NAVAL
POSTGRADUATE
SCHOOL

MONTEREY, CALIFORNIA

THESIS

**HOMELAND SECURITY WITHIN STATE
DEPARTMENTS OF AGRICULTURE:
SUCCESS FACTORS AND BARRIERS TO AN EFFECTIVE
SECURITY PROGRAM**

by

Matthew J. Blackwood

September 2010

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REPORT DOCUMENTATION PAGE		*Form Approved OMB No. 0704-0188*

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1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE September 2010	3. REPORT TYPE AND DATES COVERED Master's Thesis

4. TITLE AND SUBTITLE Homeland Security Within State Departments of Agriculture: Components of an Effective Security Program	5. FUNDING NUMBERS
6. AUTHOR(S) Matthew J. Blackwood	

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
    Naval Postgraduate School
    Monterey, CA 93943-5000
	8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING /MONITORING AGENCY NAME(S) AND ADDRESS(ES) N/A	10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government. IRB Protocol number NPS.2010.0032.EP7-A.

12a. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution in unlimited.	12b. DISTRIBUTION CODE A

13. ABSTRACT (maximum 200 words)

 The food and agriculture sector in the United States is vulnerable to attack. One solution is to ensure that homeland security programs within the state departments of agriculture have the necessary support and resources. However, there is little understanding of the abilities and capabilities of state departments of agriculture related to homeland security initiatives. The challenge is that these programs tend to fall between agriculture and homeland security programs.

   This research involved interviewing representatives of 24 state departments of agriculture to identify success factors and barriers related to homeland security programs. Respondents reported multi-state agriculture groups, public-private partnerships, and organizational structure as success factors in building successful homeland security programs. This research found that lack of information sharing, a disconnect between the federal and state government, and inadequate funding created barriers to the implementation of constructive homeland security programs.

   To better position the homeland security programs within state departments of agriculture, this research provides several recommendations. Given the diversity of the roles and responsibilities in agriculture agencies, it is not possible to develop a model program for every state. These recommendations identify components of a model program that agencies could selectively use to enhance the effectiveness of homeland security programs.

14. SUBJECT TERMS Agriculture, Homeland Security, Interviews, Agroterrorism, State Departments of Agriculture, Success Factors, Barriers, Galbraith's Star Model	15. NUMBER OF PAGES 127
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UU

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HOMELAND SECURITY WITHIN STATE DEPARTMENTS OF AGRICULTURE: COMPONENTS OF AN EFFECTIVE SECURITY PROGRAM

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MASTER OF ARTS IN SECURITY STUDIES (HOMELAND SECURITY AND DEFENSE)

from the

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ABSTRACT

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LIST OF ACRONYMS AND ABBREVIATIONS

AETA   Animal Enterprise Terrorism Act

APHIS   Animal Plant Health Inspection Service (agency within USDA)

BSE   Bovine spongiform encephalopathy

CART   County Animal Response Team

CBP   Custom and Border Patrol

DHS   Department of Homeland Security

DoD   Department of Defense

ESF   Emergency Support Function

EOC   Emergency Operations Center

FAS-CAT   Food and Agriculture Sector Criticality Assessment Tool

FBI   Federal Bureau of Investigation

FEMA   Federal Emergency Management Agency

FMD   Foot and Mouth Disease

GAO   General Accounting Office (changed name to Government Accountability Office)

GAO   Government Accountability Office

NASDA   National Association of State Departments of Agriculture

HSPD   Homeland Security Presidential Directive

ICS   Incident Command System

IMT   Incident Management Team

MAAEMA   Mid-Atlantic Agriculture and Animal Emergency Management Alliance

NIMS	National Incident Management System
NRF	National Response Framework
PDD	Presidential Decision Directive
PETS Act	Pet Emergency Transportation Standard Act
SAA	State Administrative Agency
SART	State Animal Response Team
SAADRA	Southern Agriculture & Animal Disaster Response Alliance
SHSGP	State Homeland Security Grant Program
TCL	Target Capabilities List
TLO	Terrorism Liaison Officer
UTL	Universal Task List
USDA	United States Department of Agriculture
WARN	Wisconsin Agro-Security Resource Network

ACKNOWLEDGMENTS

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I. INTRODUCTION

What makes the vulnerabilities in agriculture so worrying is that the capabilities that are required to exploit those vulnerabilities are not significant and certainly far less significant than those that would be required to carry out a mass attack against humans using biological agents.

Peter Chalk (*Agroterrorism: The threat*, 2003, p. 15)

RAND Corporation

For the life of me, I cannot understand why the terrorists have not attacked our food supply because it is so easy to do.

Tommy G. Thompson (Pear, 2004, ¶ 2)

Secretary of Health and Human Services, 2004

A. INTRODUCTION

This research provides state departments of agriculture with a better understanding related to the development of homeland security programs. Information related to agroterrorism indicates that the threats are real and that existing homeland security strategies are fragmented, yet limited guidance is available for the development of homeland security programs. State departments of agriculture are typically responsible for developing prevention programs, protecting agriculture resources, and responding to crop or foreign animal diseases incidents; however, the lack of information related to the capabilities of agriculture agencies to respond to agroterrorism is problematic.

The core of agriculture is centered along the "farm to fork" continuum; however, a more comprehensive definition includes more than just the farm and grocery store and could properly be defined to encompass the related elements of transportation, distribution, machinery repair, and other support sectors. Use of the broader definition reinforces the idea that agriculture and its related sectors are critical to the social, economic, and political stability of the United States.

In the U.S. Senate hearing entitled *Agroterrorism: The threat to America's breadbasket*, Senator Susan M. Collins (R-ME) explains that agriculture:

…is a sprawling industry that encompasses a half-billion acres of croplands, thousands of feedlots, countless processing plants, warehouses, research facilities, and factories for ingredients, ready-to-eat foods, and packaging, as well as the distribution network that brings food from around the Nation and around the world into the neighborhood markets and restaurants via virtually every mode of transportation. (2003, p. 1)

In terms of economic power, agriculture is a major component and accounts for about 13% of the U.S. gross domestic product. The market value of all products sold in 2007 amounted to nearly $300 billion, and approximately 18% of domestic employment relates to the agriculture sector (Monke, 2007; United States Department of Agriculture [USDA], 2007). The United States is the world's largest beef producer and a net beef importer. The estimated total value of global meat and live animal trade is approximately $33 billion (USDA, 2007). In the United States, agriculture accounts for nearly $60 billion or 8% of all exports. Importation of agricultural products into the United States amounts to a total of $47 billion (accounting for 4% of all U.S. imports). Taken together, this makes agriculture a positive contributor to the balance of trade in the United States (U.S. Government Accountability Office [GAO], 2005).

B.   PROBLEM STATEMENT

This research explored elements of a homeland security program within state departments of agriculture. To assist in the process, this study sought to identify success factors and barriers to developing constructive homeland security programs. Currently, an understanding of how homeland security programs within agriculture agencies are structured and function does not exist. This research will develop recommendations for enhancing the capabilities of state departments of agriculture and for improving homeland security programs related to agriculture.

C.   RESEARCH QUESTIONS

1.   Primary Research Question

What are the elements of homeland security programs within state departments of agriculture?

2. Secondary Research Questions

What factors related are to the success of homeland security programs within state departments of agriculture structure?

What barriers are related to homeland security programs within state departments of agriculture structure?

D. METHODOLOGY

This research was comprised of two elements: a rigorous review of the literature and 24 telephone interviews with homeland security officials in select state departments of agriculture. Interviews included a combination of semi-structured questions and relevant probing questions to explore the elements of a homeland security program. In an effort to maintain consistency, a common questionnaire guided all of the interviews.

Using a grounded theory approach, relevant themes and concepts emerged from the data. Through open coding, common themes and attributes emerged. Open coding and data collection activities occurred simultaneously and continued as the core categories were examined, categorized, and evaluated from the evidence collected during the research (Yin, 1994). As the data were coded, specific theoretical propositions surfaced. True to grounded theory, the analysis of the data highlighted specific categories and properties of importance.

E. SIGNIFICANCE OF RESEARCH

The purpose of this study was to examine homeland security programs within state departments of agriculture with the goal of determining characteristics of a model program. While many of the issues represented in this study have been addressed individually, they have neither been adequately viewed as a whole nor have they been studied as they relate specifically to state departments of agriculture. The topic is significant because it provided insights into the emerging role of state departments of agriculture in national security initiatives.

F.   ORGANIZATION OF STUDY

Chapter I provides an overview of the research project. Chapter II discusses the relevant literature on agriculture, agroterrorism, federal policies and guidelines, and elements related to model programs. Chapter III outlines the methods used in the study. Chapter IV presents the data collected through the interviews. Chapter V provides recommendations related to success factors and barriers associated with homeland security programs in state departments of agriculture.

II. LITERATURE REVIEW

The threat of agroterrorism is real. From recent events, we know there are forces that are seeking to harm America in any possible manner and that our agriculture is particularly vulnerable. We know that those who seek to harm us constantly change their tactics. We cannot overlook the threats to agriculture and our food supply.

James Lane[1]
Ford County Undersheriff, Dodge City, KS

A. INTRODUCTION

The literature in this overall field of inquiry is very diverse but is somewhat limited in relationship to structuring homeland security programs within state departments of agriculture. A review of literature can place the existing body of knowledge in the following sub-categories:

- **United States Agriculture Vulnerabilities** *– why are we vulnerable?*
- **Agroterrorism Targets** *– what are the threats?*
- **Guidelines and Reports Related to Homeland Security and Agriculture** *– what policies and programs are in place?*
- **Coordination Initiatives** *– how can regionalism work in agriculture?*
- **Organizational Design** *– how might a homeland security program be structured?*

This chapter provides background and directly relates existing literature to the research questions. Information in the initial two sections assesses agriculture vulnerabilities and describes potential agroterrorism targets. An analysis of relevant guidelines and reports provides supportive background. The final two sections contain

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[1] *To review Biosecurity Preparedness and Efforts to Address Agroterrorism Threats: Hearing before the Senate Committee on Agriculture, Nutrition, and Forestry*, 109th Cong., 1st Sess. (2005, July 20), p. 33.

information related to the coordination initiatives and organizational design elements. This research proposes to look at the intersection of these various bodies of information.

B.   UNITED STATES AGRICULTURE VULNERABILITIES

Agriculture in the United States has undergone radical transformation over the last century. Many characteristics of agriculture create unique challenges related to agro-security. The general susceptibility of the food and agriculture sector to an agroterrorist attack is difficult to eliminate in a systematic way due to the concentration of farms, the openness of farms, and the lack of veterinarians.

1.   Concentration of Farms

According to the U.S. Department of Agriculture (USDA), the number of farms (see Figure 1) in the United States has decreased by over 60% during the last 100 years; however, the size of the farms has increased as farming practices have become more concentrated. The 2007 Census of Agriculture found "that concentration of production in agriculture has increased in the last five years. In 2002, 144,000 farms produced 75 percent of the value of United States agricultural production. In 2007, the number of farms that produced that same share of production declined to 125,000" (USDA, 2007, p. 4). The changes related to the concentration of farms means that a greater percentage of agriculture production is accounted for by the largest farms.

