Secure Milk Supply Plan: Federal, State, Industry, and Academic Partnership

Eric Paulson

Introduction

- FMD = National animal health emergency
  - Animal, product movement restrictions
- Dairy industry: Just-in-time supply
  - Disrupted movement will impact normal business and raw milk supply
- Pre-event planning critical to maintain dairy industry survival and control FMD

“Secure Milk Supply Plan”

Why Should We Be Concerned?

World Organization for Animal Health (OIE) has 178 member countries
- 66 countries free of FMD
- 96 countries are endemic and have never been free of FMD
- 11 countries have free zones either with or without vaccination
- 5 countries were free and recently suffered from a re-emergence of FMD

Business Continuity Planning

- Minimize unintended negative effects of disease and disease response, while achieving response goals
  - Control or eradicate disease without “destroying” the industry
- Provide risk-based solutions derived from scientific data, national and international standards
  - Ability to continue key operations of production of safe, high quality food

USDA FMD Response Plan

- Establish FMD Control Area
  - Infected and Buffer Zone
  - Quarantine
  - Movement by permit, only, based on risk
    - Movement controls in place until Control Area released
- Secure Food Supply Plans working on business continuity for affected, not infected premises
Why do we need the SMS Plan?

Frequent milk movements

Just-in-time product

Limited capacity, time

Maintain income, business

1/31/17

Secure Milk Supply Plan

• Partnership
• Voluntary participation
• Continued shipment of milk and milk products
• Provides tools to help protect cattle from FMD
• Guidance for issuing permits

1/31/17

SMS Partners

National Partners

Industry
• Working groups, topic experts
Academia
• Iowa State University
• University of California, Davis
• University of Minnesota
USDA-APHIS-VS
• National Preparedness and Incident Coordination Center (NPIC)
• Centers for Epidemiology and Animal Health (CEAH)

Regional Partners

California
Colorado
New England States Animal Agricultural Security Alliance (NESAASA)
Mid-Atlantic States
• VA, MD, TN, NC, SC, DE, WV, NJ, NY, PA, GA, OH
Michigan
Pacific Northwest
• WA, OR, WI, MN

1/31/17
Other Sources of Raw Milk

- 17 States outside the 12-State area supplied unpasteurized milk to cooperating state plants: AL, AR, FL, IL, IN, KS, KY, LA, MA, MI, MS, MO, NM, OH, OK, TX, WI
- 11 cooperating states + 17 other supply states = a supply area of 28 states
- Milk moves among the 11 states
  - Primarily from North to South (but sometimes from South to North)
  - Milk moves among the 11 cooperating states, even for deficit states

Daily Milk Sales, 2013

<table>
<thead>
<tr>
<th>Item</th>
<th>PA</th>
<th>SC</th>
<th>TN</th>
<th>VA</th>
<th>WV</th>
<th>11 States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cows, 000's</td>
<td>533</td>
<td>16</td>
<td>48</td>
<td>95</td>
<td>10</td>
<td>1,500</td>
</tr>
<tr>
<td>Dairy farms</td>
<td>7200</td>
<td>75</td>
<td>390</td>
<td>640</td>
<td>80</td>
<td>14,483</td>
</tr>
<tr>
<td>Herd size, cows</td>
<td>74</td>
<td>213</td>
<td>123</td>
<td>148</td>
<td>125</td>
<td>104</td>
</tr>
<tr>
<td>Milk/cow, lb</td>
<td>19,822</td>
<td>16,500</td>
<td>15,959</td>
<td>18,337</td>
<td>15,200</td>
<td>20,431</td>
</tr>
<tr>
<td>Farm price, $/100 lb</td>
<td>$21.60</td>
<td>$23.00</td>
<td>$21.50</td>
<td>$22.90</td>
<td>$20.30</td>
<td>$21.40</td>
</tr>
<tr>
<td>Milk income farm/day</td>
<td>$11.73</td>
<td>$10.40</td>
<td>$9.40</td>
<td>$11.50</td>
<td>$8.45</td>
<td>$11.92</td>
</tr>
<tr>
<td>Milk income herd/day</td>
<td>$968</td>
<td>$2,218</td>
<td>$1,157</td>
<td>$1,708</td>
<td>$1,057</td>
<td>$1,244</td>
</tr>
<tr>
<td>State milk prod., mil. lb</td>
<td>10,565</td>
<td>264</td>
<td>767</td>
<td>1,742</td>
<td>152</td>
<td>30,487</td>
</tr>
<tr>
<td>Milk income state/day</td>
<td>$6,252,239</td>
<td>$166,356</td>
<td>$451,224</td>
<td>$1,092,935</td>
<td>$84,537</td>
<td>$18,024,700</td>
</tr>
</tbody>
</table>

