

# Biological Terrorism Against Animal Populations & the Public Health Implications

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Considerations of biological warfare and bioterrorism usually focus on the direct threat of the use of human diseases as weapons. However, the possibility of biological attack on the animal resources of a country is increasingly recognized as a serious threat.

- Agriculture in the United States is the perfect target for bioterrorism because the industry is unparalleled in scale and proceeds.
- Food and fiber account for approximately 13% of the GDP and 24 million Americans (2% of the population) are employed directly in agriculture.
- In 1997, the agriculture industry generated over \$1 trillion worth of business, a large portion (roughly \$140 billion) of which was derived from export markets.
- America has nearly 2 million farms where animals and crops are raised to provide the steady flow of high-quality, safe, and inexpensive foods
- America has become the world's leader in food production. In 1997, cattle generated \$40 billion in sales; swine generated \$3 billion; and poultry \$22 billion.

If any of these industries were to be impacted by a biological terrorism attack the results would be catastrophic. The impact would not be limited just to the farmer. Businesses such as farm suppliers, transportation, grocery stores, restaurants, equipment distributors, and subsequently consumers will be impacted. Small towns could potentially be wiped out and put the supply of our food in peril, perhaps for a long time. In addition some of the potential agents are zoonotic diseases. The health of humans exposed could lead to death or disability.

Other factors contributing to the vulnerability of US agriculture are the continuing trends of intensive production techniques including vertical integration. Large populations of susceptible livestock are concentrated within production system units. These animal agricultural production and food processing systems are large, complex, and easily accessed. In addition US livestock lack resistance against pathogens and pests that no longer prevail in the continental United States.

Any biological attack on agriculture will differ from one that targets humans. The desired results from an agricultural biological attack are more complicated than the simple widespread terror induced in a human target population. An effective agricultural biological attack could cause massive death and destruction. However it is important to realize that the impact created by the potential agents targeting livestock production may be delayed and only become obvious after weeks or even months. The major losses are not those occurring directly from the disease but those related to the required responses to a foreign animal disease.

- Cost and effort necessary to contain and clean up animal diseases.
- Prevention of further spread of a disease.
- Efforts to reclaim the previous level of disease control.
- Establishing eradication programs.
- Loss of exports and international recognition.

Agricultural terrorism is about killing animals but more importantly it is about crippling an economy. Hence, agents foreign to U.S. livestock and poultry industries would be preferred by terrorists.

Effective biological terrorism agents selected to target US livestock will be highly contagious, virulent, and able to survive well in the environment resulting in economic hardship and an import ban by other countries. The following agents fulfill most of the above criteria.

Animal Disease agents <u>lacking</u> zoonotic potential	Animal Disease agents <u>with</u> zoonotic potential
<ul style="list-style-type: none"> <li>• Foot and Mouth Disease</li> <li>• Hog Cholera</li> <li>• African Swine Fever</li> <li>• Rinderpest</li> <li>• Newcastle</li> <li>• Fowl Plague</li> <li>• Highly Pathogenic Avian Influenza</li> </ul>	<ul style="list-style-type: none"> <li>• Anthrax</li> <li>• Brucellosis</li> <li>• Plague</li> <li>• Q Fever</li> <li>• Glanders</li> <li>• Psittacosis</li> <li>• Tularemia</li> <li>• Eastern, Western, &amp; Venezuelan Encephalitis</li> <li>• <i>Escherichia coli</i> 0157:H7</li> <li>• Cryptosporidiosis</li> <li>• Hantaviruses</li> </ul>

The route of introduction of these agents may vary:

- Aerosol is an effective means and could be done in animals by crop duster and hand spray pumps.
- Feathers coated with the agent filling small bomblets and exploding them over the target where they drift on the wind and contaminate a vast area.
- Simpler inconspicuous effective methods include introducing an infected animal to the herd, walking onto the farm or feedlot with contaminated shoes or clothes and contamination of livestock at a sales barn or livestock gathering site.

Reaction to an agricultural bioterrorism event in animals depends on the rapidity with which the disease is discovered. There are over 350 veterinarians trained as Foreign Animal Diseases Diagnosticians. This does not include the thousands of veterinarians in private practice and in state and federal positions that are also in touch with the livestock and poultry industries. At the farm level perceptive veterinarians will play a crucial role in this country's effort to combat agricultural bioterrorism. Local veterinarians talk to the owners, see the animals, and are trained to take samples.

The response to a biological incident in agriculture will involve several government agencies in addition to those individuals listed above. The U.S. Department of Agriculture (USDA) is the lead agency in protecting America's agriculture through the surveillance of animals for foreign diseases, operation of quarantine stations, and the implementation of response plans should a foreign agent be found. The USDA has a Regional Emergency Animal Disease Eradication Organization able to travel for the purpose of implementing control and eradication measures. Other agencies that are being trained to respond to foreign animal disease threats include law enforcement, HAZMAT, and fire departments. These agencies may be called upon to assist the USDA, in coordinating efforts, maintaining public order, providing decontamination, slaughter, disposal efforts and communications.

The threat to agriculture and the public health is real and the U.S. is now addressing the issue. It is prudent for farmers, veterinarians, and other agricultural professionals to become familiar with the issues and details surrounding agricultural bioterrorism. Extension veterinarians are involved in coordinating efforts to educate veterinarians, farmers, ranchers and Cooperative Extension faculty in recognizing unusual animal disease signs and responding hastily and appropriately.