Labor-intensive farming on smaller farms has given way to use of technology on these larger facilities. Because of these larger farms, more and more animals are contained in each premise. Dr. Peter Chalk, an analyst with the RAND Corporation and a biowarfare expert explains:

> …these herds tend to be in very concentrated populations and are reared and bred in close proximity to one another. An outbreak of a contagious disease at any one of these facilities, particularly if it was airborne in character, would be very difficult to contain and could quite easily necessitate the wholesale eradication of all exposed animals, which is both technically and financially demanding. (*Agroterrorism: The threat to America's breadbasket*, 2003, p.14)
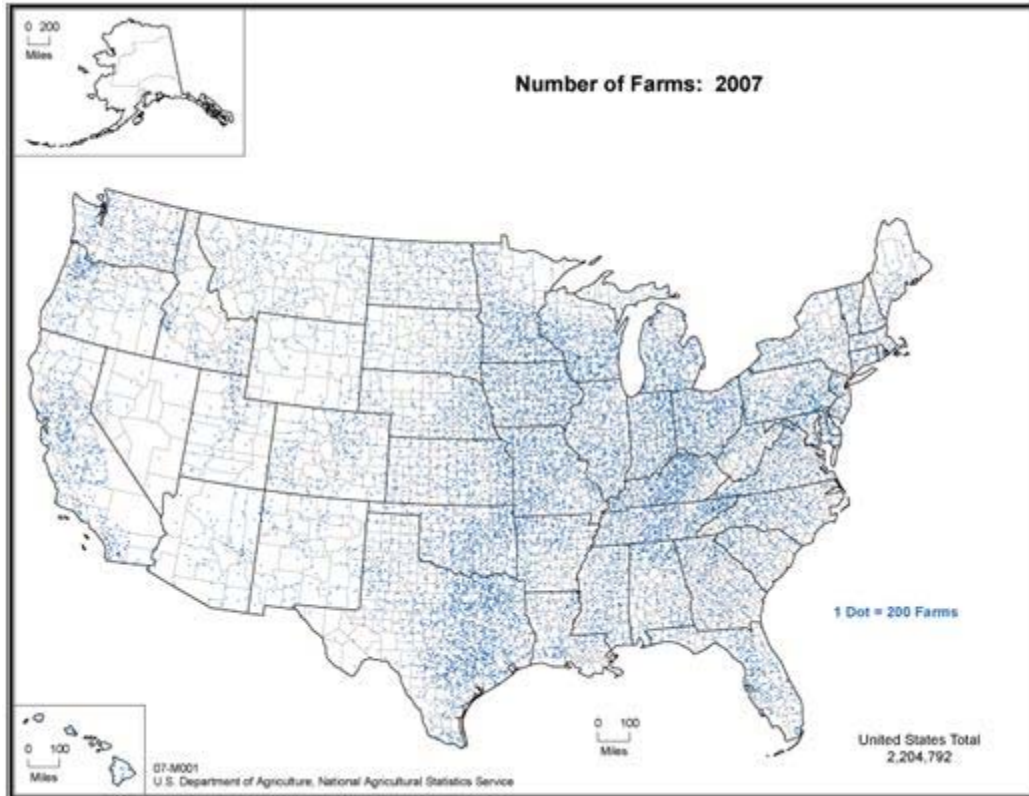
Figure 1.   Concentration of Farms in the United States (From: USDA, 2007)

In addition to the increasing size of farms, a related problem is that livestock and poultry production are becoming more concentrated within specific areas of the United States. Feedlots can house over 55,000 head of cattle, and each animal can consume 30 pounds of feed each day. This concentration offers some economies of scale and decreases transportation expenses; however, it would also make it easy for a potential terrorist to infect a large number of animals within a few premises (Foxell, 2001; GAO, 2005; Monke, 2007). Foxell states that "over 70% of U.S. beef cattle is currently produced within the locus of a 200-mile circle" (2001, p. 110). In a very broad sense, each farm is a potential point of introduction into the food chain and therefore a potential node for an act of agroterrorism.

2.   Openness of Farms

Another potential weak link in overall security initiatives for agriculture is the openness of farms. Farms and food processing facilities tend to be geographically located

in unsecured environments. This concern centers on the lack of security and surveillance programs. While some farms have instituted biosecurity programs to reduce the probability of disease introduction, it is impossible to eliminate all vectors (Chalk, 2004; Cupp, Walker, & Hillison, 2004; GAO, 2005).

In addition, many of these facilities are hard to camouflage due to size and distinct odor. While some critical operations can be located in non-descript buildings, it is impossible to hide large poultry houses or cattle feedlots. Agriculture, in general, requires large tracts of land, and the sheer size of some farms makes it difficult, if not impossible, to restrict access to all areas. Farms have inadequate barriers to keep people out; in most cases, fences and gates exist to keep animals contained (Chalk, 2004; Cupp, Walker, & Hillison, 2004; GAO, 2005).

3.   Lack of Veterinarians

There is a shortage of qualified veterinarians to deal with animal disease outbreaks and food inspection requirements in the United States. The lack of experience of veterinarians with foreign animal diseases is an animal health and food safety concern (Cauchon, 2008a; Cauchon, 2008b; Chalk, 2004; Cupp et al., 2004; GAO, 2005). The limited number of veterinarians is an issue for the food inspection system because veterinarians are typically responsible for much of the meat and poultry processing regulatory work. For example, one agency within the USDA reported that 30% of its veterinarians could be lost to retirement by 2011. Another USDA agency reported that its veterinarian staffing requirement fell short by 15% or 166 veterinarians (GAO, 2009a, GAO, 2009b).

The shortage of large animal veterinarians contributes to the overall problem associated with early detection and response *(Agroterrorism: The threat to America's breadbasket,* 2003). Many veterinarians in the United States lack training related to foreign animal diseases. The Government Accountability Office (GAO) found that the USDA would need to "obtain the 1,200 additional veterinarians trained in responding to foreign animal diseases that it estimates the nation will need to respond to an FMD [foot and mouth disease] outbreak" (GAO, 2002b, p. 5). In many cases, veterinarians serve as

first-line responders, and a decreased pool of qualified agriculture professionals means there is a limited number of personnel who could detect a foreign animal diseases or a foodborne disease.

C.   AGROTERRORISM TARGETS

Terrorism targeting agriculture or food supply is called agroterrorism, which simply put is "the deliberate introduction of a disease agent, either against livestock or into the food chain, for purposes of undermining socioeconomic stability and/or generating fear" (Chalk, 2004, p. xi). The GAO relies on a more narrow focus by limiting the terminology to "the deliberate introduction of animal and plant diseases at the farm level" (GAO, 2005, p. 3) which specifically excludes attacks on food.

In testimony before the U.S. House of Representatives, Dr. Rocco Casagrande, the Managing Director of Gryphon Scientific and a former UN weapons inspector explained that unlike other means of terrorism, an attack on agriculture does not require a high degree of scientific knowledge. Casagrande stated, "due to the very low technical barriers of an attack such as this, there doesn't need to be any specific scientific expertise married with the will" to carry out an attack (*Evaluating the threat of agro-terrorism*, 2003, p. 28). This means that an individual wanting to conduct an agroterrorist attack would just require some basic understanding of placing a pathogen at the proper place in the flow of commodities (*Evaluating the threat of agro-terrorism*, 2003).

Luckily, the agriculture and food sector have not been subject to a large-scale attack. One relatively small-scale example is the intentional contamination of a salad bar in The Dalles, Oregon (1984), in which approximately 750 people became ill. A religious commune intentionally spread salmonella on several salad bars in an effort to affect a local election. A separate incident involved the reported contamination of thousands of crates of Chilean grapes (1989) with cyanide; however, after nearly $300 million in lost imports, scientists were only able to locate two grapes with small quantities of cyanide. Researchers determined that the acid levels naturally found in grapes likely degraded the

cyanide. Even though no human health consequences resulted from the grape scare, it did highlight the potential economic impact of a suspected agroterrorism attack (Davis, 2004; Polyak, 2004).

The majority of agriculture-related health concerns deal with accidental or naturally occurring incidents. In an average year, there are five major foodborne pathogen outbreaks in the United States. A recent study found that nearly "76 million Americans—one in four—are sickened by foodborne disease each year. Of these, an estimated 325,000 are hospitalized and 5,000 die" (Trust for America's Health, 2009, p. 1). Outbreaks of E. coli 0157:H7 provide examples related to the impact of large-scale foodborne contamination on the food supply and the economy (Centers for Disease Control and Prevention, n.d.). Aside from the direct human health issues, these food recalls also have damaged the market share of these companies.

Depending on the disease selected, agroterrorism could be used either to create severe socioeconomic disruption or as a method to cause direct human casualties; however, most experts downplay the use in targeting humans. According to the GAO, "experts believe that terrorists would choose to attack livestock and crops if their primary intent was to cause severe economic dislocation…terrorists would choose to contaminate finished food products if harm to humans was their motive" (GAO, 2003, p. 3). This versatility presents opportunities for terrorists and creates many challenges for homeland security professionals.

The U.S. economy would likely be the primary target during an agroterrorism attack (Wheelis, Casagrande, & Madden, 2002). The costs associated with response and recovery coupled with the loss of international trade and new regulatory costs would be excessive. When researching the economic impacts related to the September 11, 2001, terrorist attacks, Lenain, Bonturi and Koen found that "the international trade system is dangerously exposed, with potentially large repercussions for supply-chain management. Another devastating terrorist attack would exacerbate these trends" (2002, p. 32). The repercussions of an agroterrorist attack would likely throw international trade issues off balance. Even during the response to natural disease outbreaks, trade is often affected.

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Economic losses from an agriculture incident would likely be large and widespread. Some of the potential impacts include the following:

- Direct costs related to the value of lost production, the cost of destroying diseased or potentially diseased products, and the cost of containment (quarantines, vaccines, diagnostics, pesticides, and other related expenses).

- Lost export markets if countries place bans or restrictions on importing U.S. products. This would include expenses related to inspections and other requirements associated with international trade.

A majority of these expenses would be borne by agriculturally dependent businesses (such as equipment manufacturing and repair, suppliers, manufacturing, transportation, retail grocery, and food service industries). Additional lost revenue could affect tourism as potential quarantines restrict movement.

Governmental agencies would likely bear the costs associated with eradication and containment programs and indemnification. The 1997 outbreak of Foot and Mouth Disease (FMD) in Taiwan cost farmers over $4 billion in loss of animals and $10 million for vaccine purchases. The costs for surveillance, cleaning and disinfection of affected livestock premises, and related viral eradication programs continue to climb. The estimated expense associated with trade embargoes was nearly $15 billion. The 2001 outbreak of Foot and Mouth Disease in the United Kingdom resulted in payments of over several billion dollars for the culling operations and nearly a greater amount in the loss of tourism (*Agroterrorism: The threat to America's breadbasket*, 2003; Chalk, 2004).

In some cases it might be difficult, if not impossible, to differentiate between an agroterrorism event and a natural occurrence. In most cases, the spread of the disease or dispersion of insects will typically follow predictable patterns. The concern is that an agroterrorism attack might initial appear to involve an isolated disease outbreak. Under some circumstances, however, the initial outbreak could be radically different. An agroterrorist attack:

> …would likely be carried out on a larger scale, perhaps affecting different regions of the country simultaneously. Such a widespread introduction

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would tax and could overwhelm (at least initially) the resources available to control the outbreak. On the other hand, an accidental introduction would more likely have a single starting point and may be more easily handled by planned emergency response mechanisms and resources depending on time to detection. (Kelly, et al, 2004, p. 111)

An understanding of the threats facing U.S. agriculture interests requires an analysis of all aspects of the "farm to fork" continuum. While the broader definition would include processing, transportation, and other elements, the key to the agricultural sector relates to the following sub-sectors:

1. Animals
2. Plants
3. Food supply

These three sub-sectors within agriculture form the core of homeland security programs within agriculture. In 2005, the GAO reported that it appears "that livestock and poultry are more likely to be targets of a terrorist" than attacks direct towards the food supply (GAO, 2005, p. 2). Experts suggest that:

> …the likelihood of terrorist acts interrupting the production, processing, and distribution of agricultural products is high: A number of different possible plant or animal pathogens could cause harm or loss of production, and even an act of agroterrorism that did not result in the destruction of foodstuffs or interruptions in the food supply could have a psychological impact. (Cupp et al., 2004, p. 97)

1. Animals

One of the more devastating "attacks" on agriculture would be the introduction of a foreign animal disease, such as Foot and Mouth Disease (FMD). The Department of Homeland Security held an exercise called Silent Prairie to assess the effect associated with the introduction of FMD into the United States. In a summary of the exercise, a report from the National Defense University stated, a "response to an agricultural bioterrorism attack could require significantly more resources than the attack on the World Trade Center" (2002, p. 2). Halweil reports that in relation to the simulated introduction of FMD:

> …participants looked on with alarm as the simulated virus raced across America. Within a week, only portions of New England, Hawaii, and Alaska were unaffected. After 45 days, 20 million imaginary animals had

been destroyed. Losses totaled in the tens of billions of dollars, and public panic was leading to calls for martial law. (2005, p. 25)

At the conclusion of the exercise, officials concluded that the American food system, even with the implementing prevented measures, was extremely vulnerable.

Dr. Tom McGinn,[2] the former Assistant State Veterinarian and Director of Emergency Preparedness for North Carolina Department of Agriculture, testified before the Committee on Governmental Affairs in the U.S. Senate that one simulation, involving the intentional introduction of FMD into multiple locations, found that

> By Day Five, we [the disease spread] are already in 23 States, and that Day Five is the first day that the disease is detected. So it is subclinical. It cannot be seen until Day Five and then it is in 23 States. By Day Eight, it is in 29 States, and then we would probably be in a position where there will be a national stop movement declared. The national stop movement would result ultimately in an estimated destruction of over 23 million animals. (*Agroterrorism: The threat to America's breadbasket*, 2003, p. 10)

Estimates vary on the direct costs associated with an FMD outbreak, but the GAO suggests it will be over $24 billion (GAO, 2002b). However, the total federal 2009 budget for the USDA to enhance protection and safety of the nation's agriculture and food supply is $2.8 billion (USDA, n.d.). It is likely that during a widespread outbreak, costs would continue to rise. Although slightly dated, one report states "President Bush's appropriations of $89 billion for one year of military operations and reconstruction in Iraq and Afghanistan roughly equals the costs of uncontrolled FMD in California for a period of only 14 weeks" (Polyak, 2004, p. 6). In addition, loss of agricultural trade would be between $6 and $10 billion a year until the disease is eradicated (GAO, 2002b).

