

# What Every SOF Medic Should Know About Agroterrorism – Part I

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## ABSTRACT

Agroterrorism is “the deliberate introduction of a disease agent into livestock herds for the purposes of undermining socio-economic stability and/or generating fear.” The threat of an agroterrorist attack on American soil is a growing concern. The financial, political, and social consequences of an attack are potentially enormous. This article will help SOF medics increase their understanding of the risks and consequences of agroterrorism and the foreign animal diseases that pose a threat.

## INTRODUCTION

Agriculture is part of America’s critical infrastructure. The safe and secure production of livestock and cultivated crops contribute to the social, economic, and political stability we enjoy in the United States. Agroterrorism is “the deliberate introduction of a disease agent into livestock herds [or cultivated food crops] for the purposes of undermining socio-economic stability and/or generating fear.”<sup>1</sup> The impact of such an act is potentially devastating. Yet, compared to the effort spent on other critical infrastructure such as transportation, the actions needed to prevent or respond to an agroterrorist attack have received comparatively little attention.<sup>2</sup>

The purpose of this two-part series is to increase awareness of animal-related agroterrorism and the foreign animal diseases that pose a threat. The discussion will be limited to animal-related diseases and will not cover plant-related diseases. Part I will discuss agriculture as a critical infrastructure, its vulnerabilities, and the potential impact of agroterrorism on our economy and human health. Part II will discuss foreign animal diseases that present the biggest risk to U.S. livestock.

What is the risk of an agroterrorist attack in the United States? Based on documents found in *al Qaeda* hideouts in Afghanistan in 2002, it appears that terrorists have identified our food production and supply system as a potential target.<sup>3</sup> That same year, a Saudi cleric who supports *al Qaeda* issued a *fatwa*, or religious ruling, that sanctioned the use of weapons directed against crops and livestock.<sup>4</sup> The extensive movement of animals across our borders magnifies the threat: on average, 38,000 animals enter the United States each day and 14 million are imported yearly.<sup>5</sup> In addition to terrorist organizations with political motivations, other potential agroterrorists include state-sponsored terrorist groups, ideological

groups such as radical supporters of animal rights, and individuals hoping to gain financially by manipulating the financial markets or ruining a competitor.<sup>6</sup>

The following countries have a documented history of agricultural biowarfare programs: Canada, France, Germany, Iraq, Japan, South Africa, the Former Soviet Union, the United Kingdom, and the United States. Egypt, North Korea, Rhodesia, and Syria are suspected of having or having had agricultural bioweapons programs.<sup>7</sup> State programs used – or attempted to develop the capacity to use – the following diseases offensively: anthrax, glanders, rinderpest, African swine fever, avian influenza, brucellosis, contagious bovine pleuropneumonia, contagious ecthyma (soremouth), foot-and-mouth disease, Newcastle disease, psittacosis, Venezuelan equine encephalitis, vesicular stomatitis, camelpox, eastern equine encephalitis, and western equine encephalitis.<sup>8</sup> Part II of this series will discuss some of these diseases in more detail.

Despite the number of countries with agricultural biowarfare programs, few have actually carried out attacks on livestock. In World War I, Germany attempted to disrupt Allied transportation and supply lines by inoculating horses and mules with anthrax and glanders. Targeting animals intended for shipment from the United States, Argentina, and Morocco to Europe, they fed them contaminated sugar cubes or rubbed their muzzles with contaminated material. Little evidence exists that the attacks had any significant effect.<sup>9</sup> Japan had an active offensive biowarfare program during World War II, primarily directed against Manchuria, where they allegedly used anthrax and rinderpest. Soviet forces allegedly used glanders during the Soviet-Afghan War in the 1980s.<sup>10</sup> Some evidence indicates the Soviets tar-

geted Afghan guerrillas rather than, or in addition to, their horses.<sup>11</sup>

The only documented attack against livestock by a non-state actor was for political gain; it used a toxin rather than a disease agent. In 1952, the Mau Mau, a nationalist liberation movement opposed to British rule in Kenya, used a toxic plant called the African milk bush to poison thirty-three cattle at a Kenyan mission station as part of a sabotage campaign.<sup>12</sup>

