

CHAPTER 2

Recent Disease Outbreaks and National Exercises¹

Tasha L. Pravecck, Jim A. Davis, and Christopher R. Greenwood

The United Kingdom's (UK) State Veterinary Service commissioned a study in 1999 to examine the contingency plans and logistical and staffing preparations for an outbreak of foot-and-mouth disease (FMD) and other exotic animal diseases. The resulting Drummond Report commented that the United Kingdom was not adequately prepared for a large response. A year later, the United Kingdom had realized little improvement in their responses to animal disease despite concerns expressed by the chief of the UK State Veterinary Service regarding contingency strategies.² The real test of the United Kingdom's ability to respond began on February 19, 2001, when a routine veterinary inspection in Essex showed signs of foot-and-mouth disease in 27 pigs. By the end of the UK foot-and-mouth disease crisis, hundreds of thousands of pigs, cattle, and horses were sacrificed.³ A European Union committee on FMD found that a more rapid deployment of the British army would have reduced the backlog of carcasses for disposal and relieved the stress of the local farmers and rural communities.⁴ The United States Department of Defense (DoD) should heed this European Union finding and establish military consequence management plans for animal disease outbreaks and identify/procure assets to assist the U.S. Department of Agriculture (USDA) before a similar domestic crisis.

The military role in the response to attacks or natural outbreaks of agricultural disease in the United States is not clearly understood nor well defined. In previous international and domestic incidents and exercises, the military's role was limited or engaged as an afterthought when civilian forces became overwhelmed. Many post-event and post-exercise discussions addressed the benefits of a quicker, more involved military reaction. This chapter presents the military role in recent natural events

around the world and exercises held in the United States that involved use of military personnel.

Memoranda of Understanding

The military and U.S. Department of Agriculture (USDA) have had a long standing relationship since 1964. In the 1964 Memorandum of Understanding (MOU), the DoD agreed to assist the USDA in the event of biological contamination to the U.S. agricultural base.⁵ The current military role in support of agricultural incidents is further defined by a 2000 MOU between the DoD, General Services Administration (GSA), and the USDA Animal and Plant Health Inspection Service (APHIS). In this MOU, the Department of Defense also agreed to assist USDA/APHIS with developing contingency plans and exercises.⁶ MOUs are further detailed in Chapter 4 of this publication.

Military Support in International and National Disease Outbreaks

According to testimony before the Senate Armed Services Committee provided by Robert Newberry, the DoD participates in exercises, assists in the development of response plans, provides laboratory support to the Agricultural Research Service (ARS) and the Animal and Plant Health Inspection Service, provides military specialists trained in foreign animal disease diagnosis, laboratory diagnosis, epidemiology, microbiology, immunology, entomology, pathology, and public health.⁷ These military experts and their roles are further detailed by John Herbold in Chapter 4, "Military Manpower Assessment." Since the 1970s, there are numerous instances of the DoD participation and support in disease outbreaks and exercises.

There are several examples of DoD support to the U.S. Department of Agriculture during natural outbreaks of disease. In 1971, the DoD provided 4,000 military personnel to assist in stemming the outbreak of Venezuelan equine encephalitis in Texas.⁸ The U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID) developed the vaccine to quell this outbreak of encephalitis.⁹ Next, during 1971 and

1972, more than four hundred DoD personnel took part in combating the Newcastle disease in Texas and California. In 1983, the Pentagon supplied manpower and equipment in response to an avian influenza outbreak in Pennsylvania.¹⁰ And in June 1997, the DoD provided the U.S. Department of Agriculture use of facilities and specialized equipment to conduct spraying operations to combat the Mediterranean fruit fly in Florida. In 1999, the U.S. Army Medical Research Institute for Infectious Diseases collaborated with the U.S. Department of Agriculture and the Centers for Disease Control and Prevention (CDC) to identify the causative agent for the West Nile fever outbreak in New York City.¹¹ Finally, on December 23, 2003, a case of “mad cow disease” or bovine spongiform encephalopathy (BSE)¹² was discovered in Mabton, Washington. An Air Force aircraft transported a suspected BSE infected sample to the UK for confirmatory analysis.¹³ Use of the Air Force asset allowed for rapid and safe transport, and enabled a quick confirmation of the BSE disease. In addition to these successful uses of the U.S. military in a research and response function, other nations have used their militaries for consequence management activities.