Research shows that the speed at which the problem is detected, diagnosed, and controlled is the key difference between an isolated incident and an economic and public health disaster. The latency period of some animal diseases makes early detection improbable, and "the long period between introduction of a pathogen and discovery of the resulting disease (from days to years) makes successful eradication or containment of

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[2] Dr. McGinn is currently the Chief Veterinarian for the Department of Homeland Security's Office of Health Affairs.

disease very difficult" (Postnikova et al., 2008, p. 1156). Being able to identify and isolate a disease quickly will determine the extent of economic damage and potential public health impacts.

Even though there are no strict guidelines related to the selection of an agent for attacking animals, there are some generally accepted criteria. These criteria include the disease being: highly infectious, contagious, and deadly; hardy so it can survive in the environment; easily spread in a predictable pattern (so it can be known to cause the desired impact); and easy to produce or acquire. If a terrorist organization did not want to alert officials of the attack, they would select an agent that has the potential to seen as a natural outbreak. In many cases, a non-zoonotic[3] agent might be used to prevent harming any of the attackers.

One concern is how little of the material would be necessary to cause a great deal of harm. A would-be terrorist could obtain a small amount of an infectious substance from any of the places around the world where the disease is endemic and could easily smuggle it into the United States. In most cases, no advanced scientific expertise is necessary to transport the material. For example, "all an individual would need to do is wipe a handkerchief on the mouth of an infected animal, put that into a zip lock bag, buy an airline ticket to the United States, and then drop the infected handkerchief in a feedlot" (Rich, 2005, p. 9). This is a challenge because a terrorist could easily introduce a disease into a farm or feedlot, and it would be extremely difficult to detect or respond to this animal disease incident (Casagrande, 2000; Wheelis et al., 2002).

2   Plants

While it is more likely that livestock will be a target than cultivated plants, agriculture crops remain vulnerable. The introduction of an agriculture pest[4] would have

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[3] Zoonotics are diseases that are harmful to both humans and animals. Non-zoonotics, therefore, are diseases that are only harmful to animals.

[4] Agriculture pests include any insect, rodent, nematode, fungus, weed or other form of terrestrial or aquatic plant or animal life or virus, bacteria or other micro-organism (except viruses, bacteria, or other micro-organisms on or in living man or other living animals) that are not native to that environment and cause adverse damage to plants.

the potential to damage or destroy much of the grains in the United States. However, plant pathogens tend to be much more technically difficult to manipulate than animal diseases. A terrorist using one of these diseases would need the expertise to overcome the biological conditions, such as humidity, temperature, or wind, which would make plant pathogens grow and prosper. Even skilled plant pathologists can find it difficult to control diseases in the field and typically find the environment uncooperative (Chalk, 2004; Cupp et al., 2004; Foxell, 2001; Monke, 2007).

Hundreds of diseases have the potential to affect agriculture resources, but only a few dozen have the ability to cause significant economic impact. One of the challenges is that there is no agreed-upon list of plant pathogens or insects that terrorist would likely use or even a list of pests (e.g., diseases or insect) which would likely to the most damage to American agriculture.

In testimony before the U.S. Senate, Dr. John Sherwood[5] stated:

> …the geographical expanse and economic importance of the U.S. agriculture enterprise creates a vulnerability for the intentional or unintentional introduction of plant pathogens that could directly affect crop yield and the viability of our crop production systems in our fragile rural economies. (*To Review Biosecurity Preparedness*, 2005, p.31)

The USDA and other experts have identified some pathogens that terrorists could use during an agroterrorist attack. In most cases, plant pathogens have no direct impact on human health. The likely outcome would be economic and human health threats related to altering diets. The distinction is that plant pathogens target the agriculture crops and result in the destruction and loss of crops. It also takes a longer period for plant diseases to achieve the desired impact as compared to animal diseases (Chalk, 2004; Casagrande, 2000; Cupp et al., 2004; Foxell, 2001; Monke, 2007).

Two threats of concern are wheat stem rust and soybean rust. Wheat stem rust has the potential to devastate the world supply of wheat. Estimated losses could be severe (up to 70%) over a large geographic area and would result in the destruction of many fields.

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[5] Dr. John Sherwood is the head of the Department of Plant Pathology at the University of Georgia in Athens, Georgia.

Some reports indicate that wheat rust has been "weaponized" as an agroterrorism agent. Another potential agent is soybean rust which is a pathogen naturally spreading in the United States. Soybean rust has the potential to result in crop yield losses up to 80% (Cupp et al., 2004; DaSilva, 1999; Foxell, 2001; Schaad, Shaw, Vidaver, Leach, & Erlick, 1999). The conversion of these diseases into weapons is a concern for even diseases already found in isolated areas within the United States. The weaponization could enable the spread into other areas where control efforts or natural predators would not be able to limit the impact of the disease introduction.

Another threat to agriculture is invasive insects. While most of these invasive pests cause damage to forest resources, many have the potential to cause severe damage to agriculture crops. For example, the boll weevil was able to do extensive damage to the U.S. cotton-growing industry in the early 1920s. A combination of federal and state initiatives to control the insect enabled the industry to resume production. The introduction of non-native insects has a severe potential economic impact because eradication and control programs are likely to cost millions of dollars. Another potential impact of invasive insects is the alteration of the native environment with resulting impact of tourism.

Human health would not be a consideration when evaluating the risks associated with the use of insects to destroy agriculture crops. The insects would directly damage the quality and quantity of the crops. In most cases, the only indirect impact on humans would relate to altering diets. If it were not possible to eradicate the pests, crops resistant to the invasive pest would be necessary to replace the original crop.

3.   Food Supply

The primary intent of targeting the food supply would be to cause economic impact and to kill people (*Evaluating the threat*, 2005). Spreading foodborne pathogens would not necessarily destroy the food; it would just contaminate it. Maintaining the supply of food requires addressing both food safety and food defense. Food safety relates to protecting the food from accidental contamination. Food defense, on the other hand, involves protecting the food from intentional adulteration.

Even though thousands of people become sick annually due to foodborne pathogens, the food supply of the United States is among the safest in the world. While not designated as agroterrorism, the recent concerns related to peanut butter and spinach highlight some of the potential weaknesses of current food safety programs. In a 2003 hearing before the Committee on Governmental Affairs in the U.S. Senate, Dr. Peter Chalk testified that:

> …the farm-to-table food continuum offers a low-tech yet highly conducive mechanism for the transport and dissemination of bacteria and toxins, such as salmonella, E. coli, and botulism. Developments in the farm-to-table food continuum have greatly increased the potential number of entry points for these contaminants, which has greatly augmented the technical ease of actually carrying out an orchestrated foodborne attack. (*Agroterrorism: The threat to America's breadbasket*, 2003, p.16)

Production of food along the "farm to fork" continuum is a multi-stage process involving many different suppliers and producers. Trust for America's Health explains that the "decentralized governmental food safety system means state and local governments have jurisdiction for food safety issues in their communities beyond those that are directly regulated and monitored by federal agencies" (2008a, p. 11). Currently, there is a great deal of interest on the federal level to complete an overhaul of the food safety system. An important part of this re-structuring involves enhancing the collaboration of state and federal agencies.

A top concern related to food safety is the lack of uniform surveillance at small-scale production facilities. Many of these plants have not established adequate biosecurity programs and do not have mechanisms in place to track the dissemination of products to supermarkets and other distributors. While these facilities are likely the most vulnerable, an attack on the small-scale producers would likely have minimal consequences, given their smaller market distribution (*Agroterrorism: The threat to America's breadbasket*, 2003).

All aspects of agriculture, including animals, plants and the food supply, are vulnerable to an attack. These threats are part of all-hazard preparedness models within the food and agriculture sector. An attack would likely not result in direct human

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causalities but would be designed to harm the economy and cause psychological stress. In their evaluation of a biological attack on agriculture, Wheelis et al. state that:

Even a massive outbreak of plant or animal disease in the United States would not cause famine; the agricultural sector is too diverse, too productive, and too closely regulated for that to be a realistic possibility. However, a successful attack could have severe economic consequences. The most substantial impact would be the loss of international markets for animal or plant materials. (2002, p. 570)

If the intent of terrorists were to cause human causalities, there would be more effective ways than an attack on agriculture. However, if the primary intent were to cause economic harm or to create an atmosphere in which people lost confidence in the government, agroterrorism would be a likely means of attack.

D.   GUIDELINES AND REPORTS

There are numerous directives, policies, and documents related to homeland security and agriculture. Information contained in these guidelines and reports enables a better understanding of issues related to agroterrorism. In addition, these various documents also provide some recommendations for the enhancement of state-based homeland security programs.

1.   Executive Branch Initiatives

Agriculture and food safety programs have not traditionally been a major component of terrorism prevention and homeland security programs. Presidential Decision Directives (PPD) outline various counterterrorism initiatives released during the Clinton administration (see Table 1). Publically released portions of PDD 39 (U.S. policy on counter-terrorism) and PDD 62 (combating terrorism) did not even address agriculture. Issues related to critical infrastructure planning (PDD 63) did not include agriculture or food. However, in more recent federal homeland security guidance documents, agricultural issues have been mentioned (Monke, 2007).

Select Presidential Decision Directive		
Presidential Decision Directive 39	U.S. Policy on Counter-terrorism	1995
Presidential Decision Directive 62	Combating Terrorism	1998
Presidential Decision Directive 63	Protecting America's Critical Infrastructures	1998

Table 1.   Select Presidential Decision Directives

A common practice is for U.S. Presidents (used by both George W. Bush and Barrack Obama) to use Homeland Security Presidential Directives (HSPD) as policy guidance documents related to homeland security programs (see Table 2). In terms of agriculture, the most relevant are HSPD-7 and HSPD-9. Both HSPD-5 and HSPD-8 also provide a more indirect connection to preparation of agroterrorism events.

Select Homeland Security Presidential Directives		
HSPD-5	Management of Domestic Incidents	2003
HSPD-7	Critical Infrastructure Identification, Prioritization, and Protection	2003
HSPD-8	National Preparedness	2003
HSPD-9	Defense of U.S. Agriculture and Food	2004

Table 2.   Select Homeland Security Presidential Directives

HSPD-7 provides information related to critical infrastructure including agriculture (replaced PDD-63) and mandates that federal agencies collaborate with private sector partners. This directive gives the Secretary of Homeland Security the responsibility for coordinating the overall national effort of protection. It also stipulates that federal sector-specific agencies be required to develop policies related to critical infrastructure within each sector, including the food and agriculture sector (U.S. Department of Homeland Security [DHS], n.d.).

The current version of HSPD-9 outlines the policies related to the prevention of terrorist attacks and major disasters involving food and agriculture (DHS, n.d.). This HSPD is the only one specifically designed to address vulnerabilities in the food and agriculture sector in the United States. It "instructs agencies to develop awareness and

warning systems to monitor plant and animal diseases, food quality, and public health through an integrated diagnostic system" (Monke, 2007, p. 22). The implementation of HSPD-9 requires federal agencies to rely on capabilities developed within HSPD-8 and HSPD-5.

The guidelines in HSPD-8 provide measures to strengthen the preparedness initiatives of the United States related to terrorist attacks and major disasters (DHS, n.d.). HSPD-8 describes the how Federal agencies must prepare for a variety of incidents and establishes a National Preparedness Goal. In order to achieve the National Preparedness Goal it creates the Target Capabilities List to measure preparedness. It also contains numerous planning scenarios including a biological attack on the food and agriculture sector. One example (Scenario #13) addresses the intentional introduction of a disease into the food supply. A second scenario (Scenario #14) relates to the introduction of a foreign animal disease. These two scenarios highlight the importance that of agriculture in terms of homeland security initiatives (Bea, 2005).

A more general connection to agriculture is HSPD-5, which describes the development of a National Response Plan (now called the National Response Framework [NRF]). The NRF offers guidance on the basic principles that all stakeholders use to prepare for disasters and emergencies and provides a unified national response to incidents on the local level all the way up to the catastrophic national emergencies. The NRF creates a comprehensive, national, all-hazards approach to incident response in the United States (Monke, 2007).

While the National Response Framework provides the general structure related to incident management and emergency response, the Emergency Support Function annexes contain the details related to the specific roles and responsibilities of governmental agencies. These and serve as the primary mechanisms for providing assistance at the operational level. The connection to agriculture is through ESF #11, which deals with *Agriculture and Natural Resources* (Monke, 2007).

