Frontline Implications of Agroterrorism

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Examine risk of terrorist attack or natural disruption of the U.S. agriculture sector

Q. Are the public and private sectors prepared to respond to these threats?

Key vulnerabilities:
1. Insufficient quantity of Foot and Mouth Disease (FMD) vaccine
2. Gaps in US Biosecurity
3. Need more robust scrutiny of imports
4. Absence of traceability
5. Resource constraints
6. Gaps in early detection
7. Data sharing for regulated diseases
Defining Law Enforcement’s Role in Protecting American Agriculture from Agroterrorism

Knowles et al., 2005
Terrorism and Economics

“In the war on terrorism, the fields and pastures of America’s farmland might seem at first to have nothing in common with the towers of the World Trade Center or busy seaports. In fact, however, they are merely different manifestations of the same high-priority target, the American economy.”
Senator Susan Collins (R-ME) (2003)
Chairman, Homeland Security and Governmental Affairs Committee

“Agroterrorism is not about killing cows. It’s about striking at the fundamental heart of our economy.”
David Franz, Director, NABC (2004)
Agriculture Under Attack

- Agriculture:
  - Foundation of U.S. national security
  - Fundamental economic icon
  - Manifestation of “western greed”
Agriculture Vulnerabilities

• Production occurs primarily in unsecured environments
• Geographical dispersion makes security implementation and maintenance difficult
• Livestock / grain commingled and increasingly concentrated in centralized development or processing points
• Heavily dependent upon transportation
  – “Agromovement”
  – Facilitates economic output
  – Achilles heel

“Combine, Differentiate and Connect”
U.S. Beef Industry

• Most fragmented of meat industries
• Most dependent on assembly and transportation
• Most important economically
  = Most vulnerable!!!!!
KS: ~20-25% of Nat’l Cattle Feeding Industry

85-90% I-35 / I-70 sector
Foot and Mouth Disease
FMD Best Case Scenario: Identified/Contained

- Primary effect = cessation of exports
- Model: BSE
- Direct cost
  - Estimates
    - $135-140/hd (Bowling, Cattle-Fax) = $11/cwt
    - $3.5 B in 2004 alone (Cattle-Fax)
    - Constant battle to reestablish export market!
- Closings / Layoff
  - Iowa Quality Beef Supply Cooperative
  - Creekstone Farms Premium Beef
FMD: KS, TX Shutdown (41,500 head capacity) Market Disruption

- **Cattle Perspective**
  - 1350 lb average @ $135/cwt = $1825/hd
  - $75.7 M / day
  - 3.5 multiplier = $264.95 M / day
  - 2 8-hr shifts equivalent = ~$16.6 M / hr
  - ~$275,000 / min (more later!)

Top 5 customers = ~ 20% of all beef sales

- Wal-Mart (2B lb/yr)
- McDonald’s (1B lb/yr)
- Safeway (.9 B lb/yr)
- Costco (.8 B lb/yr)
- Sam’s Club (.8 B lb/yr)

- ONLY ~25,000 hd / day
  (Top 5 – Doud, 2005)
Regional Stop Movement: Indirect Costs

• Domino effect upon cattle industry
  – Sale barns
  – Order buyers
  – Logistics
• Law enforcement
• Investigative costs
• Temporary/permanent layoffs
  – Community impact?
  – Crime?
Crimson Sky: Potential FMD Spread Following Simulated Terrorist Attack at 5 Locations

Day 30
States Infected: 40
Crimson Sky: Potential FMD Spread Following Simulated Terrorist Attack at 5 Locations

• Potential National Impact
  – (assuming no national stop movement order)
    • Destroyed Herds: 640,847
    • Total animals: 48.5 mil
    • States affected: 47
    • Time required to end disease outbreak: 282 days

• Even if a national “Stop Movement” is ordered on Day 8, by the time the disease is eradicated the nation could still lose 23.6 million animals!
USDA Mock FMD Outbreak – “Hopeless, IA”
FMD Detected in 2300 Hd Swine Operation
(May, 2008)
Source: Jim Dickrell, BeefToday, Summer, 2008

• Hopeless, IA possesses auction market
  – Sale 2 days prior to detection
  – Livestock shipped to several dozen states
  – “In essence, those shipments potentially spread the outbreak nationwide.”

