Emergency Response Preparedness: Considerations for the Small Ruminant Industry

NIAA
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Topics

- What
- Why
- How
- When
What and Why of Emergency Response Preparedness

- “Preparedness and response planning for foreign animal disease (FAD) or other incidents is crucial to effectively protect public health, animal health, animal agriculture, the food supply, and the economy.”
What and Why of Emergency Response Preparedness

• “The success of preparedness and response efforts depends on the effectiveness of cooperation among stakeholders”.

Diagram:
- Producers
- State Government
- Cooperation
- Allied Industry
- Federal Government
What do we prepare for?: Adverse Incidents
Adverse Incidents

❖ With or without warning
❖ Small manageable OR large out of control OR something in between
❖ Short, long or lasting impacts
❖ Being prepared = key to reducing losses and ensuring more rapid recovery
Why: Prevent a Crisis

- A time of intense difficulty, trouble or danger;
- A time when difficult or important decisions must be made;
- Adverse incident may or may not result in crisis;
- Intent of an incident management plan is to avert a crisis or manage it and reduce negative impacts.
Example: Incident vs. Crisis

- HPAI in Fraser Valley, BC, Canada
- First flocks 12-1-15
- Total - 11 commercial flocks (7 broiler breeder, 3 turkey, 1 layer), 2 noncommercial flocks and 1 wigeon were found to be infected
- 245,000 birds affected
- No additional infections after 12-19-15

- HPAI in north central US – IA, MN, NE, ND, SD, WI
- First flock March 2015
- Total 206 commercial premises; 9 backyard flocks
- > 48 million birds affected
- Shortages of product
- No additional infections after 6-17-15
- Cost - > $ 1 billion in direct losses
How: ASI Incident Management Plan

- ASI to use National Incident Management System (NIMS) and the Incident Command System (ICS)
- Used by all federal agencies, states, NGOs and private sector
- Allows for coordinated response
How: Incident Management Plan = Holistic System

- Up-to-date monitoring of activities and events affecting the industry
- Identify hazards
- Mitigate hazards if possible
- Prepare for incidents that cannot be mitigated
- Deliver early warnings
- Provide rapid communications
How: Hazards versus Risk

- **Hazard** – any source of potential damage, harm or adverse effects
- **Risk** – chance or probability that an adverse incident will happen
How: Incident Management Plan = Holistic System

- Effectively coordinate the activities among the organizations
- Provide assistance to members and other organizations
- Help to prevent consumer panic and maintain confidence
- Offer a continued assessment of actual and potential consequences of the crisis
- Plan for continuity of business during a crisis
- Assist in providing opportunities for continuity of business operations after the crisis
ASI Incident Management Plan

- Identify potential hazards specific to the sheep industry and evaluate risk
- Provide a system to continue this effort into the future
- If possible, identify risk mitigation measures that may be taken to prevent hazards
- Define the organizational and operational structure under which the incident management will be carried out by ASI
ASI Incident Management Plan

- Define the roles and responsibilities of ASI, its members, and affiliated organizations
- Define the roles and responsibilities of 3\textsuperscript{rd} parties and outline possible interactions with ASI and others
- Provide guidelines for a communications strategy
- Outline steps to exercise and improve the plan
- Review and maintenance of the plan
Risk Management & Risk Mitigation

- **Management** - The identification, assessment, and prioritization of hazards/risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events.

- **Mitigation** - A reduction in the extent of exposure to a hazard and/or a reduction in the likelihood of its occurrence.
Risk Management ≠ Crisis Management

Risk Management strategies:
• a) If possible avoid the risk by deciding not to start or continue with the activity that gives rise to the risk
• b) Remove or prevent the source
• c) Change the likelihood of the risk
• d) Change the consequences
• e) Spread the risk with another party or parties
• f) Retain the risk by informed decision
Incident Management Plan: Maintenance

• The plan should never be finalized
• It should be under constant review (hazards and risk)
• The plan must be tested
• The plan needs to be updated with lessons learned
Hazards: Small Ruminant Diseases of Concern

• **Foreign:**
  - highly contagious
  - US population naive
  - economic loses
  - zoonotic
  - e.g. FMD, RVF, Schmallenberg

• **Domestic:**
  - zoonotic
  - endemic diseases that mutate to cause losses
  - new scientific findings
  - e.g. Q Fever, Johnes, Atypical scrapie
Foreign Animal Disease Hazard = Foot and Mouth Disease