Foot-and-mouth disease is a highly communicable viral disease of cattle and swine, and other cloven-hooved ruminants. Although foot-and-mouth disease is not recognized as a zoonotic disease, its economic consequences are devastating. The 2001 foot-and-mouth disease outbreak in the UK cost the country an estimated £ 3.1 billion and £ 2.7-3.2 billion in lost revenue from agricultural trade and tourism, respectively.¹⁴ During the foot-and-mouth disease crisis, approximately 2,900 British soldiers assisted with quarantine operations and logistical assistance.¹⁵

To prevent the spread of disease, meticulous border checks were critical. One month into the FMD outbreak, soldiers were called to accomplish border checks in the Republic of Ireland in an attempt to stop the spread of disease.¹⁶ In addition to the use of military forces for border checks and quarantine, the UK military provided logistical support as well. In Uruguay, when a similar outbreak occurred in 2000, the military shut down all human and animal movement into and out of the restricted area. This quarantine action resulted in the need for military to also conduct humanitarian assistance through airdropped food supplies to the local population.¹⁷ This airdrop demonstrated an alternative use of military forces in an agricultural emergency.

During the 2001 UK outbreak, the military was directed by the UK Ministry of Agriculture, Fisheries and Food to manage the logistics of transporting and disposing of over 3.9 million animal carcasses. In addition to transportation, military assets were used to construct the burial pits for carcass disposal. On March 25, the UK Government directed the British Army to dig huge pits at a closed military airfield near Carlisle, in Cumbria.¹⁸ It is reported that some pits used during the outbreak measured over 8 soccer fields in length and held thousands of animals.¹⁹ In some areas, the actual slaughter was carried out by licensed slaughter teams.²⁰ However, on March 28, the British army had to slaughter thousands of sheep near Cumbria.²¹

Despite the successful use of the UK military forces, the decision to deploy the army in a logistical support role took place at a late stage in the epidemic, thus resulting in a backlog of carcasses that stressed the local communities.²² Due to the extensive nature of the UK foot-and-mouth disease outbreak, civilian resources were not robust enough to respond to the event alone. The military played a crucial role in the containment and consequence management of the foot-and-mouth disease episode.

In Malaysia, the military were used in similar roles to that of the UK foot-and-mouth disease crisis; however, there were some adverse consequences. In 1998-99, swine in Malaysia manifested an unknown neurological disease. Even before the causative agent—the Nipah virus—was discovered, the disease had spread significantly, ultimately causing 104 human deaths and countless infections.²³ Interestingly, more than 1,500 Malaysian military personnel participated in the national effort to quarantine, euthanize, and dispose of approximately one million pigs. Because of the need to quickly stem the epidemic, and the lack of other options, this involved herding the animals into freshly dug pits and shooting them from above. As a result of this type of close contact, two soldiers contracted the disease and many others sought psychological counseling. Although it is very unlikely that this method of eradication would be employed in the United States, a similar event on United States soil may see the military monitoring roads, borders, and farms, enforcing quarantine restrictions or providing communications, transportation (air and land), and earth-moving services.

U.S. Agroterrorism National Exercises

Agroterrorism exercises afford government authorities and industry leaders the opportunity to participate in simulated response measures, to appraise the efficacy of existing policy structure, and to identify barriers to interagency communication and cooperation that occur during crisis management. The federal government has sponsored two separate series of agroterrorism exercises: "*Crimson*" and "*Silent Prairie*." In terms of state sponsored exercises, Georgia, North Carolina, Kansas, and Texas are at the forefront of preparing for agroterrorism and have held numerous exercises to support their effort.

The "*Crimson*" series was developed by the Analytic Services (ANSER) Institute and sponsored by the U.S. Department of Agriculture. The first three exercises were conducted between September 2002 and January 2003. *Crimson Sky* and *Crimson Guard* both dealt with foreign animal disease (FAD) outbreaks while *Crimson Winter* simulated an attack on the U.S. food supply. The Department of Defense was reportedly involved in only the *Crimson Sky* exercise.

