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W152-Estimating Losses Using Somatic Cell Counts

The University of Tennessee Agricultural Extension Service

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Somatic Cells
- Primarily made up of white blood cells
- Used to gauge the level of infection in the udder

Factors Affecting SCC
- Infection is primary cause of SCC increases
- Uninfected glands: SCC not significantly influenced by lactation number, stage of lactation, estrus, heat stress, exercise, stray voltage or presence of other infections
- Infected glands: SCC can be exaggerated by factors that cause a decrease in milk production (i.e., a dilution effect)

Infection Status
- < 200,000 cells/ml = uninfected udder
- > 200,000 cells/ml = infected udder
  1. Infection is occurring
  2. Has recently occurred, or
  3. The mammary gland is still recovering from an infection, which may take days, weeks or longer
- The more severe the infection, the higher the SCC

Losses Due to Mastitis
- Decreased milk production
- Discarded milk
- Increased treatment costs
- Premature culling
- Decreased genetic potential
- Decreased reproductive performance
- Death
- Loss of milk quality premiums
- Loss of milk market due to high SCC
- Contamination of bulk tank with antibiotics

Table 1. Estimating Production Losses and Infection Level Using Bulk Tank Milk SCC

<table>
<thead>
<tr>
<th>Bulk tank milk SCC</th>
<th>% Production loss*</th>
<th>% Quarters infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>200,000</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>500,000</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>1,000,000</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>1,500,000</td>
<td>29</td>
<td>48</td>
</tr>
</tbody>
</table>

*Production loss calculated as a percent of production expected at 200,000 cells/ml

Source: Eberhart, 1982
Economic Losses From Production
To calculate economic losses, average the herd (or group) SCC over a one-year period and use Table 2 to estimate production losses per lactation number.

A. Calculate pounds lost for 1st lactation cows:

\[
\text{No. Head} \times \text{Pounds lost} = \text{Pounds lost 1st lactation (A)}
\]

B. Calculate pounds lost for 2nd+ lactation

\[
\text{No. Head} \times \text{Pounds lost} = \text{Pounds lost 2nd+ lactation (B)}
\]

C. Calculate annual production losses

\[
\text{A} + \text{B} = \text{Total pounds lost}
\]

D. Calculate financial losses

\[
\text{Average milk price/pound} \times \text{Total pounds lost} = \text{Annual financial loss due to mastitis}
\]

Economic Losses From Premiums
In some areas, premiums are awarded based on SCC. Premium opportunity information needs to come from the processor or milk cooperative that is buying your milk.

Your SCC Goal: _______________

A. Calculate potential premium difference

\[
\text{Max. SCC premium @ goal} - \text{Current SCC premium received} = \text{Potential premium difference (cwt)}
\]

B. Calculate monthly premium opportunity

\[
\text{Avg cwt milk shipped/month} \times \text{Potential premium difference} = \text{Current monthly premium opportunity}
\]