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2. Congressional Hearings

A series of Congressional hearings relate to agroterrorism and biosecurity initiatives (see Table 3). From 1999 to 2006, the U.S. Senate held four hearings while the U.S. House of Representatives held two meetings. These hearings highlight the of the agroterrorism threats facing the United States. Testimony also provides the opportunity to identify potential recommendations presented by witnesses representing state departments of agriculture.

Select Congressional Hearings on Agroterrorism

Agriculture biological weapons threat to the United States   October 27, 1999
      Subcommittee on Emerging Threats
        Committee on Armed Services
         United States Senate

Agroterrorism: The threat to America's breadbasket   November 19, 2003
      Committee on Governmental Affairs
        United States Senate

Evaluating the threat of agro-terrorism   May 25, 2005
      Subcommittee on Intelligence, Information Sharing, and
      Terrorism Risk Assessment
        Committee on Homeland Security
         U.S. House of Representatives

To Review Biosecurity Preparedness and Efforts to Address   July 20, 2005
Agroterrorism Threats
      Committee on Agriculture, Nutrition, and Forestry
        United States Senate

Bio-Security Coordination   January 9, 2006
      Subcommittee on Research, Nutrition, and General Legislation
        Committee on Agriculture, Nutrition, and Forestry
         United States Senate

Agroterrorism's Perfect Storm: Where the Human Animal Disease Collide   June 21, 2006
      Subcommittee on Prevention of Nuclear and Biological Attack
        Committee on Homeland Security
         U.S. House of Representative

Table 3.   Congressional Hearings on Agroterrorism

In testimony before the Committee on Governmental Affairs in the U.S. Senate, Dr. Peter Chalk stated, "Agriculture, however, is one area that has received relatively little attention in this regard, particularly with respect to accurate threat assessments and consequence management procedures. Indeed, the sect was only included as a specific component of U.S. National Counterterrorism Strategy following al Qaeda's attacks on September 11" (*Agroterrorism: The threat to America's breadbasket*, 2003, p. 14). These hearings highlight the importance of agroterrorism planning and show the seriousness with which members of Congress take agroterrorism.

Congress held one of the initial hearings related to agroterrorism on October 27, 1999. This Congressional hearing focused on *Agriculture biological weapons threat to the United States* (*Agriculture biological*, 1999; Monke, 2007). The hearing was comprised of both open- and closed-testimony. One witness in the open portion of the hearing presented the view of the Department of Defense (DoD) and summarized his remarks by explaining that the:

> DoD clearly recognizes the vulnerability of the national infrastructure, and American agriculture as one of the pillars on which American economic power rests. It represents a lucrative and vulnerable target for terrorists. Attacking the nation's agriculture and food supply system is not a new idea. In 1915, the German's [sic] infected some 3,500 horses purchased in the United States by the allies for the World War I war effort. During the days of the Cold War, the former Soviet Union had an ambitious bio-warfare program targeted against American agriculture. The threshold has been breached; our vulnerabilities are known. (*Agriculture biological*, 1999, Testimony of Robert Newberry, p. 8)

In November 2003, the United States Senate Committee on Governmental Affairs held a hearing entitled *Agroterrorism: The threat to America's breadbasket*. Senator Susan M. Collins (R-ME) stated that the hearing's goal was to "examine the vulnerability of America's agriculture and food industry to terrorist attacks, what our Nation must do to defend against agroterrorism, and how prepared we are to respond to such an attack" (*Agroterrorism: The threat*, 2003, p.1). The testimony addressed issues related to animal diseases, food security, plant pests and diseases and other aspects of potential agroterrorism (*Agroterrorism: The threat*, 2003).

The U.S. House of Representatives conducted its first hearing, *Evaluating the Threat of Agro-Terrorism* on May 25, 2005. Testimony from two witnesses occurred in an open-session followed by "a classified threat briefing from experts from the DHS Office of Information analysis, the National Counterterrorist Center, and the Federal Bureau of Investigation in the area of agricultural terrorism" (*Evaluating the threat*, 2005, p. 1). One of the issues raised was that state departments of agriculture are not receiving notification regarding potential threats from DHS (*Evaluating the threat*, 2005; Monke, 2007).

Later in 2005, the U.S. Senate Committee on Agriculture, Nutrition, and Forestry conducted a hearing entitled *To Review Biosecurity Preparedness and Efforts to Address Agroterrorism Threats*. The intent of the hearing was to "review the efforts by public and private entities to increase biosecurity and agroterrorism preparedness" (To Review Biosecurity Preparedness, 2005, p. 1). Two panels, consisting of four witnesses each, examined issued related to law enforcement, government, and the private sector. The witnesses addressed issues related to food safety, animal diseases, and threats against agriculture crops (Monke, 2007; *To Review Biosecurity Preparedness*, 2005).

In January 2006, a subcommittee of the U.S. Senate Committee on Agriculture, Nutrition, and Forestry met at the Farm Show Complex in Harrisburg, Pennsylvania with the goal "to hear about the state of agriculture in the area of biosecurity (*Bio-Security Coordination*, 2006, p. 1). It was comprised of three panels: government officials, research institutions, and private industry. The government panel included witnesses on both the federal level (USDA and Health and Human Services) and the state level (Pennsylvania Department of Agriculture). Research representatives came from colleges and universities with public health, veterinary science, and agriculture backgrounds. The private industry sector represented by feed, dairy, and grower groups from throughout Pennsylvania (*Bio-Security Coordination*, 2006).

An additional subcommittee hearing related to agroterrorism took place in Athens, Georgia on June 21, 2006, before the U.S. House of Representatives Committee on Homeland Security. This hearing was entitled *Agroterrorism's Perfect Storm: Where Human Animal Disease Collide*. Representative John Linder (R-GA), Chairman of the

subcommittee, noted in his opening remarks that the hearing was intended to "focus on a particular agroterrorist threat that could impact both animal and human health, the threat of zoonotics agents, diseases that can be transmitted from animal to human, are particularly relevant" (*Agroterrorism's Perfect Storm*, 2006, p. 1). The two witness panels were comprised of both state (Georgia) and federal personnel with backgrounds in homeland security and agriculture.

Both the U.S. Senate and the U.S. House of Representatives have held several hearings specifically on agroterrorism and many more on terrorism in general. Testimony given at these hearings has focused on aspects of food safety, plant and animal diseases, and other threats related to agroterrorism. As a result, Congress has enacted laws and appropriations with agroterrorism-related provisions. These hearings are critical in the framing of agriculture issues within homeland security. The information gathered through these hearings provides both success factors and barriers to implementation of programs within state departments of agriculture.

3.   GAO Reports

The U.S. Government Accountability Office (GAO), formerly the General Accounting Office, periodically provides reports to Congress on relevant homeland security initiatives and emergency planning programs. Shortly after the September 11, 2001, attacks, the GAO released a report entitled *Combating Terrorism: Select Challenges and Related Recommendations*. This report is more relevant for the fact that it did not recognize agriculture as being critical in terrorism issues. Comments submitted by the USDA noted, "The report speaks almost solely to an act committed with the purpose of disrupting any one of a number of infrastructures in the country, with the exception of agriculture" (GAO, 2001, p. 168). The focus of USDA comments stressed the point that agriculture needs to be involved in a coordinated U.S. terrorism strategy.

While numerous GAO reports include agriculture, there are several which directly pertain to terrorism related to agriculture and the food supply. One example is, *Foot and Mouth Disease: To Protect U.S. Livestock, USDA Must Remain Vigilant and Resolve Outstanding Issues*. This GAO report primarily dealt with measures for preventing the

introduction of foot-and-mouth disease in the United States and for assessing the ability of the United States to respond quickly and effectively to an outbreak FAD. The GAO found that:

> The magnitude and volume of international passengers, mail, and products entering the United States creates an enormous inspection challenge for USDA and other federal agencies. According to USDA, it would take only one contaminated product coming into contact with one susceptible U.S. animal to start a nationwide outbreak. (2002b, p. 8)

The result is that it is likely impossible to completely prevent the entry of foot-and-mouth disease into the United States (GAO, 2002b; GAO, 2003).

The Homeland Security Act of 2002 transferred nearly 2,000 inspection specialists from the USDA Animal and Plant Health Inspection Service (APHIS) to the DHS Customs and Border Protection (CBP) program. In an effort to evaluate the Agricultural Quarantine Inspection Program, the GAO reviewed programmatic issues after the move to the DHS. The GAO indicated that although the move enabled the agriculture specialists to obtain access to previously unavailable DHS resources, the program still faced a staff shortage problem. As a result, the number of inspections performed has declined since the realignment within DHS. The GAO noted that some coordination and management difficulties continue to limit the success of the agriculture inspections in preventing the introduction of foreign pests and diseases (GAO, 2005; GAO, 2006; GAO, 2007a).

The GAO conducted a comprehensive review of agroterrorism in a report entitled, *Homeland Security: Much is being done to protect agriculture from a terrorist attack, but important challenges remain* (2005). This analysis found "the United States still faces complex challenges that limit the nation's ability to respond effectively to an attack against livestock" (2005, p. intro). The threats facing agriculture are at all points along the "farm-to-fork" continuum.

There are other GAO reports tangentially related to agroterrorism and food safety concerns. One example deals with BSE (mad cow disease) and the ban on feeding cattle the neurological material of other cows (GAO, 2002a). The GAO also reported that there

is an "insufficient veterinarian capacity" (GAO, 2009a, p. intro) to ensure public and animal health. In a related report, the GAO noted "there is a growing shortage of veterinarians nationwide—particularly those veterinarians who care for animals raised for food, serve in rural communities, and are trained in public health" (GAO, 2009b, p. 1). Together, these reports both highlight the threats facing agriculture and identify many of the challenges facing the food and agriculture sector.

4.   Laws and Regulations

Following the September 11, 2001, attacks there has been a major restructuring of emergency response programs in the United States. A cornerstone piece of this overhaul was the creation of the DHS through the passage of the Homeland Security Act of 2002. The result has been the consolidation of many federal emergency response and planning capabilities within DHS. Part of this restructuring brought the Federal Emergency Management Agency (FEMA) under the jurisdiction of DHS. The primary connection to agriculture was the transfer of many of the port inspectors from the USDA to DHS.

Following Hurricane Katrina, one critical concern emerged that related to the care of pets during emergencies. The result was the passage of the Pet Emergency Transportation Standard Act (PETS Act) to provide guidance on the development of programs to protect household and service animals. In many states, this required the state department of agriculture to coordinate the development and implementation of plans to comply with the PETS Act.

Another piece of legislation that indirectly relates to agriculture is the Animal Enterprise Terrorism Act (AETA). The law amends the Animal Enterprise Protection Act of 1992 and provides the U.S. Department of Justice additional options for dealing with emerging trends in the animal rights terrorism movement. The AETA enhances the definition of animal enterprise to include academic and commercial activities that use or sell animals or animal products. Many groups have voiced opposition to AETA by claiming that it violates First Amendment rights of people to picket animal research facilities. Supporters of AETA counter that it does permit peaceable protesting and the

focus of the legislation is to protect people and facilities from violence associated with radical eco-terrorist organizations (Animal Enterprise Terrorism Act, 2006).

E. COORDINATION INITIATIVES

One limitation with traditional emergency planning is that it has been a classical "stovepipe" approach. Within this model, there would be no collaboration; all of Law Enforcement, Fire, Emergency Management Agency, or Public Health would operate in isolation and resemble a stovepipe. Creating stand-alone plans designed for a specific hazard does not recognize or take into account the multi-disciplinary nature of emergency response and preparedness. Advocates argue that emergency planning must account for the differences among types of hazards and their specific response needs. For example, many of the advocates explain that an "all-hazards" approach would be too broad and not suitable to address the nuances between responding to a foreign animal disease outbreak and a hazardous materials incident.

1. Regionalism

Guidance from the U.S. Department of Homeland Security makes expansion of regional collaboration part of a National Priority (DHS, 2005). The benchmarks for achieving that priority include the development of formalized mutual aid agreements, conducting exercises (related to implementing the mutual aid agreements), and coordinating planning activities (Caudle, 2006; DHS, 2005). It is within this regional approach that DHS acknowledges that threats occur geographically and not based upon a specific jurisdiction.

Caudle (2006) identified the creation of a formal organization and development of shared goals as being two critical elements in the formation of regional partnership. Caruson and MacManus found that "the ability to coordinate preparedness and response activities across multiple jurisdictions is critical to the homeland security mission" (2007, p. 3). Formation of these regional partnerships provides the foundation for collaborative initiatives across multiple disciplines over a large geographical area.

Research within Florida found that "given the complexity of the homeland security mission and the unpredictability of terrorist activities, the regional approach offers a way to harness resources spread across jurisdictions" (Caruson, MacManus, Kohen, & Watson, 2005, p. 168). It is not clear, based upon their research of a regional approach within a specific state, if the regional approach across multiple states would achieve similar results. Another consideration relates to the success of programs that address a specific homeland security mission (i.e., groups designed to address only agriculture issues).