Crimson Sky, developed with considerable input from the North Carolina Department of Agriculture, was the first of six exercises commissioned involving the entire USDA as well as principles from other federal agencies. It was designed to test the existing capabilities of the federal government to respond to an unexpected and extremely pathogenic outbreak. Participants were divided into four groups: interagency, USDA, industry, and "various states," and each of them were asked to coordinate a containment and eradication response to the outbreak.²⁴

The "*Silent Prairie*" series was sponsored by the National Defense University and grappled with the problem of an agroterrorist attack during a period of mass military deployment. Two separate exercises were held, one in June 2002, and the other in February 2003. The Office of the Secretary of Defense, the U.S. Army National Guard, Joint Chiefs of Staff, and other military leaders participated in this agroterrorism exercise, though specific details of their roles are not disclosed in open literature. The exercises were "designed to give senior government officials insights into the nuances and complexities of policymaking in the current global security environment and to illuminate policy and organizational options."²⁵

The Institute for National Strategic Studies (INSS) hosted two exercises titled *Silent Prairie*, held at National Defense University's National Strategic Gaming Center.²⁶ The exercise sought to improve dialogue between the Legislative and Executive branches during a simulated national emergency of foot-and-mouth disease. On June 25, 2002, members of Congress, executive agency officials, and military leaders convened to take part in the exercise. Participants examined the consequences of an agroterrorist attack during a large-scale U.S. armed forces deployment – which closely mirrors today's circumstances with American military personnel and resources assigned to Iraq and Afghanistan. The exercise also explored the economic ramifications of such an attack and the response necessary once a perpetrator had been identified.

Those involved in *Silent Prairie* were forced to grapple with the challenge of balancing sufficient military capability versus domestic emergency response, management, and enforcement. “Participants examined the gravity, complexity, and difficulty inherent in responding; issues [*sic*] that would arise in a national level agricultural bioterrorism incident coincident with a large-scale overseas deployment of U.S. Armed Forces.”²⁷

The second exercise in the *Silent Prairie*²⁸ series simulated a hypothetical, 45-day attack of foot-and-mouth disease on the United States. Continuing with the theme of the previous exercise, this one was concerned with how the nation would be equipped to respond to an agroterrorism incident during a major military deployment overseas. Members of Congress, the Deputy Secretaries of Defense and Agriculture, the Surgeon General, and members of other state and federal agencies served as part of the forty individuals who participated in the exercise held on February 11, 2003.

Despite MOUs, Senate testimony, and exercises detailing military support, the interactions between the military and civilian community are not without flaws especially during a mass deployment situation. For instance, the U.S. Department of Agriculture Animal and Plant Health Inspection Service requested military assistance from the Army Veterinary Corps during the October 2002 through May 2003 exotic Newcastle disease (END) epidemic that effected bird populations in California, Nevada, Texas, and Arizona. END is an avian disease with a mortality rate

of up to 90% for exposed birds. The Army Veterinary Corps was unable to commit personnel to assist in the END crisis due to involvement in Operation Enduring Freedom (Afghanistan) that was initiated October 7, 2001, and in Operation Iraqi Freedom, initiated March 20, 2003.²⁹ The END epidemic resulted in over 19,000 premises being quarantined and almost four million birds depopulated.³⁰ Although the U.S. Department of Agriculture Animal and Plant Health Inspection Service was successful in quelling the disease, military assistance would have been beneficial and may have resulted in a quicker resolution. This crisis represents an important lesson to the civilian community: during a time of war, the military may have other national defense obligations that prevent fulfilling responsibilities detailed in MOUs to the U.S. Department of Agriculture Animal and Plant Health Inspection Service.

U.S. Agroterrorism State Exercises

Though the federal government developed two important and seemingly effective series of agroterrorism exercises, state-sponsored exercises – often incorporating county, state, and regional participation – have become far more prevalent and proactive in addressing this potential threat. This effort to heighten awareness of and preparedness for agroterrorism attacks is supported by a handful of enthusiastic and concerned localities and states. With the majority of American livestock and poultry residing in the Midwest, Southeast, and Great Plains; states like Georgia, North Carolina, Kansas, and Texas are at the forefront of this issue.

Georgia was the first state to hold an exercise that dealt with an attack on its agriculture. Its initial effort, the *Georgia State Avian Influenza Exercise*, was conducted in 1999. It later sponsored a regional exercise that simulated foot-and-mouth disease and included the participation of Florida, North Carolina, and South Carolina. The DoD participated in both of these exercises.

In the aftermath of the 1994 floods in Georgia, the state's Department of Agriculture was requested to develop an animal disaster plan that could "mitigate the effects of catastrophic disaster on Georgia's animal industries."³¹ A year later, Georgia became the first state to feature an Emergency Support Function (ESF) that applied solely to animal industry

and agriculture catastrophes.³² The *Georgia State Avian Influenza Exercise* was intended to test the state's new ESF-14 through a simulated introduction of avian influenza (AI). Sixteen state and federal agencies were present at the exercise.

