Value of Bulk Milk Surveillance

- Commitment of the dairy industry and government to animal health, food safety, milk quality and emergency preparedness.
- Assist the $1.8 billion dairy industry with an early detection and monitoring system for producers
  - animal health
  - zoonotic pathogens
- Assure everyone that wholesome milk is harvested from healthy cows.
Why Bulk Milk?

- Easy for producer
- Screening of many lactating animals at once
- Product that goes to processor and consumer
- Capitalize and build partnerships around existing infrastructure
  - Existing logistic network of cold transport
  - NYSCHAP Program

Limitations of Bulk Tank Testing

- No correlation between number of positive animals and level of detection in bulk tank milk
- One "supershedder" can produce as many organisms as a group of low-level shedders
- Animal-level follow up is needed to assess number of positive animals
Your Options

- Animal Health Pathogens
  - Mastitis Pathogens, BVD
- Foodborne and Zoonotic Pathogens
- Milk Quality Parameters
- Emergency Preparedness

Animal Health Pathogens

- BVDV (bovine viral diarrhea virus)
- *Salmonella*
- Johne’s Disease
- Mastitis Pathogens
BVD

- Costly diseases of cattle
  - Reduced reproductive performance
  - Increased premature culling
  - Decreased milk production
  - Depressed immune system → other diseases
  - Abortion

Foodborne and Zoonotic Disease

Disease in humans from food (foodborne) or contact with animals (zoonotic)

- *Listeria monocytogenes*
- *Salmonella*
- STEC (*e.g. E. coli* 0157:H7)
- *Campylobacter*-under development
- Q-fever
Salmonella

- Potentially resistant to a wide range of antibiotics (e.g. *Salmonella* DT104)
- Diarrhea
- Calf mortality
- Communicable between animals and humans
- Control recommendations available

Listeria monocytogenes

- Animal health - sheep, cattle
  - abortion
  - sepsis
  - encephalitis
- Public health - humans
  - abortion
  - sepsis
  - encephalitis
- Silage quality key in prevention
Mastitis Pathogens

- Contagious pathogens
  - *Streptococcus agalactiae*
  - *Staphylococcus aureus*
  - Mycoplasma
- Other pathogens
  - Streptococci
  - Coliforms
  - Prototheca
  - other aerobic micro-organisms.

*Staphylococcus aureus*

- Contagious mastitis in cattle
- Decrease in milk quantity
- Decrease in milk quality
- Poor response to treatment
- Penicillin resistance
**Streptococcus agalactiae**

- Highly contagious mastitis in cattle
- Decreased milk production
- Large increase in bulk tank somatic cell count
- Impact on shelf life due to SCC
- Potential increase in SPC

---

**Mycoplasma**

- Calves
  - otitis media - head tilt
  - polyarthritis - swollen joints
  - pneumonia
- Cattle
  - Mastitis
  - arthritis
- Contagious
  - Respiratory secretions
  - Milk
- No response to treatment
Example: Mastitis Pathogens

Sensitivity of Repeated Bulk Tank Culture

Number of Tests

Probability of detection

- S. agalactiae
- S. aureus
- Mycoplasma

Bulk Milk Surveillance
Project Enrollment
Enrollment into the Bulk Milk Database Program

- Producers talk with their veterinarian about:
  - what pathogens they want to test
  - *frequency* of testing
- Dairy producers can sign up:
  - With QMPS staff member
  - Herd veterinarian
  - NYSCHAP Veterinarian

Email/Fax

- Once an event has been scheduled, an email/fax is sent to:
  - Hauler
  - Producer
  - Cooperative
  - QMPS
Sample Transport from Farm to Lab

- The normal route of sample submission is:
  - Hauler takes an extra sample with lime green vial and producer sticker attached
  - Sample then goes to milk plant or hauling location and is put into the Dairy One Courier System
  - Once sample arrive at Ithaca QMPS, sample(s) are sent to appropriate laboratory

What if You Test Positive?

For each test, we have recommendations for acting on a positive result.
Follow-up

We encourage producers to share testing results with herd veterinarian

All results are CONFIDENTIAL! However, with producer permission, results can be sent directly to herd veterinarian, NYSCHAP veterinarian or other farm consultants.

What Bulk Milk Told Us

<table>
<thead>
<tr>
<th>Test</th>
<th>Bulk Milk Surveillance NY</th>
<th>Bulk Milk Surveillance NAHMS (USA)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>S. Aureus</em></td>
<td>22%</td>
<td>41%</td>
</tr>
<tr>
<td>Mycoplasma</td>
<td>0</td>
<td>6.5%</td>
</tr>
<tr>
<td>BVDV</td>
<td>0</td>
<td>4.0%</td>
</tr>
<tr>
<td>STEC's</td>
<td>3%</td>
<td>NA</td>
</tr>
</tbody>
</table>
Emergency Preparedness

- Develop infrastructure for sample collection
- Establish working relationships
- Train personnel that know and work with the dairy industry

12/21/2009

Bulk Milk Surveillance - Our Vision -

- Easy and affordable → builds on existing infrastructure of cold milk transport
- Provides producers with early detection of problems and tools to monitor management
- Surveillance tool for animal health, food safety and foodborne pathogens
- Framework for emergency preparedness
- Shows consumers the commitment of our dairy industry to cow health, milk quality, and safety of dairy products.
Thank You
To sign up or for information, contact:
Tonya Van Slyke
Quality Milk Production Services
22 Thornwood Drive, Ithaca, NY 14850, phone:
607-255-8202
e-mail: tmv5@cornell.edu