Summary

- If there were total movement restrictions for 48 hours in all 12 states and all milk was lost:
  - ~ $2,450 per farm in lost milk sales
  - ~ $36,000,000 in lost farm milk sales
- Longer term losses depend on the size and location of control areas
- Farms in control areas may be prevented from shipping milk for several days, threatening viability

Moving Milk During FMD Outbreak

Guidance

- Control Areas established around Infected Premises
  - Manage animal, animal product movement within, into, out of Control Area
- Regulatory Officials balance risks
  - Allowing raw milk movement
  - Not allowing movement, on-farm disposal of raw milk
- Decision based on risk, outbreak, Control Area characteristics

Proactive Risk Assessments

- Risk of moving raw milk from an FMD infected, but undetected, dairy farm to processing
- Shed the virus 2 to 4 days before clinical signs appear
- FMD is NOT a public health or food safety concern
Risk of Raw Milk Movement

- Current industry practices
- Grade A Pasteurized Milk Ordinance (PMO)

Risk Decreases with Biosecurity

Biosecurity Protection

- Routine level of biosecurity is not sufficient to protect from a newly introduced, highly contagious disease (e.g., HPAI, FMD, CSF, ASF)
  - No herd or flock immunity
  - High levels of pathogen shedding and low levels of resistance
  - Recognize biosecurity is expensive, inconvenient for people
  - Losses from FMD infection expensive, inconvenient for cattle

Principles of Biosecurity

Producer’s responsibility to keep their animals from becoming infected

1. Operation-specific enhanced biosecurity plan
2. Biosecurity Manager
   - Develop, monitor plan
3. Line of Separation (LOS)
   - Nothing should cross LOS that can introduce virus
   - Outdoor housed animals more difficult to protect from infection, but LOS concept can help

Line of Separation (LOS)

- A clearly identified boundary around or within a dairy premises to separate off-farm traffic from on-farm movements of vehicles, items, people, animals
- Only cross LOS through a controlled access point following appropriate biosecurity measures

SMS Plan: LOS
SMS Plan: LOS

Every Tanker Entry Crosses LOS

Milk House OUTSIDE LOS

Biosecurity Impact

- Risk assessment = Negligible
- Industry, Officials = Acceptable
- Dairies in a Control Area
  - Move raw milk until told to stop?
  - Stop raw milk until permitted to move?
- Balance the risks...
Milk Movement from Control Areas in FMD Outbreak

Dairy premises that are **NOT Infected, Suspect, or Contact Premises** will be informed by Responsible Regulatory Officials:

**EITHER**
- Continue moving milk to processing
  - May require a Premises Identification Number (PIN) and some form of pre-certification by state

**OR**
- Stop moving milk, become a Monitored Premises
  - Requires having a valid PIN, be inspected to ensure adequate biosecurity and surveillance, and obtain a milk movement permit

http://securemilksupply.org/Assets/SMS-Milk-Movement-FMD-Control-Areas_FINAL.pdf

Milk Processor Recommendations

FMD Virus in Dairy Products

- Animal health issue: Cows can shed FMD virus in milk before showing clinical signs
- Standard milk pasteurization (HTST) and some cheese processing times and temperatures used in the US are not sufficient to completely eliminate FMDv from dairy products
  - No research on higher times/temps ability to fully inactivate FMD virus
- **FMD is not a public health or food safety concern**

Inactivation of FMDv in Milk, Cream

<table>
<thead>
<tr>
<th>Animal Consumption</th>
<th>Human Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HTST process applied twice; or</td>
<td>1. A process applying a minimum temperature of 132°C (270°F) for at least 1 second (UHT), <strong>-OR-</strong></td>
</tr>
<tr>
<td>2. HTST combined with another physical treatment</td>
<td>2. Milk with pH less than 7.0, a process applying a minimum temperature of 72°C (161°F) for at least 15 seconds (HTST), <strong>-OR-</strong></td>
</tr>
<tr>
<td>• Maintaining a pH 6 or lower for at least 1 hour or</td>
<td>3. Milk with pH of 7.0 or over, the HTST process applied twice</td>
</tr>
<tr>
<td>• Additional heating to at least 72°C (161°F) combined with desiccation;</td>
<td></td>
</tr>
<tr>
<td>3. UHT combined with another physical treatment referred to in point 2 above</td>
<td></td>
</tr>
</tbody>
</table>

Remaining Challenges

- Pre-certification process
  - Farms, processors
- Information management and timely, scalable permitting
- FMD vaccine surge capacity
- Consumer outreach and education
- Mitigation of risk to rapidly growing dairy export market
Special Thanks

• Danelle Bickett-Weddle, DVM, MPH, PhD, DACVPM
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• Geoff Benson
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Questions?

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Welcome input and engagement!