

CHAPTER 1

Military's Role in Combating Agroterrorism: Introduction

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I am concerned about avian flu. I am concerned about what an avian flu outbreak could mean for the United States and the world...If we had an outbreak somewhere in the United States, do we not then quarantine that part of the country, and how do you then enforce a quarantine? ...And who best to be able to effect a quarantine? One option is the use of a military that's able to plan and move.

–President George W. Bush
Rose Garden Press Briefing
October 4, 2005¹

The World Health Organization (WHO) reported on October 24, 2005, that there have been 126 confirmed human cases of avian influenza (H5N1) and 64 deaths.² Quarantining farms and destroying infected flocks have been standard control measures to stem the spread of disease. More than 140 million birds have been culled in Asia.³ Despite these efforts to control avian influenza, the disease continues to spread across the globe. This disease spread and the leap from infecting only avian species to humans as well has alarmed the President of the United States and the world. The WHO stated that “experts agree that another influenza pandemic is inevitable and possibly imminent.”⁴ If avian or other highly contagious disease arrives in America, prompt and effective containment of disease will be dependent on the coordinated reaction of appropriate local, state, and federal response personnel and assets.

How will the U.S. military be used in the event of a massive natural disease outbreak? Or, in the event of a terrorist attack?⁵ This publication

strives to present examples and examine shortfalls concerning the DoD roles and responsibilities in the event of an agroterror event. In order to understand the potential “planning and moving” requirements of the military, the threat and consequences must be fully understood.

Agroterrorist Threat

The U.S. agricultural industry is extremely vulnerable to attack for many reasons including the geographic concentration of different sectors of agriculture, the almost ubiquitous and highly contagious nature of many diseases or pests, and the massive size of the U.S. agricultural industry. Do our adversaries have the capability to convert these vulnerabilities into a real national security threat? Former Secretary of Health Tommy Thompson stated in December 2004, “for the life of me, I cannot understand why the terrorists have not attacked our food supply because it is so easy to do. We are importing a lot of food from the Middle East, and it would be easy to tamper with that.”⁶ One source states that 280 documents dealing with agroterrorism were found in the Afghanistan caves.⁷ In fact, “hundreds of pages of U.S. agricultural documents had been translated into Arabic. Al Qaeda’s interest in American agriculture was more than academic, according to government officials. A significant part of the group’s training manual is reportedly devoted to agricultural terrorism - the destruction of crops, livestock and food processing operations.”⁸

The use of disease against plants and animals is not new. Indeed, in World War I (WWI) the Germans had a spy network producing biologics to inoculate horses and mules before they went across the Atlantic to support the military in the war. The peak success of the German program occurred when it infected over 4,500 mules and horses in Mesopotamia. Since WWI, many countries including the United States, Britain, and Japan have had anti-plant and anti-animal programs, and have weaponized many disease agents. In the United States, the Central Intelligence Agency developed methods for carrying out covert attacks against crops to affect severe crop loss.⁹ And, in the 1940s and 1950s, the Soviet Union developed anti-agricultural biological weapons under their “Ecology” program. By 1990, a shift in Soviet strategy led to the abandonment of anti-agricultural weapons due to the belief that these weapons were not

suitable for strategic military use. The Soviets thought these weapons to be suitable only for terrorist use to disrupt a target country's economy.¹⁰

The science and art of how to promulgate an agroterrorist attack is not an international secret. Note in Table 1.1 the long history of countries that have worked in this field. This may reflect the common assumption that attacks against agriculture might be more attractive to terrorists because of the economic disruption, the secondary effects on humans, and the potential for deniability that might make the response or retribution less vigorous.¹¹