A regional foot-and-mouth disease exercise was conducted August 9-12, 2001, and was comprised of a multi-state delegation from Georgia, Florida, North Carolina, and South Carolina. The exercise simulated a foot-and-mouth disease outbreak in Florida that ultimately spread into Georgia. Its objective was to test the response of support agencies as well as evaluate the projected cost of operations.³³ The Georgia National Guard was present and participated in the state's operation center during this 2001 tabletop exercise.³⁴

North Carolina is one of the top producers in the poultry and swine industry, boasting a sizable portion of the nation's total population of broilers and hogs. Because of this vested interest in preserving the integrity of the agricultural system, North Carolina has been a leading proponent in the development of exercises and policy meant to diminish the effects of an agroterrorism attack.

North Carolina conducted the *Silent Farmland*³⁵ exercise in August 2003 to simulate an outbreak of foot-and-mouth disease in the state. *Silent Farmland* was designed to test state and federal response measures and to understand the ramifications of an agricultural bioterrorism attack on state and federal security. The exercise also evaluated the ability of key agencies to communicate and cooperate with each other. The exercise model was an adaptation of the one developed for *Silent Prairie* through the National Defense University's National Strategic Gaming Center. *Silent Farmland's* objective was to "highlight the protections needed to effectively deploy and utilize the North Carolina National Guard, as well as Department of Defense personnel, during an agricultural bioterrorism event."³⁶

With the support of its National Agricultural Biosecurity Center (NABC),³⁷ Kansas has been the host of several agroterrorism exercises. Two of these simulations, *Exercise Prairie Plague* and the *Jefferson County Emergency Response Exercise*, made no reference to military involvement. Exercises *High Stakes* and *High Plains Guardian* featured a replicated outbreak of foot-and-mouth disease across Kansas and utilized

the Kansas National Guard as a third echelon of response to state law enforcement and traffic authorities.³⁸

According to its final report, “the purpose of the NABC-KSU [Kansas State University] High Stakes simulation was to exercise Kansas local, state, and federal departments and agencies in the preparedness for, response to, and consequence mitigation of an agroterrorism attack on that state’s livestock industry.”³⁹ The simulation featured an outbreak of foot-and-mouth disease across Kansas. The National Agricultural Biosecurity Center and Kansas officials also sought to determine necessary support requirements from federal departments and agencies for response and to identify inefficiencies that arose during the coordinated emergency management efforts.⁴⁰ The hypothetical foot-and-mouth disease outbreak was based upon the same model used by the U.S. Department of Agriculture in its *Crimson Series* developed by the North Carolina Department of Agriculture and Consumer Services.⁴¹

In terms of military involvement in disease control measures, the final report argues for the Kansas National Guard to act as “third echelon of responders” once state law enforcement and transportation authorities become unavailable.⁴² The Kansas National Guard could also be used to ensure emergency traffic patterns are followed, restricted zones are maintained, and any other response measures are fully enforced.⁴³ The final report for *High Stakes* is very forthright in its observation that it is important to include military personnel in these emergency response activities.

In August 2004, Kansas state agriculture and emergency disaster agencies conducted the *High Plains Guardian* exercise simulating another outbreak of foot-and-mouth disease. During this exercise, the state evaluated the military support aspect of agricultural disaster response. Participants included the Kansas Highway Patrol, Kansas Bureau of Investigation and Federal Bureau of Investigation, U.S. Northern Command, Kansas National Guard, and military reserve units. The Kansas adjutant general and state director of homeland security, Major General Tod Bunting, reported that Kansas has approximately 8,000 soldiers and airmen who are available on short notice to respond to an agroterrorism attack. Of these, 2,000 guardsmen would likely be used for quarantine to prevent movement of livestock on the roadways.⁴⁴ Although all Kansas counties have not completed an agroterrorism emergency plan, exercises

such as *High Plains Guardian* provide valuable information regarding the expected use of state and federal military assets.