The GAO reports, "regional coordination efforts are enhanced by the presence of a collaborative regional organization that includes representation from many different jurisdictions and different disciplines" (2004, p. intro). Research is showing the importance of developing a regional approach to homeland security programs (Caruson & MacManus, 2007; Caudle, 2006). Other organizations, including FEMA, the U.S. Conference of Mayors, and the National League of Cities call for strengthening regionalism related to emergency and disaster management (Dodge, 2002).

Many intangible benefits are associated with regional coordination. Specifically, Carr, Selin, and Schuett (1998) point out using a collaborative approach in planning results in intangible outcomes such as building relationships and networks, sharing information, improved communication, and gaining trust for each other. Wondolleck and Yaffe (2000) state:

> Collaboration can lead to better decisions that are more likely to be implemented and, at the same time, better prepare agencies and communities for future challenges. Building bridges between agencies, organizations, and individuals in environmental management is not an end in itself. Rather it is a means to several ends: building understanding, building support, and building capacity. (p. 23)

Overall, the goal of collaborative initiatives is to gain support from all stakeholders and to integrate local knowledge (Glicken, 1999; Schuett, Selin, & Carr, 2001).

2.   Agriculture Initiatives

National, state, and local boundaries do not confine the threats facing agriculture and do not serve as adequate safeguards against agroterrorism. In order to combat these threats, many states are forming multi-state initiatives related to agriculture. While some of these partnerships have primarily included representatives from agriculture, some have had a more inclusive membership and have reached out to the emergency preparedness communities. Throughout the United States there are several regional organizations focusing on agriculture emergency response initiatives.

One of the groups is the Multi-State Partnership for Security in Agriculture, which includes representatives from State Departments of Agriculture, State Veterinarian's Offices, Homeland Security, Animal Health Departments, and Emergency Management Divisions from twelve states (see Figure 2). The Partnership encourages collaboration between stakeholders to enhance agriculture emergency preparedness and response initiatives (Gordon, 2004). The Multi-State Partnership for Security in Agriculture was one of the first groups established with the sole function of enhancing the emergency capabilities related to the food and agriculture sector.
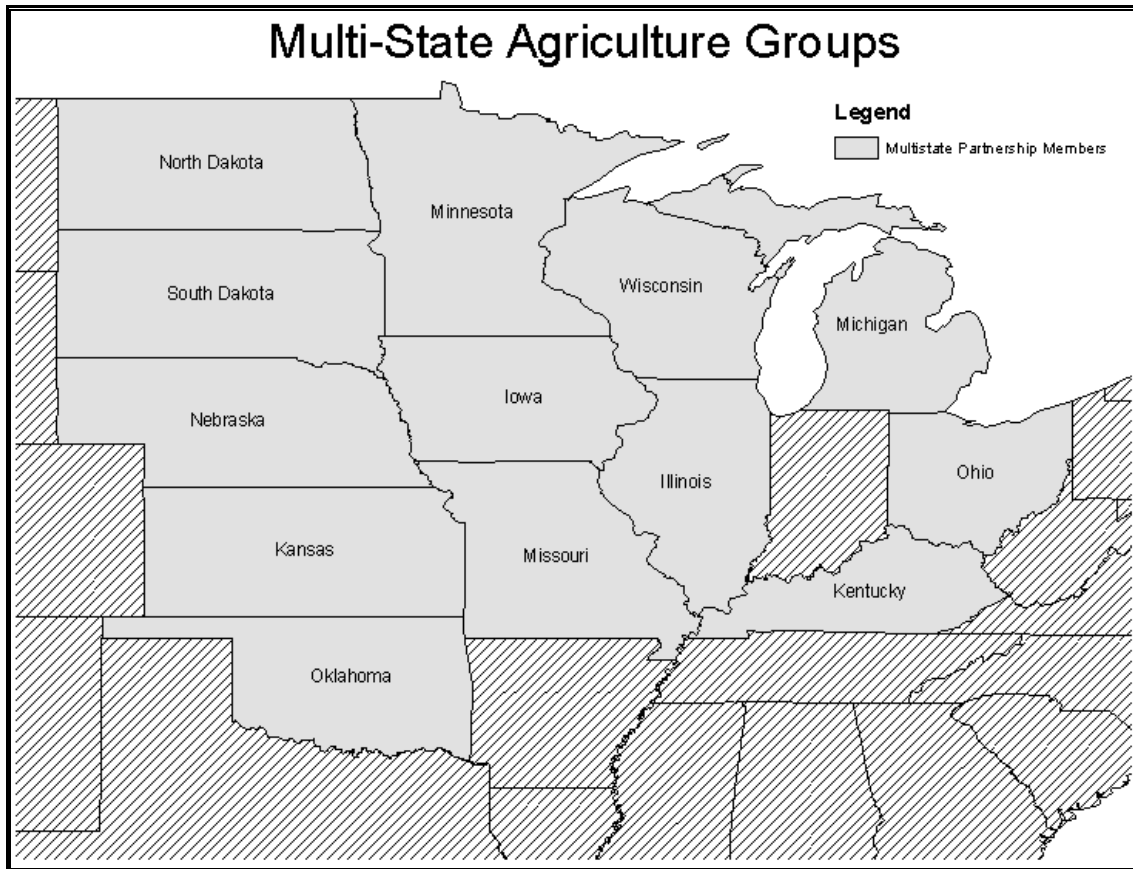
Figure 2. Multi-state Partnership for Security in Agriculture

The Southern Agriculture & Animal Disaster Response Alliance (SAADRA) is an organization designed to enhance all-hazard capabilities within states at "risk from similar natural, intentional, technological, and disease disasters affecting agriculture and animals" (SAADRA, slide 2). One of the common bonds of SAADRA relates to the shared threats of hurricanes on agricultural interests in the member states (see Figure 3). While the primary focus of this organization is on agriculture and animal-related emergencies, the overall organizational objectives include issues related to incident command and all-hazard response initiatives.
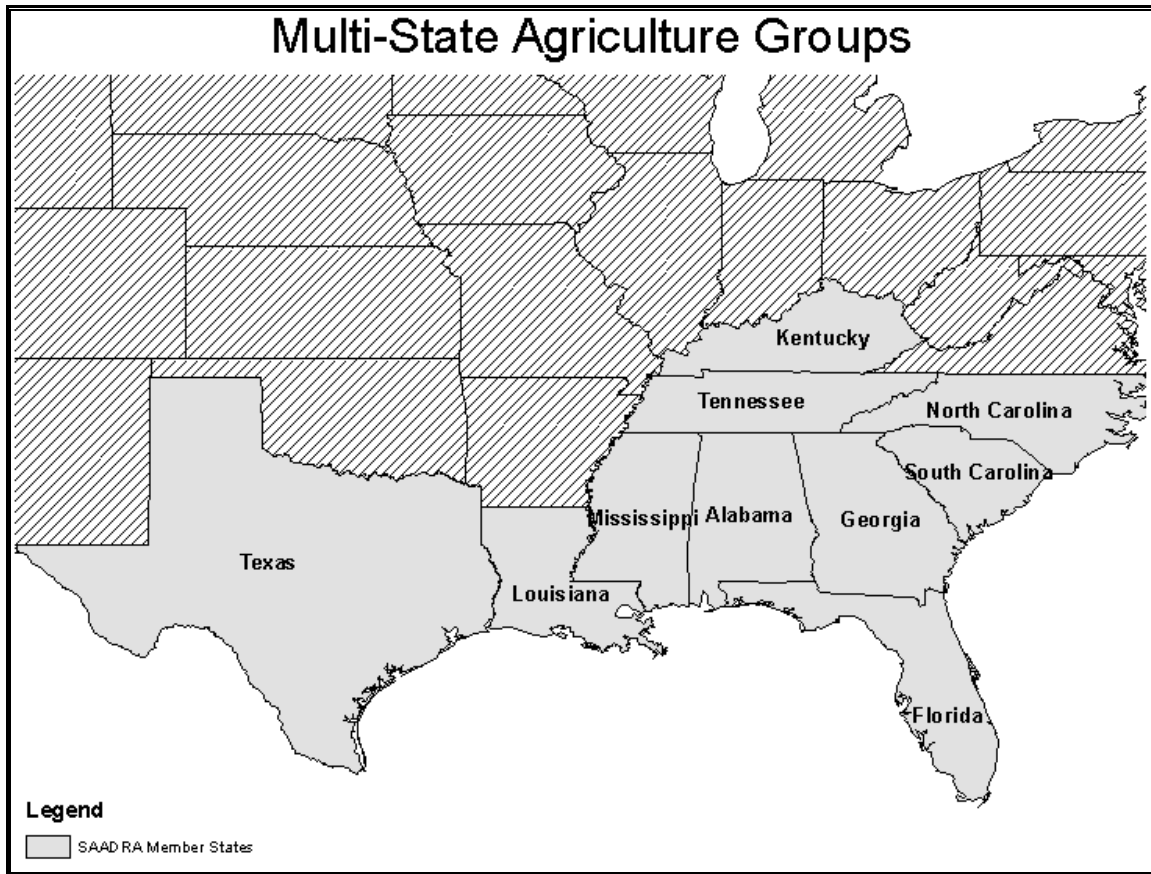
Figure 3.   Southern Agriculture & Animal Disaster Response Alliance

Another group is the Mid-Atlantic Agriculture and Animal Emergency Management Alliance (MAAEMA). This group is the most recent agricultural group formed and has been struggling to obtain adequate financial support from member states. An additional challenge is that unlike other groups, there is not the same common shared threat facing the member states (see Figure 4). This group is working on a variety of programs related to training and equipment. One the projects undertaken by this group is the development of a standard method to identify response equipment.

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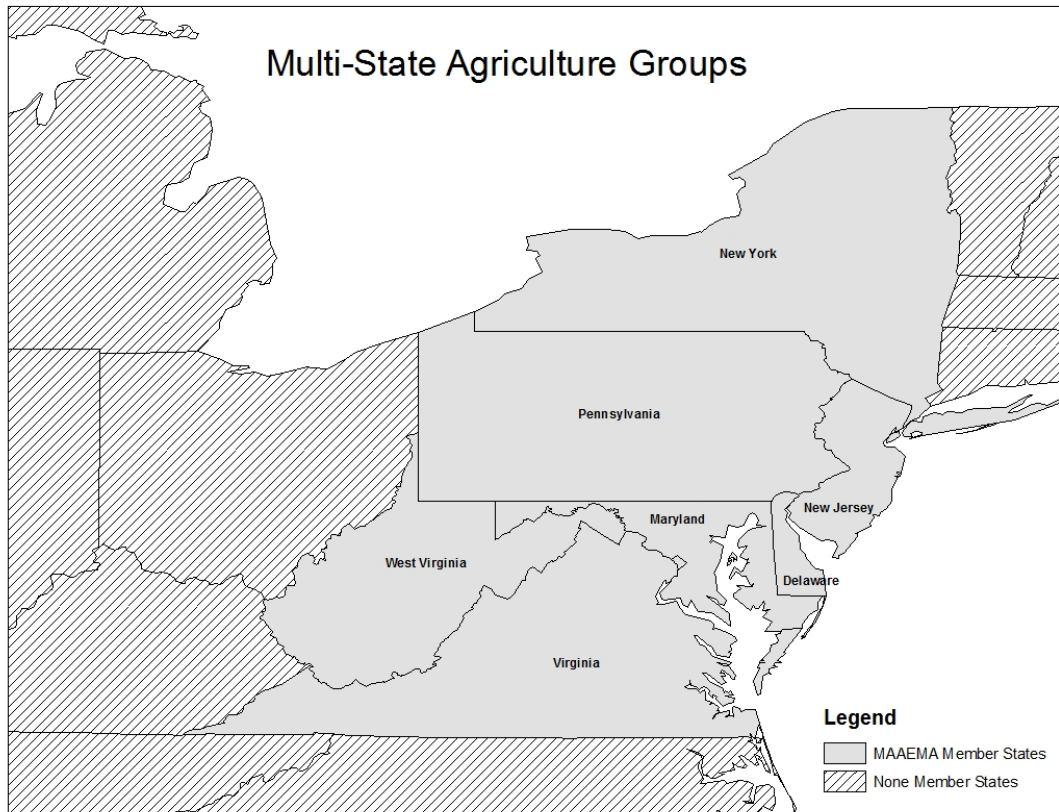
Figure 4.   Mid-Atlantic Agriculture and Animal Emergency Management Alliance

F.   ORGANIZATIONAL DESIGN AND MODEL PROGRAMS

Potential models exist which could offer suggestions on how to structure a homeland security program. Recommendations from the United States Commission on National Security/21st Century (2001), Jay Galbraith's Star Model, and relevant success factors provide frameworks around which programs evaluations can take place.