Table 1.1 Countries with Past and Present Agricultural BW Capabilities

STATE	STATUS	DATES	DISEASE	COMMENTS
Canada	Former	1941-60s	Anthrax, Rinderpest	Exact date of project termination unclear
Egypt	Probable	1972-present	Anthrax, brucellosis, glanders, psittacosis, Eastern equine encephalitis	
France	Former	1939-72	Potato beetle, Rinderpest	Exact date of project termination unclear
Germany	Former	1915-17, 1942-45	Anthrax, foot-and-mouth disease, glanders, potato beetle, wheat fungus	In World War II (WWII) experimented with turnip weevils, antler moths, potato stalk rot/tuber decay, and miscellaneous anti-crop weeds
Iraq	Known	1980s-2003	Aflatoxin, anthrax, camelpox, foot-and-mouth disease, wheat stem rust (camel pox may have been surrogate for smallpox)	Believed to have had program elements despite UN disarmament efforts
Japan	Former	1937-45	Anthrax, glanders	During WWII experimented with miscellaneous anti-crop fungi, bacteria, nematodes
North Korea	Probable	?-present	Anthrax	
Rhodesia (Zimbabwe)	Uncertain/ Former	1978-80	Anthrax	Suspicious epidemic of cattle anthrax resulted in 182 human deaths. Some scientists believe government forces infected livestock to impoverish rural blacks during last phase of civil war.
South Africa	Former	1980s-93	Anthrax	
Syria	Probable	?-present	Anthrax	

Continued on page 4.

STATE	STAT	DATES	DISEASE	COMMENTS
United Kingdom	Former	1937-60s	Anthrax	Exact date of project termination unclear
United States	Former	1943-69	Anthrax, brucellosis, Eastern & Western equine encephalitis, foot-and-mouth disease, fowl plague, glanders, late blight of potato, Newcastle disease, psittacosis	Continued from the disease column: rice brown spot disease, Rinderpest, Venezuelan equine encephalitis, wheat blast fungus, wheat stem rust
USSR (Russia, Khazakstan, Uzbekistan)	Formerly active; current status unclear	1935-92	African swine fever, anthrax, avian influenza, brown grass mosaic, brucellosis, contagious bovine pleuropneumonia, contagious ecthyma (sheep), foot-and-mouth disease, glanders, maize rust, Newcastle disease virus, potato virus, psittacosis, rice blast, Rinderpest	Additionally experimented with: rye blast, tobacco mosaic, Venezuelan equine encephalitis, vesicular stomatitis, wheat & barley mosaic streak, wheat stem rust, parasitic insects and insect attractants

Source: Monterey Institute of International Studies, Center for Nonproliferation Studies. *Agroterrorism: Agriculture Biowarfare: State Programs to Develop Offensive Capabilities*, created October 2000. On-line. Internet, 22 June 2005. Available from <http://cns.miis.edu/research/cbw/agprogs.htm>. Chart edited for space considerations; see complete chart and extensive footnotes on web page.

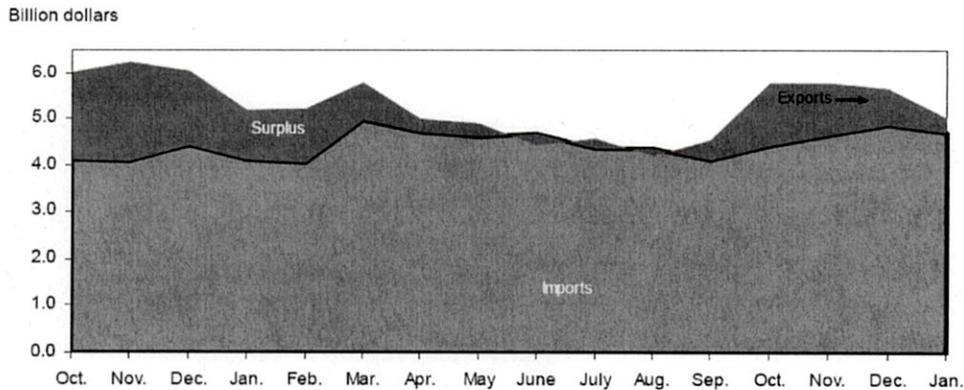
Many potential adversaries either have or can easily obtain an agroterrorism capability that could cause catastrophic economic effects in the United States. The economic impact of the September 11, 2001, attacks on America has been estimated to be well over a \$100 billion,¹² but the effect of a successful multipoint agricultural attack could surpass this and lead to long-term, perhaps unrecoverable damage to the agricultural export industry.

U.S. Agriculture Industry

Agriculture is a key component of the U.S. economy, comprising over 15% of America's jobs and 11% of the gross domestic product.^{13,14} Livestock sales make up half of this amount, or \$93 billion and the United States is the world's largest exporter of livestock and livestock products.¹⁵ Billions of dollars worth of agricultural products are exported monthly resulting in over \$50 billion exported annually.¹⁶ In fact, the agricultural industry is recognized as one of only two major industries in the United States that exports more than it imports; the other being the aerospace

industry.¹⁷ U.S. agricultural exports are so significant that they generate larger revenue than the entire national GDP of 70% of the world's countries.¹⁸

Figure 1.1 Monthly U.S. Agriculture Trade, fiscal years 2004-2005



Nora Brooks. "U.S. Agricultural Trade Surplus of \$325 Million in January 2005." U.S. Agricultural Trade Update, United States Department of Agriculture, FAU-102, 13 June 2005. On-line. Internet, 18 June 2005. Available at: <http://usda.mannlib.cornell.edu/reports/erssor/trade/fau-bb/text/2005/fau99.pdf>.