As the home to more head of cattle than any other state in the United States, Texas predictably harbors an acute concern over the prospect of agroterrorism attacks within its borders. The Texas Animal Health Commission (TAHC) has sponsored much of the effort to prepare for this threat. In the past four years, Texas has hosted three significant agroterrorism exercises. During November of 2000, *Tripartite Foreign Animal Disease Test Exercise Program* tackled the challenge of coordinating a multi-national response to an outbreak of foot-and-mouth disease that threatened the United States, Mexico, and Canada. Conducted a year later, the *State of Texas Foreign Animal Disease Modified Functional Exercise* tested the state's capability of coping with a pathogenic outbreak. Another Texas event was the *Panhandle Exercise* which was more localized in nature, both in the region in which it focused (the Texas Panhandle) and the industry on which it concentrated (cattle).

The *State of Texas Foreign Animal Disease Modified Functional Exercise*⁴⁵ was the result of a partnership between the Texas Division of Emergency Management and the Texas Animal Health Commission, with the assistance of Texas A&M University. Held on June 26-29, 2001, it simulated a foot-and-mouth disease outbreak originating at Texas A&M's Swine Facility. Over the course of the exercise, the disease spread quickly, infecting various locations throughout Brazos, Burleson, and Robertson Counties.

The Texas National Guard was a full participant in the state foreign animal disease exercise.⁴⁶ The Texas National Guard offered intensive logistical support for aircraft (both fixed and rotary), construction, transportation, traffic control and communications support in association with the Texas Department of Public Safety Emergency Operations Center.⁴⁷

Conclusion

To better understand and conceptualize how the military and its personnel could be involved in agroterrorism response measures, it is important to review the numerous worldwide natural outbreaks and exercises conducted in the United States. This review is especially vital

because many of the individuals who are charged with responding to potential natural or agroterrorism incidents are unaware of the situation's gravity or even its existence. Exercises also afford government officials and industry leaders the opportunity to participate in simulated response measures as well as to appraise the efficacy of existing policy structure. Oftentimes, barriers to interagency communication and cooperation are revealed through the practice of these exercises or examination of after-action reports following a natural outbreak. The examination of real-world events and exercises offers critical opportunities for consequence management improvement and reformation.

Notes

1. Christopher R. Greenwood and Jim A. Davis, "Agroterrorism Exercise and Disease Outbreak Project: Phase 1 of the Study of the Military's Role in Combating Agroterrorism," USAF Counterproliferation Center, 6 August 2004.
2. Temporary Committee on Foot and Mouth Disease, 28 November 2002 "Report on Measures to Control Foot and Mouth Disease in the European Union in 2001 and Future Measures to Prevent and Control Animal Diseases in the European Union," point 15, On-line, Internet, 17 February 2005, available from <http://www2.europarl.eu.int/>.
3. CNN.com/World, "Foot-and-Mouth Crisis Timetable," 30 May 2001, On-line, Internet, 17 February 2005, available from <http://archives.cnn.com/2001/WORLD/europe/UK/04/11/fandm.timeline/>.
4. "Report on Measures to Control Foot and Mouth Disease in the European Union in 2001 and Future Measures to Prevent and Control Animal Diseases in the European Union," point 27.
5. Michael E. Peterson, "Agroterrorism and Foot-and-Mouth Disease: Is the United States Prepared?" Counterproliferation Papers, Future Warfare Series No. 13, Air University, Maxwell AFB, AL, 2002.
6. MOU among U.S. DoD, GSA, and USDA/APHIS, 2 June 2000 (DoD), 29 August 2000 (GSA) 30 June 2000 (USDA). 1985 MOU discussed by Robert Newberry, 1999, "Statement by Robert Newberry, Deputy Assistant Secretary of Defense for Combating Terrorism Policy and Support Before the Senate Armed Services

Committee,” 27 October 1999. On-line, Internet, 23 February 2005, available from <http://armed-services.senate.gov/hearings/1999/e991027.htm>.

7. Ibid.

8. Ibid.

9. USAMRIID, “USAMRIID Highlights,” On-line, Internet, 22 February 2005, available from <http://www.usamriid.army.mil/highlightspage.htm>.

10. Ibid.

11. Newberry, “Statement by Robert Newberry, Deputy Assistant Secretary of Defense for Combating Terrorism Policy and Support Before the Senate Armed Services Committee.”