So is U.S. agriculture vulnerable to attack? Yes, according to several government and scientific reports.<sup>13</sup> The reasons are multi-fold. Industrial practices that have done so much to create a commercial system capable of producing affordable food have increased the risk of “catastrophic disease and pest outbreaks.”<sup>14</sup> The average American spends just 11% of disposable income on food, compared to as much as 50% for those in less developed countries.<sup>15</sup> Farming practices in our country are concentrated and intensive. Large feedlots house up to 300,000 cattle. Chickens are raised in floor pens holding up to 20,000 birds.<sup>16</sup> This concentration of livestock in confined areas increases the speed at which a disease can spread. In addition, the stress of living in such conditions increases the susceptibility of livestock to disease.

Current agricultural security and biosurveillance systems are inadequate, although recommendations for “hardening” the system exist.<sup>17</sup> Reporting systems also contribute to the vulnerability of U.S. agriculture to attack, or at least to extensive spread of the disease prior to recognition. The current disease-reporting system is passive and inefficient, and is not linked to the human disease reporting system, although that is beginning to change. A trend toward reporting livestock statistics in aggregate rather than for individual animals has decreased incentives to observe the health of individual animals. In addition, agricultural producers are hesitant to report outbreaks of disease at their facilities because they worry they will not be compensated for the costs of culling or quarantining their livestock. Finally, there has been a decline in the number of veterinarians and veterinary technicians trained to recognize and treat foreign animal diseases.<sup>18</sup>

Not only is our agricultural infrastructure vulnerable to attack, but these vulnerabilities are easy to exploit. Again, the reasons are multi-fold.<sup>19</sup> Agroterrorists have a large number of potential pathogens from which to choose. The Office International des Epizooties (OIE) (or World Organisation [sic] for Animal Health) has as one of its objectives: “To ensure transparency in the global animal disease and zoonosis situation.”<sup>20</sup> The OIE lists 115 diseases that member countries must report.<sup>21</sup>

These are communicable diseases that can affect the social, economic, or public health well-being of countries and that are important in the international trade of animals and animal products.<sup>22</sup> The technology required to obtain and weaponize livestock pathogens is relatively unsophisticated. Many pathogens can be isolated from the environment. Many are environmentally hardy and cannot be transmitted to humans; these organisms would be especially easy to smuggle into the country with little personal risk to the terrorist. Because livestock vaccination programs in the U.S. do not routinely cover these diseases, herds and flocks are susceptible. Highly transmissible pathogens, of which there are many, simplify the weaponization issue because the livestock serve as the primary means for spreading the disease.

If the goal of a terrorist attack is to kill people, infecting the food chain is a low-tech way to do so. However, agroterrorism is more practical as a secondary attack meant to disrupt and weaken a society already traumatized by a conventional kinetic terrorist attack. This is because the effects of an attack on livestock will be scattered across the country and the impact will increase gradually; it will not have the media-grabbing impact of a single, explosive attack.<sup>23</sup>

What would be the impact of an agroterrorist attack in the United States? Agriculture is part of America’s critical infrastructure.<sup>24</sup> Although farming employs less than two percent of the American population, about 16% of Americans work in an occupation directly supported by food production. Generating over one trillion dollars a year, agriculture accounts for about 16% of the U.S. gross domestic product (GDP).<sup>25</sup> Each year, cattle and dairy farmers earn over \$50 billion through the sale of milk and meat. The value of exported agricultural products totaled almost \$50 billion in 2001.<sup>26</sup> An attack on the agriculture infrastructure would have widespread social, economic, and public health consequences. Speaking at the second annual International Symposium on Agroterrorism in September 2006, FBI agent David Cudmore said, “[Terrorists] are not going to kill people with foot-and-mouth disease, but boy will they hit our pockets. We’d lose billions; it will almost cripple us economically.”<sup>27</sup>