- Said to be most highly contagious virus of animals
- Multiple strains
- US – naïve populations
- Lesions of sheep and goats are subtle with similarities to common diseases (foot rot and soremouth)
Foreign Animal Disease Hazard = Foot and Mouth Disease

- Would it be recognized if sheep/goats were first introduction?
- Would current biosecurity slow/stop spread?
- Are we prepared as an industry?
Biosecurity

- "Bio" refers to life, and "security" indicates protection.
- Biosecurity is the key to keeping livestock, poultry, and horses healthy.
- Biosecurity means doing everything one can to keep diseases out of a herd or flock OR limiting the spread of disease within a flock or herd.
- Biosecurity equates to the steps taken to reduce the chances of an infectious disease being introduced to animals.
How disease is introduced

- Animal traffic
- Human traffic
- Movement of vehicles and equipment
- Environment
- Feed
- Pests – insect vectors, rodents
- Accidental or deliberate introductions
Swine and Poultry Industries Considered Biosecurity Good Until PEDv (2013-14) and HPAI (2015)
NAHMS Sheep 2011

- Overall 28.6% of operations brought in new sheep/lambs from outside flocks with 40% implementing some type of quarantine.
- 48.4% of flocks >500 brought in sheep/lambs with 29.9% implementing a quarantine
- Collectively 27.9% of sheep and lambs added were quarantined
Approximately 80 percent of all operations added sheep in the last 9 years.

Only 33.9 percent of operations accounting for 16.4 percent of new additions administered any type of quarantine prior to commingling.

Over 50 percent of operations reported such nose to nose contacts at shows, sales etc. - less than 30 percent made an attempt to decrease such contact.

Of operations which allowed visitors, only 22.6 percent had any biosecurity requirements for visitors.
Biosecurity is more than a sign
Biosecurity = Attention to detail

- Rendering, Disposal, Culling
- Supplies and Product Delivery
- Equipment
- Replacements
- C&D Protocols
- Transportation
- Visitors (Service, Delivery Neighbors)
- Aerosol - Weather
- Pest/Wildlife control
- Water
- Feed
- Boots, Clothing, Employee behavior
How good is our biosecurity? What would happen if FMD were introduced into the USA?
Foreign Animal Disease Hazard = Rift Valley Fever

- Rift Valley Fever (RVF) is an arthropod-borne, acute, fever-causing viral disease of sheep, goats, cattle and people.
- Mosquitoes – *Aedes, Culex*, others species
- Ruminants are amplifying hosts
- Mainly a disease of sheep
Epidemiology

• Endemic in tropical Africa
  – Cyclic epidemics every 5-20 years
    • Susceptible animal populations
  – Abnormally heavy rainfalls
  – Peaks in late summer
  – Mosquitos in US could serve as vectors
Other Modes of Transmission

• High levels of virus in blood of infected ruminants

• Direct contact or aerosol:
  – Tissue or body fluids of infected animals
    • Aborted fetuses, slaughter, necropsy

• No person-to-person transmission BUT humans possible source of virus for mosquitoes
Mainly a disease of sheep

- Mainly a disease of sheep
- Mortality in lambs under 2 weeks of age approaches 100%
- Mortality in older sheep reaches 30%
- Abortions rates may approach 100%
Zoonotic Outbreak 2006-2007

- Began in Kenya
- Spread to Tanzania and Somalia
- By May 2007
  - Over 1000 cases
  - 300 deaths
  - Case-fatality 23-45%

**Figure 3. Number of reported Rift Valley fever cases (n = 330), by date of illness onset — Kenya November 2006—January 2007**

Center for Food Security and Public Health
Iowa State University - 2007
Would we recognize RVF if it entered the US?
Are we prepared to respond?
Domestic Hazard = Johne’s Disease

- Maybe endemic in sheep population
- Relationship to human Crohn’s Disease but no causal link to date
- Organism very resistant to inactivation even pasteurization
- Found in feces, milk, lymph nodes, etc.
If definitive causal link between Johne’s and Crohn’s found: What is your assessment?

- Is there a risk of Johne’s becoming an adverse incident?
- Could this result in a crisis?
- Can we mitigate the risk?
- Can we prepare for the possibility of definitive science of zoonotic risk?
When do we prepare: Now and continuously!

“This year, I resolve to stay away from unnecessary risks.”
Emergency Response Preparedness Considerations for the Small Ruminant Industry: What is our status?