service</td>
<td>74</td>
<td>82</td>
<td>93</td>
<td>105</td>
<td>120</td>
<td>140</td>
</tr>
<tr>
<td>Conception rate 1st service</td>
<td>47</td>
<td>41</td>
<td>40</td>
<td>40</td>
<td>42</td>
<td>47</td>
</tr>
<tr>
<td>% heat observed</td>
<td>53</td>
<td>50</td>
<td>44</td>
<td>38</td>
<td>33</td>
<td>26</td>
</tr>
<tr>
<td>Projected 305-day ME milk (lbs.)</td>
<td>22,751</td>
<td>23,652</td>
<td>23,264</td>
<td>22,404</td>
<td>21,592</td>
<td>20,791</td>
</tr>
</tbody>
</table>

1/ DairyMetrics reports, processed by Dairy Records Management Systems, Raleigh, N.C., were generated on Sept. 11, 2002, using current DHId information for Virginia Holstein herds that have a twice-daily milking schedule and 25% or less of the services were to non-AI sires.

![Graph showing the effect of increasing pregnancy rate on milk, cow, and total returns](image)

**Figure 2.** Predicted effect of increasing pregnancy rate on milk/cow/day and net marginal returns.

Every 1% increase in PR = $............

Dr. Overton, Univ. of Georgia
Reproductive Efficiency and Management in Cattle

- Understand anatomy and physiology of reproduction
- Know the hormones of reproduction, and understand their sources, targets, and their functions
- Know the reproductive cycle (estrous cycle, gestation, anestrous period, etc.) of the cow
- Comprehend

Reproductive Efficiency and Management

- Recognize
- Keep complete and accurate reproduction records
- Identify the critical weaknesses and prioritize them
- Use the knowledge to develop management practices and implement changes to achieve your goals
- Goals should be
Calving interval components

Calving Interval

- Conception (breeding)
- Gestation/Pregnant (~9.5 mo.)
- Dry period (45-60 days)
- Lactation (10 mo.)
Fertility factors organized according to who/what controls them

Adapted from Senger, 2003
Grouping cows for Efficient Management

- **GROUP I**: Early postpartum cows (0-45 days postpartum)
  - 0-10 days postpartum

- **GROUP II**: Postpartum breeding (45-120 days postpartum)
  - Reproductive management
    - Intense
    - Implementing systematic breeding program
    - Identify
    - Pregnancy checks
  - Nutritional management (Peak lactation)

- **GROUP III**: Pregnant lactating cow (> 120 days postpartum)

- **GROUP IV**: Dry cows

Reproductive Parameters

- Pregnancy Rate

- Days Open

- Average Days to First Breeding

- % Heat Detection
Reproductive Parameters

First Service Conception Rate

Overall Conception rate

Breeding Per Conception

Calving Interval

Reproductive Cull Rate

Reproductive Performance Goals

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Ideal Goals</th>
<th>Realistic Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive Cull Rate</td>
<td>&lt; 8 %</td>
<td>-----</td>
</tr>
<tr>
<td>% Heat Detection</td>
<td>&gt; 70</td>
<td>&gt;---</td>
</tr>
<tr>
<td>Average Days to First Breeding</td>
<td>70 – 75 d</td>
<td>---- days</td>
</tr>
<tr>
<td>First Service Conception Rate</td>
<td>60%</td>
<td>-----%</td>
</tr>
<tr>
<td>Overall Conception rate</td>
<td>50-55%</td>
<td>-----%</td>
</tr>
<tr>
<td>Breeding Per Conception</td>
<td>&lt; 2</td>
<td>-----</td>
</tr>
<tr>
<td>Days Open</td>
<td>110</td>
<td>----- days</td>
</tr>
<tr>
<td>Calving Interval</td>
<td>13 months</td>
<td>13.5 Months</td>
</tr>
<tr>
<td>Pregnancy rate</td>
<td>&gt; 25%</td>
<td>24 %</td>
</tr>
</tbody>
</table>
Pregnancy rate = Heat detection X-------------------------
Maintaining Pregnancy rate
(Practical approach)

1000 cows

We need 1000 pregnancy

Calving Interval Goal = 13 month

1000 / 13 or calving interval = ~ -------- preg./mo

1000 / 56 weeks = ~ 18 pregnant / week

Take Home Message

• Reproductive problems are seldom due to a single cause

• Pay extra attention to the cows-----------------
  -----------------------------------------------
  ------------------------------------------------

• Overall health is important, sick cows don’t do well reproductively
Take Home Message

• The effects of disorders on reproductive performance, culling, and profit are more severe in older cows.

• Cows with mastitis and those that have calving difficulties and treated for retained placenta are at risk to have other problems (ovarian cysts, uterine infections, etc.) and require more attention.

• Good sanitation and vaccination program can prevent many reproductive disorders