12. Bovine Spongiform Encephalopathy (BSE), widely referred to as “mad cow disease,” is a chronic degenerative disease affecting the central nervous system of cattle. The disease was first diagnosed in 1986 in Great Britain. BSE is a member of a family of diseases which includes scrapie, which affects sheep and goats; various animal encephalopathies; chronic wasting disease of deer and elk; and in humans, both classic and variant Creutzfeldt-Jakob disease (vCJD). BSE infection holds special concern due to the potential effects on humans. On March 20, 1996, the UK’s Spongiform Encephalopathy Advisory Committee (SEAC) announced the identification of 10 cases of vCJD. The epidemiological evidence was consistent with BSE and the causal agent and laboratory evidence provided strong support to the hypothesis of a causal link between BSE and vCJD. On-line, Internet, available from http://www.aphis.usda.gov/lpa/pubs/fsheet_fa_notice/fs_ahbse.html.

13. CNN.com, “U.S. First Apparent U.S. Case of Mad Cow Disease Discovered,” 24 December 2004. On-line, Internet, available from www.cnn.com/2003/US/12/23/mad.cow/.

14. Department for Environment, Food and Rural Affairs (UK government) and Department for Culture, Media and Sport, “Economic cost of Foot and Mouth Disease in the UK,” On-line, Internet, 28 February 2005, available from <http://labouranimalwelfaresociety.org/files/fmdeconcost.pdf#search='economic%20cost%20of%20fmd%20in%20the%20uk'>.

15. CNN.com/World, “Foot-and-Mouth Crisis Timetable.”

16. Ibid.

17. Linda Logan, “News Release: Foot-and-Mouth Disease,” 28 February 2001. On-line, Internet, 9 February 2005, available from www.bansidhegraphics.com/FMD.htm.

18. CNN.com/World, "Foot-and-Mouth Crisis Timetable."
19. "Disaster Relief: The Brave New World of Disaster Relief Operations," Armada International, March 2004, 18-30.
20. Harry Snelson, "Foot and Mouth Disease in the UK—My Experience," from the Proceedings of the North Carolina Healthy Hogs Seminar, Greenville NC, 31 October 2001. On-line, Internet, 9 February 2005, available from <http://mark.asci.ncsu.edu/HealthyHogs/book2001/snelson.htm>.
21. CNN.com/World, "Foot-and-Mouth Crisis Timetable."
22. "Report on Measures to Control Foot and Mouth Disease in the European Union in 2001 and Future Measures to Prevent and Control Animal Diseases in the European Union," point 27.
23. Roslinah Ali, Anthony Mounts, Umesh Parashar, et. al. "Nipah Virus Infection Among Military Personnel Involved in Pig Culling during an Outbreak of Encephalitis in Malaysia, 1998-1999." *Emerging Infectious Diseases*, Vol. 7, No. 4, July-August 2001, page 759. On-line. Internet, 22 June 2005. Available from <http://www.cdc.gov/ncidod/eid/vol7no4/pdfs/ali.pdf>.
24. "Perspectives on Food Security," Food Safety and Inspection Service (FSIS), 29 October 2003, n.p. On-line, Internet, 18 June 2004, available from http://www.fsis.usda.gov/oa/speeches/2003/em_acp.htm.
25. "Silent Prairie Summary Report – INSS Holds First Secretary of Defense Strategic Policy Forum." National Defense University – Institute for National Strategic Studies, n.p. On-line, Internet, 22 June 2004, available from http://www.ndu.edu/inss/Repository/INSS_Proceedings/Strategic_Policy_Forum/SPF_June_02_Silent_Prairie/Silent_Prairie_Summary.htm.
26. Ibid.
27. Ibid.
28. For articles related to this exercises visit the following sites: Michael Doyle, "Nunes takes on ag terror exercise – He and other officials try solving simulated disease outbreak." *Bee Washington Bureau*, 13 February 2003, n.p. On-line, Internet, 18 June 2004, available from http://www.nunes.house.gov/press/2003/newsclips/feb/011303_agbioterrorismFB.htm; Michael Meredith, "Bioterrorism Threat – FMD Defense Simulation." *American Association of Swine Veterinarians*, 17 February 2003, n.p. On-line, Internet, 18 June 2004, available from <http://www.aasv.org/news/story.php?id=466>; and Katherine McIntire Peters, "Officials Fear Terrorist Attack on U.S. Food Supply."

GovExec.Com, 10 June 2003, n.p. On-line, Internet, 18 June 2004, available from <http://homelandsecurity.osu.edu/focusareas/agri-terrorism.html>.

29. Joseph Anelli, Director of Emergency Management, USDA/APHIS, Maryland. Personal correspondence with Christopher Greenwood, 20 February 2005.

