Quality Milk on Pasture-Based Dairy Farms

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DABVP-Beef and Dairy Cattle
Overview

• Present Status of Industry
• Why Milk Quality is Important
• Systematic Approach to Addressing Milk Quality
Present Status

- 750,000 Somatic Cell Count (SCC)
- Canada < 500,000 SCC
- European Union (EU), Australia, New Zealand < 400,000 SCC
- EU demands < 400,000 SCC from imported milk
  weighted average of pool (USA interpretation)
  for all herds in pool (EU interpretation)
- Originally to be implemented 10/1/10
- Still open ended, waiting on EU’s response
Present Status

• NCIMS voted down reducing SCC to 400,000
  26 to 25
• 10-30 % of producers average > 400,000
• This makes up 10% of the milk supply
Stricter Standards

- Industry knows that milk < 250,000 extends shelf life 2 days, which increases profits 15%
  - Hillmar (California and Texas) ≤ 400,000
    - Krogers ≤ 250,000
Why Milk Quality is Important
Milk Quality and Production

• For each increase in somatic cell score (linear score) there is a decrease in 0.6-1.3 pounds of milk/day produced.

• Lower SCC increases premiums
Milk Quality and Health

• Lower SCC herds have fewer clinical and subclinical cases of mastitis
• Consumers expect milk from healthy cows
• Mastitis, especially, toxic mastitis, can cause pain as well as death (Animal Welfare/public perception)
Milk Quality and Reproduction
## Milk Quality and Reproduction

University of Missouri

<table>
<thead>
<tr>
<th></th>
<th>Days</th>
<th># of Cows</th>
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<td><strong>1st Lactation</strong></td>
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<td>SCC &lt;400,000</td>
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<td>SCC 401-800,000</td>
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</table>
Mastitis and Reproduction

- Cows with clinical case(s) of mastitis have increased days open
- They have disrupted heat cycles
- They have increased abortions
- This is especially pronounced if the case of mastitis occurred prior to breeding
- Likewise, gram negative organisms cause more problems (endotoxins and prostaglandins)
Conclusions

• It is no longer if but when the 400,000 SCC limit will be enacted.
• It will benefit the consumer as well as the farmer
• The benefits to the farmer will be through the health/reproduction of the cow and premiums for higher quality milk!
Excellence should be our Goal

• Do not limit yourself to 400,000
Systematic Approach to Milk Quality
MASTITIS: Three factors

- Cow
- Bacteria
- Management
Host/Cow’s Defense

- Teat sphincter
- Keratin plug
- Immune system
Somatic Cell Count (SCC)

- Cow’s defense
- Neutrophil (white blood cells) most common
- Enhanced by nutrition
Pathogen/bacteria

• Contagious vs. Environmental
• Or both?
Environment/management

- Milking procedure
- Housing
- Cow comfort
- Treatment
Nerves Carry Message of Stimulation
To Brain and Pituitary Gland

Let Down Hormone Goes to Udder
In Blood

Pituitary Gland

Heart
Are Your Cows Clean or Dirty?
What do the teat ends look like?
Dip coverage?
It is teat dip, not teat end dip
Bacterial Cultures

• Bulk Tank
  – Weekly / Monthly
  – Not a safety net!!
Bulk Tank Cultures

• Have milk hauler take 2\textsuperscript{nd} take sample for 3 successive pick-ups
• Date and then freeze samples until you have all 3 (Mycoplasma)
• Submit to Lab
• Lab should run a composite culture
Interpretation

**Contagious**
- Staph aureus
- Strep ag
- Mycoplasma
- +/- Strep uberis
- Concentrate on the cows (i.e. cultures)
- Culling
- Segregation

**Environmental**
- Coliforms
- Environmental streps
- Coagulase Negative Staph (CNS)
- Concentrate on the environment (i.e. cleanliness)
Individual Cow Cultures

- Individual Cows
  - All fresh cows
    - Includes first lactation
  - All cows with a clinical case of mastitis
  - Any purchased cows
Individual Cow Cultures

• Every case of mastitis should have a sample taken for culture.
• Prep teat
• Discard first several squirts of milk
• Angle teat/milk into sample bottle
• Place date, cow #, quarter affected, and then freeze sample
Lactating Treatment

- Sensitivities
- Labeled drug use
- Lactating Protocol
Dry Cow Therapy

• Higher cure rates over lactating
• Higher concentrations of antibiotics
• Reduces new infections, first two weeks
• Clinical mastitis reduced at freshening
• Eradication of Strep ag
• Increases milk production first 120 days
  – Berry UCDavis Dairy Sci 96 (179 kg P<0.01)
Orbeseal®

- Cows remain vulnerable because teats stay open throughout much—sometimes all—of the dry period.*

Orbeseal:
Missouri Field Trial

Production data through June 2010

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Plan of Action

Pumpkin’s grandson
Develop Action Plan

• “A good plan today is better than the perfect plan tomorrow.”