1.   U.S. Commission on National Security/21st Century

The United States Commission on National Security/21st Century (2001) identified specific critical functions within homeland security programs. Two main differences exist between this current research and the findings of the United States Commission on National Security/21st Century (the Hart-Rudman Commission). First, the Hart-Rudman Commission focused on national programs while the current research addresses state programs. The other difference is that the Hart-Rudman Commission

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evaluated efforts based on a broader definition of homeland security while this current research is investigating homeland security initiatives related more specifically to agriculture. Nevertheless, many of the suggestions identified in the Hart-Rudman Report are applicable.

In a study entitled, "A model for effective organization and communication of homeland security activities at the state level," Smith adapted the recommendations from the Hart-Rudman Commission to state-level agencies (2007). He suggests that when a program aligns with the certain critical functions it becomes "a model agency for addressing homeland security-related functions at the state level" (2007, p. 32). His (Smith, 2007) more narrowly focused recommendations include:

    a. Developing a **comprehensive strategy** to heighten ability to prevent and protect against all forms of attacks;

    b. Creating an **organizational structure** with responsibility for planning, coordinating and integrating various activities involved in homeland security;

    c. Assigning **responsibility** for coordinating and overseeing activities related to homeland security;

    d. **Consolidating homeland security activities** to improve their effectiveness and coherence;

    e. Developing a **funding mechanism** for coordinating the homeland security related overall mission; and

    f. Ensuring that organizational structures enable **information flow** among all stakeholders.

2.   Galbraith's Star Model

Another approach for investigating organizational design is Galbraith's Star Model (see Figure 5). The Star Model provides a framework for clarifying the interrelationships of the different components of the organizational structure.
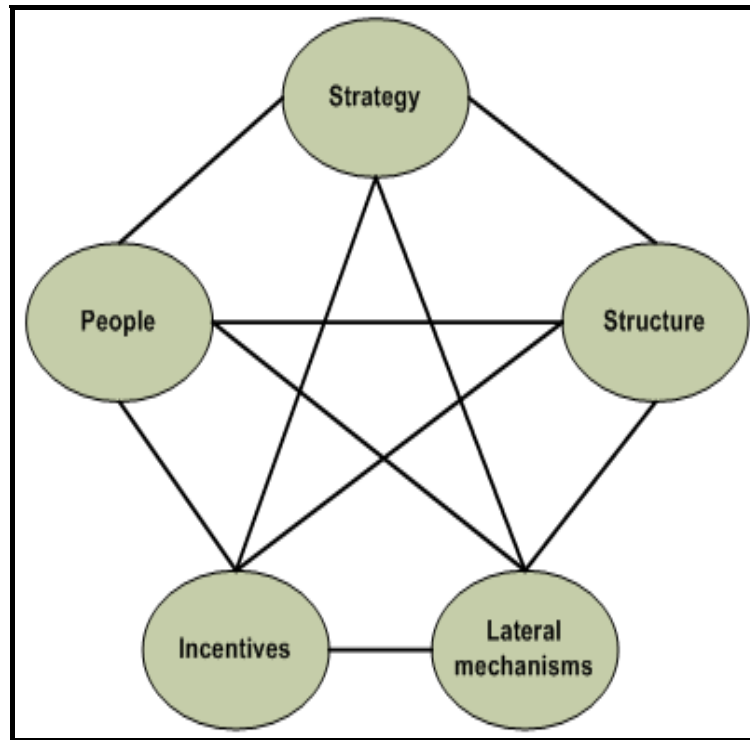
Figure 5.   Galbraith's Star Model (From: Galbraith, 2009)

Galbraith's Star Model provides a guide for organizational decision making and shaping employee behavior. According to this model, factors related to organization design fit into five broad categories:

The first is strategy, which determines direction. The second is structure, which determines the location of decision-making power. Processes have to do with the flow of information; they are the means of responding to information technologies. Rewards provide motivation and incentives for desired behavior. And finally, the selection and development of the right people—in alignment with the other policies—allow the organization to operate at maximum efficiency. (Galbraith, 2009, p. 1)

The Star Model is a process in which all of the organizational design components affect each other. According to Star Model, "for an organization to be effective, all the policies must be aligned and interacting harmoniously with one another" (Galbraith, 2009, p. 5). It is also important to remember that when one element is changed, it will affect the other components. According to Galbraith, the structure, processes, and people all play a critical role in the effectiveness of an organization to reach its objectives.

Specifically, "the organization is not an end in itself; it is simply a vehicle for accomplishing the strategic tasks [of the organization]" (Kates & Galbraith, 2007, p. 1). The Star Model relies on the interweaving nature of different components (which in turn gives it the star shape).

The research of Hocevar, Thomas, and Jansen (2006) identified specific success factors and barriers to collaboration. As part of their research, they took their success factors along with each barrier to collaboration and placed them into Galbraith's Star Model of organizational design (see Table 4). The use of this approach utilizing both success factors and barriers enables the evaluation of other collaborative initiatives.

Factors Affecting Inter-Organizational Collaboration		
(Hocevar, Thomas, & Jansen, 2006)		
	Success factors	**Barriers**
Strategy	Common goals Recognized Interdependence	Divergent goals Lack of interest in collaboration
Structure	Formalized coordination	Lack of formal roles Inadequate authority
Lateral mechanisms	Social capital Effective communication and information exchange	Unfamiliarity with other organizations
Incentives	Leadership support and commitment	Competition for resources Lack of mutual respect
People	Trust building Commitment	Lack of competency

Table 4.   Success Factors and Barriers to Collaboration

a.   Strategy

The strategy component of the Star Model relates to the goals and objectives connected with the organization. Specifically, the strategy identifies the direction in which the organization is going to move and the programs it is going to

support. In terms of homeland security programs, a strategy might be to develop the goal of an all-hazard response capability. Barriers or obstacles to strategy include lack of clarity in mission or divergent goals (Galbraith, 2009; Hocevar, Thomas, & Jansen, 2006).

b.   Structure

Another element of the Star Model relates to the organizational structure. Galbraith identifies four factors that determine structure: specialization, shape, distribution of power, and departmentalization. Aspects related to the structure of homeland security programs within a state department of agriculture relate to each of those structure policy areas.

The location of the program within the department plays a critical role in the overall influence of the program. Placing the program within a specific discipline (**specializations**) will likely limit the focus of the organization. For example, some departments have their homeland security programs located in an animal health administrative unit. Placement within a narrowly focused division might limit their connection to all of the relevant homeland security missions within their organization.

Issues related to span of control (**shape**) are also considerations that are relevant to the effectiveness of homeland security programs. The ability of the homeland security program to exercise control over programs (**distribution of power**) is critical for achieving initiatives that require broad support and participation. For instance, the completion of a continuity of operations plan might be under the direction of the homeland security program, but it will require the participation of all elements of the department. The final element related to organizational structure deals with consolidating functions and workflow processes (**departmentalization**). One potential connection to this aspect is that program specialists working homeland security functions might have other primary job duties that could diminish effectiveness related to homeland security.

c.   *Lateral Mechanisms*

The Star Model identifies the third element as processes (Kates & Galbraith, 2007). However, Hocevar, Thomas, and Jansen (2006) refer to this organizational design component as lateral mechanism. According to the model, the flow of information and the establishment of interpersonal networks rely on the creation of these lateral mechanisms. The connection between lateral mechanisms and the model program relate to the coordination of the model program and other homeland security initiatives in the state.

d.   *Incentives*

Rewards or incentives refer to the motivation techniques used to get staff members to support organizational goals and objectives. These incentives are the driving force for completing many of the activities that support the strategic direction of the organization. Hocevar, Thomas, and Jansen (2006) suggest that by classifying collaboration as a prerequisite for funding there would be an incentive to use collaboration. In homeland security, compliance with the National Incident Management System (NIMS) is a prerequisite for DHS funding. In essence, this means that the receiving DHS funding would be an incentive for agencies to follow NIMS guidelines.

e.   *People*

Issues related to people deal with skills and abilities to manage homeland security programs. Members need to have the necessary commitment and motivation to support the organizational mission, yet organizational design must remain flexible enough to support cross-functional teams.

There appears to be a nexus between the model program advocated by the United States Commission on National Security/21st Century (2001) and Galbraith's Star Model. Connecting the two models permits the identification of key organizational design components (see Table 5).

Organizational Design Components	
U. S. Commission on National Security/21st Century (2001)	**Galbraith's Star Model** (Galbraith, 2009)
Comprehensive strategy	Purpose and strategy
Organizational structure	Structure
Responsibility	People
Consolidating activities	Structure
Funding for coordinating	Incentives
Information flow	Lateral mechanisms

Table 5.   Organizational Design Components

3.   Linking Organizational Design and Success Factors

It is possible to link organizational design components and success factors to create a model program (see Figure 6). The five elements of the Star Model interweave to control and shape the behavior of the organization (see point A). In turn, this behavior affects performance and culture. All of these elements directly influence implementation of success factors and the presence of barriers. These activities have the potential to influence the organization and then shape performance and culture (see point B). In essence, the organizational factors (Star Model) produce the opportunities in which the implementation of success factors is possible. The feedback loop (see point C) will contain the elements of a model program.
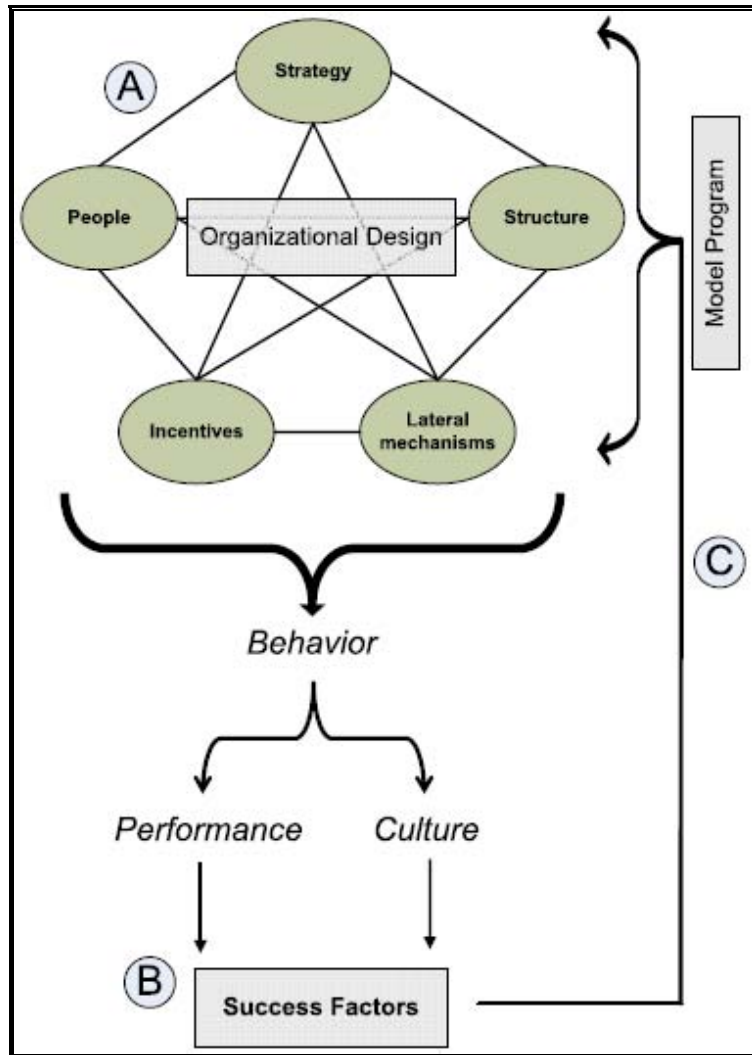
Figure 6.   Modified Galbraith Star and Success Factors (From: Galbraith, 2009)

G.   CONCLUSIONS

The research, reports, and programs outlined in this chapter highlight the importance of agriculture in the United States and identify the potential threats associated with agroterrorism. The defense of our food supply—from "farm to fork"—is a daunting task. Nonetheless, many state departments of agriculture are responsible for safeguarding animal, plant, and food safety. Even in the wake of the September 11, 2001, terrorist attacks, food safety scares and the H1N1 pandemic, food and agriculture protection are

often a low priority at the state level. The information outlined in the first sections of this chapter describes the importance of agriculture in the United States and identifies the potential threats related to agroterrorism.

A challenge facing state departments of agriculture is that there is little guidance provided that relates to the development and implementation of homeland security programs. The various guidelines and reports examine policies and programs designed to support homeland security initiatives. The importance of collaboration is examined in relationship to various multi-state agriculture groups. Information related to success factors and organizational design offer opportunities for state departments of agriculture related to homeland security programs. Together this information creates the framework in which state departments of homeland security operate homeland security programs. These initiatives tend to exist between the agriculture world and homeland security.