30. USDA/APHIS, "2003 Emergency Management Warnings" Online, Internet, 28 February 2005, available from <http://www.aphis.usda.gov/lpa/issues/enc/exoticnc.html>.

31. Paul Williams, "Animal Health Emergency Management and Agroterrorism," *Conference Session: Georgia's Emergency Management Operations Plan for Agriculture and Terrorism*, 23 May 2002, n.p. On-line, Internet, 24 June 2004, available from <http://www.agrosecurity.uga.edu/conf/gema.html>.

32. Ibid.

33. "Agroterror," *National Governors Association*, 6 February 2003, 30-41. On-line, Internet, 23 June 2004, available from http://www.nga.org/cda/files/BIOSUMMIT03_WILLIAMS.PPT.

34. Jeffrey Mahany, Veterinary Medical Officer, USDA/APHIS, Georgia, personal correspondence with Christopher Greenwood 24 February 2005.

35. For additional information regarding exercise *Silent Farmland*, refer to the following reports: "Federal, state, officials to participate in agriculture bioterrorism preparedness exercise," *NC Department of Agriculture and Consumer Services*, 4 August 2003, n.p. On-line, Internet, 21 June 2004, available from <http://www.ncagr.com/paffairs/release/2003/8-03silent.htm>; Chris McIlroy, "North Carolina to Host Agroterrorism Exercise," *Front & Center*, 17 July 2003, n.p. On-line, Internet, 21 June 2004, available from http://www.nga.org/center/frontAndCenter/1,1188,C_FRONT_CENTER%5ED_5708.html; and Dan Wilkinson, "*Silent Farmland* Takes on Threat of Biological Diseases," *WRAL.COM Newswire*, 5 August 2003, n.p. On-line, Internet, 21 June 2004, available from <http://www.wral.com/news/2383350/detail.html>.

36. "HIMSS Related Bioterrorism Projects," *HIMSS National Preparedness Response Task Force*, 14 August 2003, 88. On-line, Internet, 24 June 2004, available from http://www.himss.org/content/files/nprgrid_all_intitatives.pdf.

37. Aside from being recognized as a leading research institute in the field of agriculture, Kansas State University (KSU) is also home to the National Agricultural Biosecurity Center (NABC). The NABC works in conjunction with APHIS "to help coordinate the development, implementation and enhancement of diverse capabilities for addressing threats to the nation's agricultural economy and food supply." Among these capabilities is the development of agricultural security exercises. The NABC also receives some funding from the Department of Defense to conduct agroterrorism

exercises involving National Guard and U.S. Northern Command (NORTHCOM) military assets. On-line, Internet, available from <http://www.ksu.edu/nabc/mission.html>.

38. *Exercise High Stakes*. Final Report. Topeka, KS: National Agricultural Biosecurity Center, 19 June 2003. For a comprehensive account of *Exercise High Stakes*, please refer to its final report. It includes an account of the proceedings, a statement of purpose and objectives, a discussion of key components of the exercise, and a concluding analysis of what can be learned from the simulation.

39. Ibid.

40. Ibid.

41. Ibid.

42. Ibid.

43. Ibid.

44. Roxana Hegeman, "Kansas Readies Defenses against Agroterrorism Attack," *Dodge City Daily Globe Online (DodgeGlobe.com)*, On-line, Internet, 8 February 2005, available from www.dodgeglobe.com/stories/080704/ag_0807040072.shtml.

45. The furnished report on the *Texas Foreign Animal Disease (FAD) Modified Functional Exercise* provides a detailed narrative of the three-day simulation, charting the chronology of the disease outbreak and response measures. "State of Texas Foreign Animal Disease (FAD) Modified Functional Exercise Post-Exercise Report," *Texas Department of Emergency Management*, June 2001, 1-37. On-line, Internet, 24 June 2004, available from http://www.tahc.state.tx.us/emergency/exercises/tamu_exercise_2001.pdf.

46. Confirmed by Christopher Greenwood through electronic correspondence with Dr. L. Garry Adams, Associate Director of the Texas Agricultural Experiment Station and Professor of Veterinary Pathology at Texas A&M University.

47. Christopher R. Greenwood and Jim A. Davis, "Agroterrorism Exercise and Disease Outbreak Project: Phase 1 of the Study of the Military's Role in Combating Agroterrorism," USAF Counterproliferation Center, 6 August 2004, 30.