How has the United States become such a global force in agriculture and how has agriculture become such an important factor in the prosperity of America? Process changes, industrial technology, bio-technology, and information technology have been applied while utilizing the indigenous land, water resources, and production practices to produce what would appear to be an unstoppable agricultural machine. Smaller farms have been combined into much larger operations cutting overhead and allowing for purchases of large production equipment. The five top agricultural commodities, beef cattle, dairy products, broilers, hogs, and layers (chickens raised to produce eggs), represent animals now living in highly concentrated conditions.¹⁹

The modern poultry industry is a perfect example of this trend. It is common for poultry producers (also known as "integrators") to control the entire process from hatching through grow-out, to slaughter processing and market distribution.²⁰ These large, vertically integrated businesses commonly own or control hatcheries, farms, feed mills, slaughter facilities

and truck fleets. The advantage of this practice is a stable supply of wholesome, low-priced food products that are readily available to the consumer. The disadvantage of these highly specialized industries is the vulnerability to the accidental or intentional introduction of a plant or animal pathogen.

Certain geographic areas now specialize in growing just certain crops or livestock, thereby enhancing national infrastructure efficiencies. For instance, by 1997, Texas produced 16% of the U.S. cattle and calves and 22.5% of the U.S. cotton. In fact, 70% of the nation's beef cattle are raised on one area with a 200 mile radius.²¹ Similarly, California produced 92.2% of the grapes, 47% of tomatoes, and 75% of the strawberries grown in the United States. Geographically concentrating agriculture industries may be efficient but it also increases their vulnerability to agroterrorist attack.

Additional advances in plant and animal protection are seen through species selection and genetic engineering. Some plants and animals have been selected for their disease resistance. Brahman cattle, for example, are selected for breeding partially because they have greater resistance to Texas tick fever. Moreover, some plants and insects are now being genetically modified to resist diseases and mitigate agricultural pests. Through eradication programs, the United States has been able to rid itself of some of the more severe agricultural scourges such as classical swine fever (formerly hog cholera), foot-and-mouth disease, and the infestations by screw worm fly.

The benefit from these continual improvements is a reduction in the amount the U.S. citizen pays for food from 14% on their income in 1970 to 11% in 1996.^{22,23} The significance of these figures is underscored by the fact that Russians spend approximately 50% of their income on food, the Filipinos spend 44%, and the Argentineans spend 34%.^{24,25} The American public expects cheap, safe, and high quality foods and places great trust in the production continuum leading to its dinner tables.

Consequences of Agroterrorist Attack

The United States, as a direct result of its national resources and increasingly efficient production capacity, has a global impact in the agricultural industry. If the United States loses its ability to maintain its

agricultural exports through an act of agroterrorism, at least three primary consequences will ensue: cessation of food production, loss of vital export markets, and near-term food shortages.

Once the initial agroterror event occurs, certain geographical areas containing specific sections of the affected industry could be shut down until situational awareness is achieved and the magnitude of the act is determined. The production, movement, and processing of livestock or crops could be stopped for days or weeks. However, it is possible that the response would require an entire industry to be shut down for months until the situation is resolved. Farms, factories, and distribution channels could be closed, leading to layoffs, job losses, and economic downturns for the communities tied to these industries.

Second, the United States will lose vital export markets as other producers in the world quickly move to fill the void with their exported goods. Although some of the market losses will be temporary, many will be permanently lost unless the United States is able to begin exporting again quickly. The cessation of all product exports may place pressure on the United States' balance of trade.

Third, the introduction of disease may have grave consequences for food availability. Some food security experts estimate that the average city in the U.S. has at most a five-day supply of fresh meat, fruit, and vegetables on hand. These food stores could last from three to five weeks if edibility, and not freshness, was the main concern. Supermarkets and restaurants have shifted to "just-in-time" deliveries to bring fresher food to their customers. However, these businesses are vulnerable to severe economic risks if their distribution supply is disrupted. Food commonly travels great distances from the farm to the dinner table. A disruption in a metropolitan area's food supply by an agroterrorist attack could lead to a surge in demand for food as panic buying and food hoarding occurred.²⁶ Additionally, as a result of the import/export disruption, some foreign recipients of U.S. agricultural commodities may experience near-term shortages resulting in adverse population health outcomes.