III.   METHODOLOGY

A.   INTRODUCTION

This research was comprised of two elements: a rigorous review of the literature and interviews with homeland security officials in select state departments of agriculture. The research explored the elements of a homeland security program within state departments of agriculture.

B.   POPULATION

The population studied in this research was all the state departments of agriculture in the United States. This research selected the states with a minimum of 1% of the total agricultural production of the United States. Using the threshold of 1% of total agriculture receipts resulted in the sampling of 32 state departments of agriculture (see Figure 7).
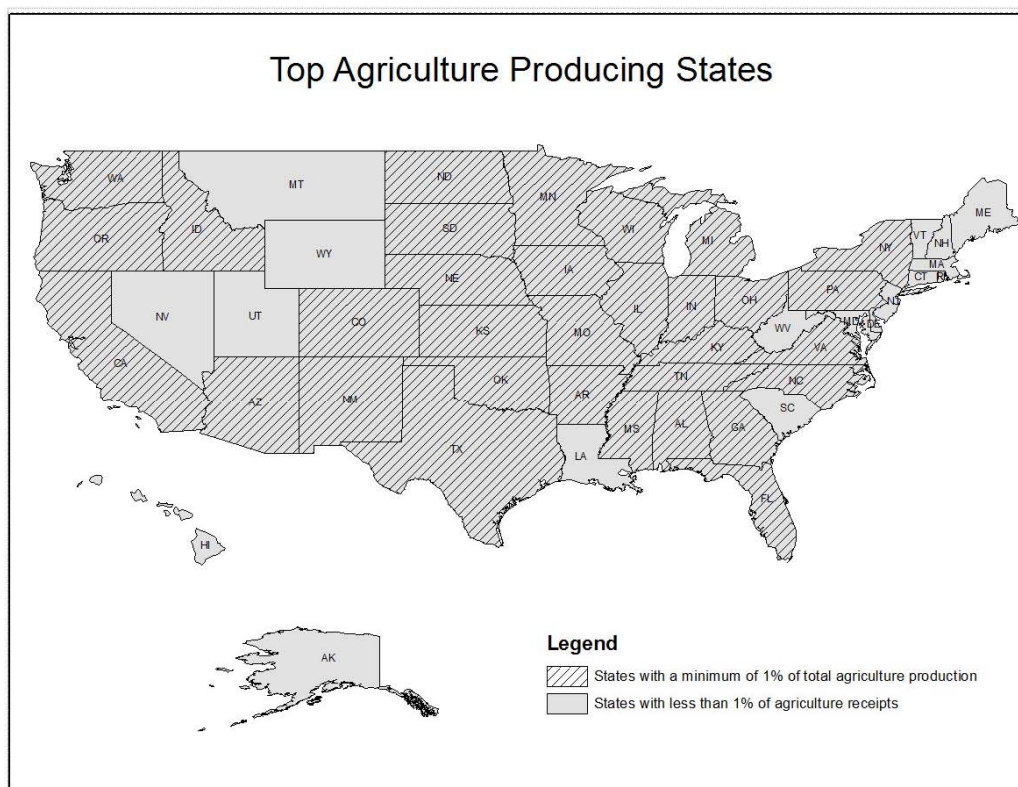
Figure 7.   Top Agriculture Producing States

It was not the intent to have a geographic balance to the selection of the states. The state's contribution to overall agriculture production in the United States was the determining factor in the selection of potential interviewees (see Appendix A: Total Agriculture Receipts).

C.   RESEARCH DESIGN

This research used an interview approach using a combination of semi-structured questions and relevant probing questions. The interview process remained consistent throughout the research. A common questionnaire guided the interviews, and the researcher recorded the answers on pre-printed answer sheets. The interviews began with a statement ensuring confidentiality.

The standardized questions enabled the researcher to obtain specific information targeted at the research questions. To collect relevant information, the research grouped the open-ended questions in broad categories: organizational structure, collaboration, success factors, and programmatic needs. The use of probing questions enabled the researcher to draw out additional information from the respondents.

D.   PROCEDURES

A key element of the methodology was the use of standard procedures when conducting the interviews associated with this research. While it was intended for all the interviews to adhere to the same format, insights gained from early interviews influenced the development of additional probing questions and spurred additional dialogue during subsequent interviews.

1.   Pre-testing Interviews Protocol

Two selected homeland security practitioners were given a draft of the interview protocol. Feedback from these reviewers was used to clarify confusing questions and to add and remove questions as necessary. In addition, practicing the interview process provided an opportunity to refine the official interview process and evaluate the flow of the questions in an actual interview setting.

2.   Participants

Names of agency[6] heads each of 32 state departments of agriculture selected for this research were located through the National Association of State Departments of Agriculture (NASDA). Each of the agency heads received a letter via postal mail describing the research goals and process (see Appendix B: Research Cover Letter), briefly describing the research goals and the research process was sent to each agency.

3.   Anonymity of Subjects

It was predetermined that the names of the participants would not be reported as part of the research findings. All of the information with the potential to identify a respondent was stored on a password-protected computer in an encrypted database. The informed consent process explained this guarantee of anonymity. Names of the states participating would be included in the data analysis; however, the use of specific comments in data analysis followed a non-attribution policy.

4.   Interview Documentation

Maintaining detailed and accurate interview documentation was critical to the research process. According to established research protocols, the interviewer did not record the telephone interviews but did take detailed notes. Following each interview, the researcher recorded additional comments and follow-up notes into a computerized file for each interviewee. These notes were stored in an encrypted file.

The notes of each interview was compiled into a memo to assist in the conceptualizing the interview data. These theoretical memos included all notes related to the interviews and were used to draw a consistent comparison as part of the grounded theory approach. Memos served as important tools for refining and keeping track of ideas as concepts evolve. The intent was that this process of writing served as an instrument for documenting ideas, which become more realistic as concepts emerge. As the data collection and coding proceeded, the theories and the memos accumulate.

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[6] This term includes Secretaries, Directors, and Commissioners.

In order to follow a consistent process, an interview guide ensured that all relevant topics were covered; this served as a framework (see Appendix C: Research Guide) and not as a rigid procedure (Miller, 1992). This guide addressed the objectives of the interview with the specific research questions and served as a road map for the interview but permitted diversions necessary to address a specific subject of discussion. In order to keep the interview on track, this guide helped to pace the interview process and to maintain an appropriate time schedule.

E.   DATA ANALYSIS

A grounded theory approach allowed relevant themes and concepts to emerge from the data. The data analysis process consisted of examining, categorizing, and evaluating the evidence collected during the research (Yin, 1994). A system of open coding enabled the researcher to determine common attributes. Open coding and data collection steps were integrated activities, occurred simultaneously, and continued until the core categories completely emerged.

This research relied on multiple approaches for conducting the content analysis. Initially, the focus of data coding was on broad categories, but the data collection became more focused as themes emerged throughout the process. The collection of information was broken down into sub-headings and then into new, separate subject matter fields. This process continued throughout this research as the interviews brought to light new information.

The assumption was that the words mentioned most often were the words that reflect the greatest concerns. This technique was particularly rich and meaningful due to its reliance on coding and categorizing of the data. As the data was coded, specific theoretical propositions began to surface. The information identified during the open coding revealed links between categories. An element central to this grounded theory approach was that categories and properties emerging as links were identified in the formation of a theory.

F.   LIMITATIONS OF METHODS

One of the potential limitations of this research was associated with the response rate. To overcome the potential for limited response, the research made contact with the National Association of State Departments of Agriculture to obtain their support. A representative of NASDA indicated that an e-mail supporting this research went to the states identified in this research. It is not clear whether any of the individuals interviewed had received the e-mail of support from NASDA.

Some consider personal interviews as too subjective; on the positive side, a higher degree of personal connection and rapport is possible in this one-on-one type of communication. An additional limitation is associated with the reliance on written notes, since no recordings were made of the interviews. Another drawback could involve misinterpretation of terminology during the coding. Frequently, the benefits of using this approach outweigh the limitation by highlighting the rich data associated with personal interviews.

The reliance of a single individual in the coding process in another limitation associated with this research. Specifically, the identification of themes relied on a single coder to categorize the data; however, reliability was increased by triangulation. The findings of this research could have been advanced if a more detailed survey were used to explore issues more in-depth.

Another limitation had to deal with the time of some of the interviews. Conducting interviews shortly after the DHS held a Webinar (on agriculture critical infrastructure tools) might have highlighted frustration felt towards these programs. Many of the respondents cited this program as a prime example of the disconnect between the federal government and states. However, many of the respondents expressed similar comments in interviews conducted prior to the training.

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IV. DATA ANALYSIS

The success of state departments of agriculture in the development of homeland security programs is due to state initiative and not federal leadership.

<div align="right">Anonymous Interview Participant</div>

A. INTRODUCTION

The methodology chapter provides specifics of the data collection process. This chapter provides an in-depth analysis along the five elements of Galbraith's Star Model; specific examples under each of the elements highlight the relevance to homeland security programs. This chapter also includes a section describing the obstacles that state departments of agriculture face in the development and implementation of homeland security programs.

The population studied in this research was the top 32 agricultural production states in the United States. This chapter presents the findings of the 24 interviews with representatives of state departments of agriculture, giving a 75% response rate. Three states were unable to participate, and five states did not respond to the mailing or e-mails soliciting their participation (see Figure 8).
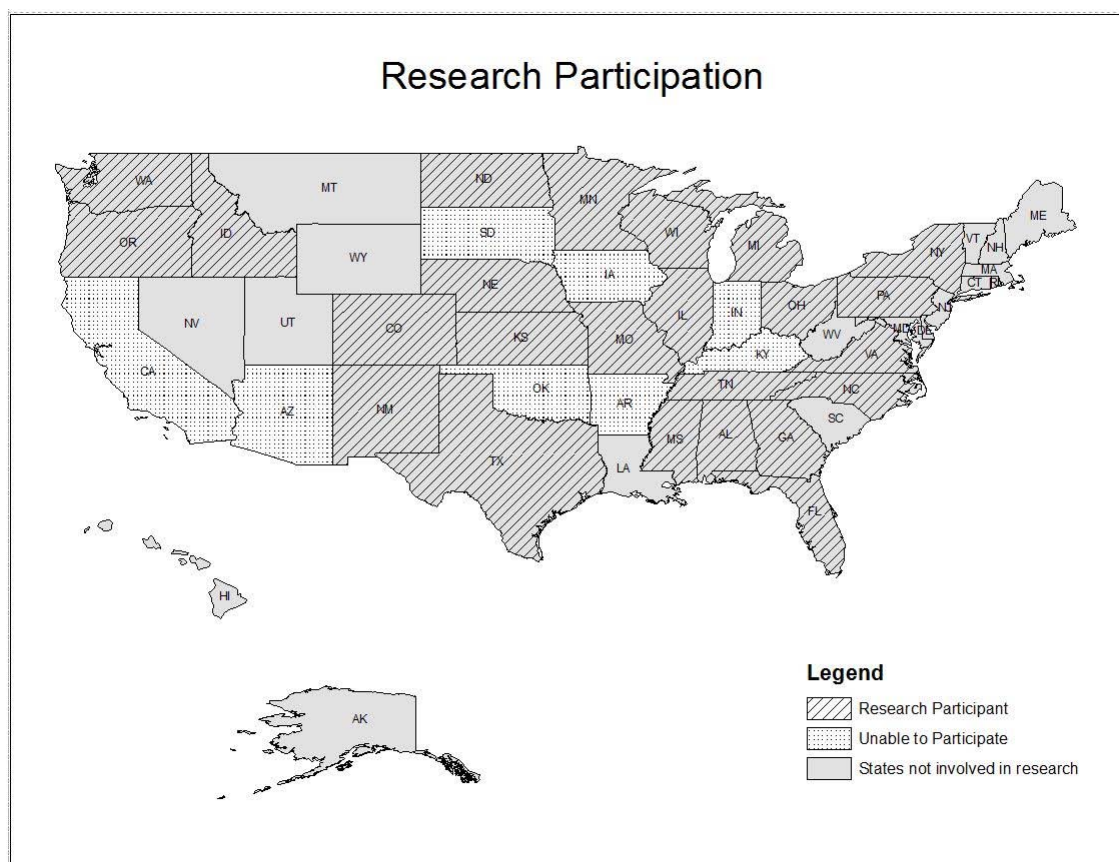
Figure 8.   States Interviewed for Research

B.   IDENTIFIED SUCCESS FACTORS

Success factors relate to programs or approaches that support homeland security programs within the state departments of agriculture. The respondents were asked a series of questions which were designed to address the elements of Galbraith's Star Model. Relevant programs and initiatives that support the elements of the Star Model were determined to be success factors.