• Results:
  – FMD outbreak stress local resources
  – Spreads quickly
  – Cripple U.S. livestock industry
FMD Worst Case Scenario: Nationwide Shutdown “Million Dollar Minutes”

- Livestock & product value
  - $177.8 B (USDA: ERS 2016 F)
  - ~$685 M / day
  - $42.75 mil / hour (16-hr day)
  - $712,500 / minute
  - Multiplier of 2 = $1,425 mil / minute
BUSINESS IMPLICATIONS
Direct Costs

- Containment / Law Enforcement
- Quarantine and eradication costs
- Production losses
- Disposal of contaminated products and/or destroyed animals
- Disruption of export markets and/or imposition of trade sanctions
FMD Worst Case Scenario Indirect Costs

Hysteria?
Indirect Costs

- “Hysteresis” (Turvey, 2003)
  1) Causes a downward shift in demand
  2) Enhanced risk perception causing demand to become more inelastic
  Thus, consumers become more resistant to decreases in prices that subsequently could restore quantity demanded
- Price Volatility
- Long-term implications / insidious costs
  - Ex. TSA Security check
- Intangible
  - Undermine public’s confidence in, and support for, governmental agencies (RAND, 2004)
- Unk unks
Long-Term Implications: Got Milk?

• Stop Movement NE Animals Only !!!

• Dairy Industry = ~ 5 mil tankers annually

• Requirement for “proof of negative status”
  – Complicated tests and logistics
Key Questions Industry Needs to Ask:
- What is at stake?
- What is the industry willing to invest?
- How much time is available?
- What is the ROI?

Prior to Summit - 25% attendees agreed, “Government and Industry ARE well prepared to rapidly and effectively detect an FMD outbreak.”

– After the Summit...9%! 
Priorities- FMD summit

• Promotion of concept that FMD is the priority in terms of a major animal health threat in U.S.

• Need for active support and funding at state and national level to combat FMD

• Clear communication about:
  – 1. capabilities,
  – 2. limitations, and
  – 3. policies.
62% of survey respondents indicate NOT confident about food supply being secure from terrorism.

41% consider governmental agencies to hold primary responsibility relative to food defense.
Challenges: Thoroughly and Quickly Halting Progression of FMD Outbreak

(FMD Disease Summit)

- False-positive FMD tests
- FMD detection and identification issues
- Lack of policy on when to use vaccinations
- Trade implications of vaccination
- Lack of consensus on quarantines and effectiveness of stop-movement orders
- The effects of stop-movement orders on animal welfare and business needs
- Depopulation and disposal protocols
- Commodity producer group leadership and coordination
- State and federal gov’t coordination
- Clear communication of gov’t policies
Wishful Thinking: Not The Answer!!!
The Platonic fold:

Gap between what you know and what you think you know becomes dangerously wide -
It is here that the Black Swan is produced.

To be resilient, an [entity] must dramatically reduce the time it takes to go from ‘that can’t be true’ to ‘we must face the world as it is.’

Hamel and Valikangas, HBR, 2003
Interdisciplinarity

The Depth of Study Opens Up Relationships at Intersection of 2 (or more) Disciplines

• NIJ Terrorism Project
  – Animal Science / Industry
  – Animal Health
  – Public Health / Environment
  – Economics
  – Sociology
  – Law enforcement
  – Military
  – Intelligence

OECD Seminar: *Inter-discipline of today is the discipline of tomorrow.*
• Why use a mix of disciplines...?

• A. ...the ability to draw on several disciplines also minimizes the risk that this analysis will be inadvertently hijacked by a particular set of oversimplifying assumptions. Such oversimplified assumptions often drive theories and models, and they can also undermine their application if the user loses sight of the fact that these assumptions were oversimplified to begin with. In contrast, the greater the number of disciplines used to support a hypothesis, the greater the probability that accuracy and applicability will be achieved.”
Key Resource Sectors

GAO: Need for continued vigilance relative to FMD

“What makes agriculture and the food chain unique is this tremendous interdependence and connectivity --- every producer, from smallest to largest, could be looked at as critical infrastructure.”

> 750,000 U.S. Beef Producers (90% of whom possess less than 100 head)
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QUESTIONS / COMMENTS?

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