Unique DoD Capabilities

The DoD downsizing since the end of the Cold War combined with current operations in Iraq and Afghanistan to fight the global war on

terrorism have placed enormous pressure on the active duty and reserve forces of the Army, Navy, Air Force, and Marine Corps. Since military forces are most commonly seen fighting this war by directly engaging the terrorists, it is somewhat difficult to imagine what role, if any, soldiers, sailors, airmen, and marines might have in an agroterrorism event. However, the military brings unique capabilities and resources that could be vital before, during, or after such an event occurred.

The capabilities and resources the DoD brings to the federal government's response to an agroterrorism event include biological and chemical detection/reconnaissance and risk assessment, medical and veterinary support, laboratory capabilities, decontamination assets, logistics, and general response expertise.²⁷ The National Guard's Weapons of Mass Destruction Civil Support Teams (WMD-CST), which are composed of 22 highly skilled, full-time National Guard personnel, are designed to assist local first responders in determining the nature of an attack, provide medical and technical advice, and assist with the identification and arrival of other state and federal response assets. WMD-CST teams are a state asset and are activated by the Governor of that state. They can be federalized under recent amendments to the Presidential Selective Reserve Call-Up (PSRC) authority.²⁸

Despite the DoD's wide-ranging capabilities, there are some restrictions to the unique resources and capabilities brought to support the civil authorities. In his 1999 report to the Senate Armed Services Committee, the Deputy Assistant Secretary of Defense for Combating Terrorism Policy and Support stated that the DoD's support to civil authorities is governed by five principles: (1) the DoD must have absolute and public accountability of officials involved in the oversight of this process while respecting constitutional principles and civil liberties; (2) the DoD must maintain a supporting role to the lead civilian agencies; (3) DoD support should emphasize its natural role, skills, and structures such as mass mobilization and logistical support; (4) DoD equipment and capabilities are primarily to support its war-fighting mission; and (5) the DoD abides by the existing legislative authorities that govern its civilian agency support.²⁹ Thus, the role of the DoD in an agroterror attack is not yet clear-cut and needs clarification if the military is to be prepared to handle the problems created by an agroterror event.

Nevertheless, the federal government has provided directives which address the concern to protect our agriculture and food resources. Homeland Security Presidential Directive/HSPD-9 (Defense of United States Agriculture and Food) states that the *“United States agriculture and food systems are vulnerable to disease, pest, or poisonous agents that occur naturally, are unintentionally introduced, or are intentionally delivered by acts of terrorism. America’s agriculture and food system is an extensive, open, interconnected, diverse, and complex structure providing potential targets for terrorist attacks. We should provide the best protection possible against a successful attack on the United States agriculture and food system, which could have catastrophic health and economic effects.”*³⁰ HSPD-9 mentions a number of federal agencies, such as the Departments of Interior, Agriculture, Health and Human Services, the Administrator of the Environmental Protection and others as having a role in defending American agriculture. Although HSPD-9 does not mention the DoD in this capacity, the DoD has in the past and will continue in the future to play a role in helping our nation prepare for, respond to, and recover from an intentional attack on our nation’s food supply.

The DoD has previously helped the Department of Agriculture respond to and recover from natural biological outbreaks in American agriculture. For example, nearly 4,000 military personnel participated in the effort to stem the 1971 outbreak of Venezuelan equine encephalitis in Texas. Other such support occurred in 1971-1972 when nearly 400 military personnel participated in stopping an outbreak of Newcastle disease in California and Texas. In 1983, about 140 military personnel helped support a campaign against avian influenza in Pennsylvania.³¹ Additional examples of DoD involvement in disease outbreaks are detailed in Chapter 2.

Project Overview

The U.S. Air Force Counterproliferation Center (CPC) was directed by the Defense Threat Reduction Agency (DTRA) to conduct a study to determine the DoD’s potential involvement in responding to an agroterrorism event. This resulting report details several possible roles for the DoD in a CONUS agroterrorist event.