Costs from a large-scale agroterrorist attack come from several sources. First, there is the direct cost due to death or culling of animals. Second, there is the cost of containing the outbreak. Third, there is the economic loss due to a decreased demand or market for the agricultural product. Fourth, embargoes on export of products would decrease sales. Finally, revenue from tourism may suffer, as it did in England during the recent

outbreak of foot-and-mouth disease.<sup>28</sup> The overall effect would be a significant destabilization of the economic market.<sup>29</sup>

The few documented cases of agroterrorism/biowarfare were limited in scope. To get some sense of the economic impact of a widespread outbreak, we turn to several recent cases of natural disease epidemics. An outbreak of classical swine fever in the Netherlands in 1997 required the slaughter of 8 million swine; the fiscal loss was \$2.3 billion (USD). That same year, an outbreak of foot-and-mouth disease in Taiwan also required the slaughter of 8 million swine.<sup>30</sup> The cost to diagnose and eradicate the disease was \$4 billion (USD) but the indirect loss from trade embargoes was \$15 billion (USD).<sup>31</sup> The total cost of the well-publicized outbreak of foot-and-mouth disease in the United Kingdom in 2001, which included cases in France, the Netherlands, and Ireland, was about \$15 billion (USD)<sup>32</sup> and required the slaughter of four million animals.<sup>33</sup> Economic models predict that the total cost of a similar outbreak of foot-and-mouth disease in the U.S. would be \$10-33 billion (USD).<sup>34</sup> Given the frequency of interstate transport of animals during the food production cycle, the U.S. Department of Agriculture estimates that an outbreak of foot-and-mouth disease would take just five days to reach twenty-five states.<sup>35</sup>

In addition to economic costs, an agroterrorist attack is likely to have a human cost – beyond the emotional or mental hardship faced by those who suffer severe economic loss. An animal pathogen that can also infect humans (i.e., a zoonotic disease) may result in the spread of disease and death throughout the human population. A zoonotic disease that was introduced unintentionally in a previously unexposed population illustrates the potential for devastating consequences. Concurrent with the deaths of hundreds of birds in New York, New Jersey, and Connecticut in October 1999, seven people died of a viral encephalitis previously undiagnosed in the Western Hemisphere. At the time, few people connected the deaths of the birds with the human epidemic. This is one reason why public health officials recommend improving the integration of human and animal disease surveillance systems.<sup>36</sup> Since those initial cases, West Nile Virus has spread across the United States, with cases reported from all but seven states in 2006 (all but VT, NH, ME, RI, DE, NC, SC).<sup>37</sup> The epidemic peaked in 2003 with 9,862 cases and 264 deaths in the U.S. In 2006 (as of 17 Oct), there were 3,498 cases and 108 deaths in the U.S.<sup>38</sup> With news headlines such as “Public Panic Over West Nile Virus”<sup>39</sup>; “Virus Panic Grips US East Coast”<sup>40</sup>; and “U.S. Braces for Return of West Nile Virus”<sup>41</sup>, one can imagine the public reaction to a disease that infects both humans and their food supply. Even headlines designed to reassure – “West

Nile Virus Kills One – Do NOT Panic”<sup>42</sup> – seem to spread alarm. No wonder officials preparing for an agroterrorist attack recommend training spokespeople how to communicate health risks appropriately.<sup>43</sup>

An agroterrorist attack may also decrease the confidence of citizens in our government’s ability to protect the safety of the food supply. A sense of vulnerability and fear could provoke civil unrest and undermine support for the government. Controversial and emotionally disturbing control measures, such as mass culling of animals, could further destabilize the situation, as it did in England during the recent outbreak of foot-and-mouth disease.<sup>44</sup>

## SUMMARY

“At this time, the scope, scale, and consequences to human and animal health from zoonotic and agroterrorism threats are unprecedented.”<sup>45</sup> SOF medics should be aware of the risk of agroterrorism and the foreign animal diseases that pose a threat. This article discusses why agriculture is one of our critical infrastructures, the vulnerability of our food supply system to attack, and the potential impact of agroterrorism on our economy and human health. Part II will discuss foreign animal diseases that present the biggest risk to U.S. livestock.



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