

AGROTERRORISM



BASICS

OVERVIEW

- Threats to healthy livestock, wholesome crops or processed foods from the introduction of an infectious agent, toxin or other hazardous substance have, and will continue to be a concern for consumers.
- Agroterrorism can be defined as the deliberate introduction of a disease agent, either against livestock or the food chain (crops or animal products), for the purposes of undermining economic stability and/or generating fear. This chapter will focus on the livestock component.
- Agriculture and related industries are easy targets that, if disrupted, could have significant consequences. In our global economy not only the affected nation but also the entire world would suffer from the economic impact of a sudden drop in, or decrease of confidence in, food supplies and animal products.
- All agricultural production, worldwide, is at risk for an agroterrorism attack.
- There are vulnerabilities within agricultural systems that can make livestock producers a target for agroterrorism.
- Globalization of people and animals continues to increase, thus increasing the ease of disease introduction into new regions (emerging diseases).

AGROTERRORISM

- The United States Department of Agriculture (USDA) has classified agents that could potentially be used in an agroterrorism attack against animals (High Consequence Livestock Pathogens). Most of these agents have no human repercussions (zoonotic).
- An excellent example of a very successful attack that still has implications today occurred in 1978-1980 when Rhodesian security forces used anthrax to infect cattle owned by those closely aligned with that country's independence movement. Governmental and infrastructure collapse contributed to the establishment of anthrax a major enzootic problem throughout the country (now Zimbabwe). This single event led to the deaths of thousands of animals and to the contamination of an entire country with anthrax spores. Severe cattle losses continue in unvaccinated livestock today.
- In 1997 farmers who wanted to eradicate rabbits from their farms intentionally released rabbit viral hemorrhagic disease in New Zealand. Farmers smuggled into the country virally infected tissues and infected rabbits. The disease is now endemic in New Zealand and further illustrates the need for effective biosecurity planning and implementation worldwide.

CRITERIA FOR AGROTERRORISM POTENTIAL

To be considered a potential agroterrorist agent the agent should be:

- 1) highly infectious and contagious
- 2) able to attack multiple species, possibly including humans

- 3) able to survive in the environment with little degradation and be easily disseminated
- 4) able to cause a predictable disease pattern with the chances of high morbidity and mortality
- 5) easily acquired or produced with little equipment
- 6) able to cause a resultant disease that can possibly be attributed to a natural outbreak.

VULNERABILITIES IN DEVELOPED AGRICULTURE

● Consolidation

- Food producing animals are reared in larger groups than ever before.
- The intensity in animal production allows farmers to efficiently provide food for the world. However, susceptible animal populations located in a small geographic area make intentional introduction of a single ruminant disease much easier.
- Auction markets are often large, open to many people, difficult to monitor, and mix animals from multiple sources that are then transported to a variety of locations throughout a country. Over 5 million cattle pass through auction markets annually.
- Feed suppliers are more consolidated and should a disease agent be introduced into this system, it could be distributed to hundreds or thousands of farms throughout the U.S.

● Transportation

- Today's transportation methods allow animals to be moved easier and faster from adjacent states, regions, and nations. It is not unusual for animals to travel 300-600 miles in one day.
- Asymptomatic animals can spread a disease to new susceptible areas. Vehicle movement can also spread a highly infectious disease into new areas by having infectious agents contaminating tires and vehicular bodies.
- Insects have the potential to carry livestock or human disease. Air transportation can be a source for movement of infected insects from one continent to another.

Lack of biosecurity

- The openness of livestock operations has led to a general lack of biosecurity protocols. Often they are difficult to implement in certain situations given the husbandry practices of raising grazing animals. This makes multiple operations vulnerable to the introduction of an agroterrorism agent.
- Isolation of newly introduced animals is not commonly practiced and could increase the introduction and spread of an agroterrorism disease agent to a herd of animals.
- Securing feed and water sources are often difficult given pasture, cropping and natural water sources used for ruminant species. Should a water or feed borne disease agent be introduced, spread could be rapid if prompt diagnosis does not occur.

Increased susceptibility of livestock to disease

- Herd immunity against many diseases has been lost in countries where these diseases have been eradicated. However, many of these are present in other parts

of the world and can be taken from the environment for culture and potential spread.

- Uncommon diseases may present with clinical signs that go unrecognized initially by producers allowing the disease to become widespread fairly rapidly.
- Rapid diagnostic tests are not readily available for many of the most devastating foreign animal diseases. Delay in diagnosis expedites disease spread.
- Vaccines and treatments are not often available for many deadly livestock pathogens.

Globalization

- International trade and travel has greatly expanded in the last quarter century.
- Disease agents from other countries could be obtained and transported to the developed countries without highly sophisticated methods. There is no need to weaponize the agent as there is in a bioterrorism attack targeted at humans.

Disease surveillance and reporting systems

- The shortage of food animal practitioners in many countries, specifically those trained in foreign animal disease diagnosis, increases their vulnerability to an agroterrorism attack.
- For example, the USDA has identified various Program Diseases in which to focus testing and surveillance in order to eradicate brucellosis and tuberculosis, and monitor the prevalence of chronic wasting disease and Johne's. Historically the focus has not been on clusters of illness, death, neurological signs, and anorexia, which could be indicators of an agroterrorism attack.
- Most developed countries are unable to efficiently trace animal movement, making them vulnerable to economic devastation.

Prevention measures

- Producers need to be aware of both the endemic diseases in their area and the potential threat agents.
- Operational biosecurity should be written down and implemented in all animal production systems.
- Producers and their employees need to be knowledgeable of sanitary procedures for disinfecting vehicles and equipment.
- Monitoring and restriction of visitors to the operation site should be a best management practice (BMP).
- Veterinary professionals must follow proper sanitary procedures to prevent the spread of disease. Awareness of the clinical and pathologic features of these potential threat agents is crucial; consider them in the differential diagnosis when examining animals.
- Veterinary professionals should look for unusual events, particularly ones that involve infectious agents or toxic events.
- Veterinary professionals and producers should be ready to contact government officials if they suspect an incident involving one of these agents.



MISCELLANEOUS

ASSOCIATED CONDITIONS

- Should an agroterrorism attack result in a disease outbreak the trade implications could be quite severe. The World Organization for Animal Health (OIE) is the international governing body for animal diseases. Should a List A or B disease occur in a country, trade would be temporarily stopped until the epidemiology of the disease is understood and eradication is underway or completed.

ZOONOTIC POTENTIAL

- Diseases found on the USDA High Consequence Livestock Pathogens and Toxins list, include the following potential zoonoses: Anthrax, botulism, brucellosis, glanders, melioidosis, Nipah virus, Rift Valley fever, Q fever, and tularemia.

SEE ALSO

- Anthrax
- Brucellosis
- Biosecurity: Beef Cow/Calf (www.fiveminutevet.com/ruminant)
- Biosecurity: Cervidae (www.fiveminutevet.com/ruminant)
- Biosecurity: Dairy (www.fiveminutevet.com/ruminant)
- Biosecurity: Goats (www.fiveminutevet.com/ruminant)
- Biosecurity: Research Herds (www.fiveminutevet.com/ruminant)
- Biosecurity: Sheep (www.fiveminutevet.com/ruminant)
- Cleaning and Disinfection (www.fiveminutevet.com/ruminant)
- Clostridial Diseases: Nervous System
- Rift Valley Fever
- Q Fever (Coxiellosis)

ABBREVIATIONS

- OIE=Office International des Epizooties
- USDA=United States Department of Agriculture
- BMP=Best Management Practice

SUGGESTED READING

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