To complete this report, the CPC and project assistant³² identified subject matter experts (SMEs) in the following areas: (1) DoD response

planning; (2) military manpower assessment; (3) plant and crop response; and (4) carcass disposal. These areas were chosen because each has a potential need for DoD consideration. The SMEs (chapter authors) and other invited guests (listed in the “Workshop Attendees” section of this report) attended a one-day workshop at Colorado State University, Fort Collins, Colorado, to discuss the topic areas. The authors incorporated comments of the invited guests and their own research into chapters which are included in this publication.

This report explores each of the four areas in greater detail. The findings will provide local, state, federal, and DoD policy makers detailed information about current capabilities and future potential roles for the DoD in helping the nation prepare for, respond to, and recover from a terrorist attack on U.S. agriculture. The following paragraphs provide a brief introduction to the content of each military agroterrorism response issue examined.

Chapter 2: Recent Disease Outbreaks and National Exercises

The military’s role in the response to attacks or natural outbreaks of agricultural disease in the United States is neither clearly understood nor well-defined. In previous incidents and exercises in the United States and throughout the world, the military role was limited or engaged as an afterthought when civilian forces became overwhelmed. The exercise chapter provides examples of the memoranda of understanding that establish DoD involvement, military support in international and national disease outbreaks, and some U.S. agroterrorism exercises.

Chapter 3: Department of Defense Response Planning

As part of its mission to defend the United States, the DoD in conjunction with other state and federal agencies must plan and prepare to deter, prevent, defeat, and mitigate threats against the agriculture and food system. There are many civilian agencies involved in the regulation and protection of agriculture and food production in the United States. Principals among the federal agencies responsible for the safety of our food supply are the United States Department of Agriculture (USDA) and

the U.S. Department of Health and Human Services (DHHS) through the actions of the Food and Drug Administration (FDA). Other federal agencies with responsibilities for food supply protection include the Departments of Commerce, Homeland Security, and Defense. This response planning chapter details the agencies involved in protection of agriculture, plans for a progressive disaster response to an agricultural event, DoD planning considerations, and the likely impacts of an agricultural event on the DoD.

Chapter 4: Military Manpower Assessment

Much of the history as well as current expectations regarding sharing of resources and availability of dedicated DoD assets for response to agricultural emergencies are based on assumptions grounded in a much larger early 1970s DoD force. This force included a large standing army, mostly in garrison, substantial Reserve and Guard Forces – both replenished by the military draft obligation, and was sustained by internal/organic DoD support services and equipment. The manpower chapter reviews the type and magnitude of DoD manpower support required if an agroterrorism event occurs and comments on the scope of training, organization, and equipping needed to field an appropriate force.

Chapter 5: Plant and Crop Response

A terrorist attack against plants and crops is a national security threat. Plant and crop production is geographically dispersed in unsecured environments such as open fields and pastures. Like its livestock counterpart, the modern crop industry has evolved into large scale operations, which has increased its vulnerability to the intentional introduction of a disease. Plant and crop production possess several characteristics that make this an attractive terrorist target. The plant and crop chapter addresses these unique characteristics, potential agroterrorist targets, the responsibilities of federal agencies in safeguarding this industry, and the type and magnitude of military support required for effective plan and crop response.

Chapter 6: Carcass Disposal

An agroterrorist event involving livestock will, by design, result in potentially large numbers of carcasses either from death caused by the disease or by the mass euthanasia efforts implemented to control the spread of the disease. Regardless of the cause of death, carcasses must be disposed of quickly, safely, and in an environmentally sound manner. The method used will depend on a number of factors including the number carcasses, the cause of death, the stability of potential infectious agents, local or regional environmental conditions, the availability of equipment, the availability and type of fuel sources, the cost and the impact of public perceptions. The carcass disposal chapter describes a number of methods currently in use to handle diseased or dying animals and their carcasses which could also potentially be applied to an emergency agroterrorist event. Additionally, the chapter details the role DoD may play in carcass disposal, providing heavy equipment, detailing manpower, supplying logistics, and providing contracting expertise.

This report provides a brief investigation into several potential support activities the DoD might provide if an agroterrorist attack occurred. Since the September 11, 2001, attacks, the DoD and the military services have responded to a new set of dangerous challenges in the war on terrorism. An even sterner test of military planning and moving flexibility will be how military forces, in cooperation with other U.S. departments and agencies, respond to a national agroterrorist attack.

Notes

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32. Dr. Tom Berg, DVM, PhD, was contracted by the CPC and acted as project assistant.