• General George S. Patton
Develop Action Plan

• Who will be responsible for what?
• How will you measure and monitor?
• When will the plan be implemented?
3 M’s

- Measure
- Monitor
- Manage
3 M’s: Example

Measure
Monitor
Manage

Bulk Tank Somatic Cell Count (SCC)
For 2010-2011
3 M’s Example: Hot Sheet

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<th>In</th>
<th>Calv</th>
<th>Name</th>
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<th>Date</th>
<th>Curr T.D.</th>
<th>Curc SCC</th>
<th>Curr T.D.</th>
<th>T.D.</th>
<th>Curr %Fat</th>
<th>%Prt</th>
<th>Pre T.D. SCC</th>
<th>Lot</th>
<th>C Pot</th>
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3M’s Example:
List of Chronic Cows

| Barn Name | Milk | Days In | Calv Date | Curr Prev Milk | Cur Pre | T.D. T.D. | SCC | SCC r03 | SCC r04 | SCC r05 | SCC r06 | SCC LTD | SCC Act | SCC Act | SCC SCC | SCC SCC | SCC SCC | SCC | Milk | T |
|-----------|------|---------|-----------|---------------|----------|-----------|-----|---------|---------|---------|---------|---------|--------|---------|--------|--------|--------|--------|--------|     |      |   |
| 2429      | 148  | 9-08-10 |           | 52.2          | 52       | T.D. T.D. | 3676| 800     | 857     | 162     |         | 6966 C  | 90      | 919      | 2599   | 528    | 2425   |       |      |   |
| 759       | 335  | 3-05-10 |           | 74.4          | 72       | T.D. T.D. | 2111| 1600    | 2986    | 5199    | 1213    | 174    | 28214 B| 90      | 919      | 1213   | 3940   | 528    | 18241 C|      |     |   |
| 755       | 241  | 6-07-10 |           | 62.5          | 73       | T.D. T.D. | 1715| 696     | 1493    | 1213    | 3940    | 528    | 18241 C| 90      | 919      | 1213   | 3940   | 528    | 18241 C|      |     |   |
| 2199      | 133  | 9-23-10 |           | 93.6          | 90       | T.D. T.D. | 919 | 2599    | 528     | 2425    |         | 9536 C  | 90      | 919      | 1213   | 650    |        |      |     |   |
| 2250      | 116  | 10-10-10|           | 72.2          | 90       | T.D. T.D. | 919 | 1213    | 650     |         |         | 7800 C  | 90      | 919      | 1213   | 650    |        |      |     |   |
| 2259      | 111  | 10-15-10|           | 86.2          | 89       | T.D. T.D. | 919 | 373     | 400     |         |         | 7367 C  | 90      | 919      | 1213   | 650    |        |      |     |   |
| 2293      | 331  | 3-09-10 |           | 40.4          | 45       | T.D. T.D. | 857 | 400     | 857     | 87      | 50      | 17976 C| 90      | 919      | 1213   | 650    | 87     |      |     |   |
| G-375     | 437  | 11-23-09|           | 40.8          | 44       | T.D. T.D. | 650 | 460     | 2786    | 1300    | 398     | 27114 A| 90      | 919      | 1213   | 650    | 87     |      |     |   |
| 2227      | 103  | 10-23-10|           | 102.0         | 109      | T.D. T.D. | 400 | 606     | 1213    |         |         | 8037 A  | 90      | 919      | 1213   | 650    | 87     |      |     |   |

***Averages for 9 animals (4% of herd)***

| 217       |         | 69.4 | 74 | 1265 | 1064 | 1194 | 1862 | 1936 | 398 | 14583 |
High Quality Milk: Summary

• **An attitude of a desire for excellence**
  • Proper milking procedures / teat dip
  • Properly maintained milking system
  • Effective dry cow therapy
  • Cost effective treatment protocols
  • Bacteriological monitoring system
    – monthly bulk tank analysis
    – sample, culture & treat clinical case
  • Culling and segregation
    – Chronic and contagious
  • Measure, Monitor, and Manage
NMC
FIVE POINT CONTROL PROGRAM

• Teat Dipping
• Dry Cow Therapy
• Milk Machine Maintenance
• Treat Clinical Cases Early and Thoroughly
• CULL CHRONICS