1.   Strategy

According to Galbraith's Star Model, one aspect of organizational design that contributes to success factors is strategy. The strategy component relates to the goals and objectives connected with the organization. These strategy elements tend to set the direction of the program and act much like a strategic plan.

### a.	*All Hazard Perspective*

While all agencies included in this research reported focusing on all hazards, some agencies place more emphasis on certain elements of the food and agriculture sector than on other aspects of agriculture. These states often assign the highest priority on those sectors having the greatest economic importance to the state, which means the priorities vary from state to state. The majority of states also reported the inclusion of agriculture response plans into state-level emergency operations plans. In most cases, they reported integrating agricultural plans into the state emergency operations plans as functional annexes and not as stand-alone plans.

Several respondents indicated that a primary focus related to animal health issues since that discipline was heavily involved from the earliest days of agriculture response plans. The research also suggests that the majority of emergency response plans focus specifically on supporting reactions during animal disease outbreaks. This focus might be due to high profile incidents in the United Kingdom involving foot and mouth disease (FMD) and Bovine spongiform encephalopathy (BSE), commonly known as mad-cow disease. The response efforts in the United Kingdom to FMD and BSE likely served as the impetus for the development of animal disease emergency plans in the United States. There have not been similar incidents related to plants, which might explain some of the lack of preparation.

In addition, most states also reported involvement in the development of pet care and sheltering programs. A majority of the states noted that developing programs in compliance with the PETS Act were not under their agency authority; however, many of these agencies did report work being done in the area. Part of the jurisdictional challenge is that in some states, animal-related issues are under the authority of other agencies, while in other states, pet laws and regulations are local issues.

On many levels, the issue surrounding pets was tied back to the federal-state disconnect. While most states understood and supported the goal of the PETS Act, the fact that the agencies tasked with program implementation lacked authority, re-enforced the notion that the federal government did not understand local realities. One

state reported that they would only take care of pets "if people were going to eat them" (Interview 10-0001, February 22, 2010). Another state developed a detailed legal position paper on pet sheltering and specifically connected it as a means to take care of people. A common feeling was that this was another one of those unfunded mandates.

The research identified other major programmatic areas within the departments of agriculture that states are slowly addressing. All of the interviewees mentioned food safety and security; however, it was apparent that some agencies placed a greater emphasis on these initiatives. The findings also suggest that, in general, divisions such as plant industries are slower to embrace homeland security initiatives than animal health or food divisions. One participant explained that food and water are the foundation for homeland security. "Can't eat, there is a problem. The most important aspect is to ensure that we get food and water. If we don't, everything else is secondary" (Interview 10-0005, February 19, 2010).

b. *State Homeland Security Strategic Plan*

State homeland security strategic plans normally serve as the state-level guidance related to homeland security. Typically, these plans serve as the foundation for identifying goals and objectives within statewide homeland security initiatives. In most cases, reference to these homeland security goals and objectives is required to obtain grant funding. Accordingly, to receive funds, a grant applicant must first link the proposal to an element of the strategic plan. Many of the respondents acknowledge that requirements set out by the U.S. Department of Homeland Security make it difficult to complete all programs. One acknowledged that "It is a struggle to keep up, much less move ahead" (Interview 10-0010, February 26, 2010).

While no questions were directly related to the state homeland security strategic plan, several of the states indicated that information on agriculture issues was included in their state's strategic plan. However, many respondents reported that the information pertaining to agriculture initiatives in the strategic plan was insufficient. One respondent acknowledged concern about the lack of information related to critical infrastructure being shared from homeland security agencies. Specifically, the concern

was that not have enough information has been provided to complete critical infrastructure planning projects. A key to this problem related to the need to get industry more involved. The respondent stated "There are many challenges" (Interview 10-0006, February 22, 2010).

A common complaint was that homeland security agencies in states typically group agriculture issues into other critical infrastructure protection programs. The concern is that classifying agriculture with other parts of the critical infrastructure does not reflect the complexity of agriculture. This also has the tendency to limit the funding of agriculture-related programs. The lack of knowledge of ESF usage suggests limited coordination between state emergency management officials and representatives of the state departments of agriculture.

c.   *Emergency Support Functions*

Another common discussion point revolved around the adoption of the Emergency Support Functions (ESFs). The adoption of ESF is relevant to structure because it has the tendency to determine the direction of the program and the initiatives that are supported. The majority of the respondents indicated that their state was utilizing the ESF approach, and the primary focus was on ESF-11, which deals with food and agriculture. A breakdown of utilization (see Table 6) suggests that the majority of states currently use the ESF approach, but five states were unable to report on the use of ESF within their state.

Utilization of ESF Structure	(N=24)	n	%
Utilize ESF Structure		14	58.33%
Does not Utilize ESF Structure		2	8.33%
Moving towards ESF Structure		2	8%
Utilization of ESF Unknown		6	25.33%

Table 6.   Utilization of ESF

A few states reported being the lead agency on other ESFs, which align with other non-agriculture missions of their agencies. This was not a surprise given the

role that state departments of agriculture play across the country. For example, states also reported playing a lead role in ESF-6 (Mass Care) and ESF-12 (Energy). The connection to ESF-6, in general, was related to pet sheltering during emergencies. Even though many state departments of agriculture have jurisdiction over fuel, only one reported a connection to ESF-12. A majority of the respondents with a familiarity of ESF reported the importance of lead and support agencies in accomplishing response missions.

2. Structure

The respondents were asked to answer a variety of questioned design to assess the structure of the homeland security program. Structural questions focused on how the program specifically operates and were related to the location of the program within the organization and what internal operations configurations are in place.

a. *Placement Within Organization*

The location of the homeland security program was determined by having the respondents describe the structure of their program. An initial focus of the interviews was to explore the placement of the program within each agency (see Table 7). Most of the departments of agriculture assessed during this research were sub-divided into discipline-specific divisions. Common divisions included animal health, executive, plant industries, food safety or inspection, and regulatory.

The most common area for the homeland security program to be located within state departments of agriculture is in the executive division. Executive divisions tended to be those in which the agency administrator was located. The departments with stand-alone programs were ones in which a new division was created specifically to address homeland security initiatives. The informal programs were those in which a homeland security program was simply added to the duties of other employees and no new organizational elements were created.

Location of Program by Functional Area (N=24)	n	%
Executive	15	62.5%
Animal Health	2	8.33%
Food	1	4.17%
Stand-Alone	3	12.5%
Informal	3	12.5%

Table 7.   Placement of Program within Agency

Some the respondents indicated direct reporting to the agency head while others reported to other members of the executive staff. All reported more benefits than barriers to this executive division placement. The concern associated with the placement of the homeland security program within the agency was that there is the potential ability of leaders to influence the types of activities undertaken by the program. The consequence of placing the homeland security program within a discipline-specific unit (e.g., animal health) was that it could restrict the focus from all potential hazards to a single area of concern.

b.   *Formalized Internal Coordinating Group*

Many of the states indicated that their agency had an internal group that coordinated emergency response and homeland security programs. The name of the group varied from state to state, but the primary focus of this entity across all states was to engage members of all divisions in the development of homeland security initiatives. This approach reinforces the notion that homeland security is a mission of the entire agency and that it should focus on all hazards.

Most of the states that had developed a coordinating group used this forum to bring subject matter experts together to discuss issues, conduct training, participate in exercises, and respond to incidents. Several of the states conducted monthly meetings to provide situational awareness to representatives of the different divisions. In most cases, members of this group would be the primary contacts within each of the divisions who

frequently served as the subject matter experts (SMEs) for agriculture incidents. The homeland security coordinator would be responsible for coordinating the activities of this group.

3. Lateral Mechanisms

The third element of the Galbraith's Star Model assessed dealt with lateral mechanisms. This specific aspect deals with collaboration and the flow of information and the establishment of interpersonal networks. The primary focus of these research questions revolved around the interaction with external organizations.

a. Multi-State Agriculture Groups

This research also sought to evaluate the involvement of the respondents in the various multi-state agriculture groups in the United States. The primary groups identified were the Mid-Atlantic Agriculture and Animal Emergency Management Alliance (MAAEMA), the Multi-State Partnership for Security in Agriculture (Partnership), and the Southern Agriculture & Animal Disaster Response Alliance (SAADRA). Prior to conducting the interviews, a list of all of the states in each of the multi-state groups was developed. This enabled the researcher to focus questions on the specific multi-state organization. The breakdown of the groups (see Table 8) participating in the research was balanced between the Partnership and SAADRA, the two groups with the larger agriculture producing states.

Multi-State Agriculture Group	(N=24)	n	%
MAAEMA		3 (3)	12.5%
Partnership		9 (13)	37.5%
SAADRA		7 (7)	29.17%
Not Involved		5 (9)	20.83%

Note: Numbers inside parentheses are the number of states in each group originally contacted to participate in the research.

Table 8.   Participation in Multi-State Agriculture Group

Respondents described their involvement in the multi-state group and provided examples of the benefits of the collaborative initiative. Information collected suggests that there are tremendous benefits to these organizations. However, it does appear that not all of these organizations provide the same services to its members. The majority of the subjects indicated that the groups were very beneficial to their organizations.

The Partnership appears to offer more than the other multi-state agriculture groups to its members. The most common benefit cited by Partnership members was the support provided to implement FAS-CAT.[7] Almost without exception, members of the Partnership stated that they got more out of the organization than they put into it. The only complaints associated with the Partnership related to the flow of U.S. Department of Homeland Security funding.

Members of the other organizations also expressed benefits of participation in these multi-state groups. Based upon the comments of those interviewed, however, there are not as many tangible benefits associated with either SAADRA or MAAEMA. An explanation of the different level of involvement might be associated with the maturity of the organizations. Members of the Partnership got together to form their organization in 2003, but both SAADRA and MAAEMA formed more recently. The identification of solutions to address funding problems and development of a mission focus are two benefits associated with the maturity of an organization and SAADRA and MAAEMA might not realize these benefits at the current time.

In addition to the states already participating in a multi-state group, several expressed hope to form a group in their region. Those interested in participating in a program indicated that they have been in contact with other states to discuss the formation of a new agriculture initiative. Those interviewees indicated that they would be looking to existing models to identify how to best structure and fund these programs. One

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[7] Food and Agriculture Sector Criticality Assessment Tool (FAS-CAT) is a computer system to help state-level decision makers determine critical assets in the food and agriculture. This computer program enables state departments of agriculture and private sector representatives to collect and evaluate critical infrastructure protection information related to the food and agriculture sector.

challenge they identified is getting people to serve as the driving force in the development of an agriculture group in their region. Many states will find it difficult to devote the time and effort to a new initiative.

b. Involvement With the State Intelligence Fusion Center

The participation of personnel in a State Intelligence Fusion Center is a new endeavor in homeland security programs. Fusion centers are an effective and efficient mechanism to exchange information and intelligence by merging data from a variety of sources. States and some larger cities have created fusion centers to share information and intelligence within their jurisdictions as well as with the federal government.

Respondents reported a range of involvement from zero contact to having a presence within the fusion center (see Table 9). All of the respondents had an awareness of the fusion center in their state and understood its role in homeland security. The majority indicated a good to very good relationship with their state fusion center.

Participation in Fusion Center	(N=24)	n	%
No Contact		2	8.33%
Limited Contact		9	37.5%
Regular Contact		11	45.83%
Strong Partnership		2	8.33%

Table 9.   Participation in Fusion Center

A key point at each level of involvement was information sharing related to agriculture issues and threats. Those reporting no contact were aware of the intelligence fusion center but had not established any working relationships. Two states said that that the newness of the intelligence fusion center had limited their involvement. One respondent explained that the fusion center was simply something behind a locked door. These respondents indicated that developing and fostering the relationship would be beneficial to their programs. The greatest challenge reported was lack of time necessary to build this relationship.

In the states with little involvement in fusion centers, the interviewees reported establishing basic lines of communication but explained that there were not fully developed. Respondents suggested that they would like to become more involved in the fusion center. Part of the challenge related to lack of interest on both the parts of the state departments of agriculture and the fusion center.

The majority of interviewees reported that their agencies were in regular contact with their state intelligence fusion center. In this level of interaction, a regular two-way communication effort exists related to agriculture issues. Based upon this analysis, the fusion centers provide information to agriculture agencies, and the personnel within the agriculture agency provide relevant information back to the fusion center. This would include daily briefs, threat assessments, and other reports.

Two states explained that they have a very strong partnership with the fusion center. In fact, this working relationship had the potential to include the placement of agriculture analysts within the fusion center. The concern of many interviewees is that while there is the benefit of having an agriculture specialist within the fusion center, current budget problems of many agencies would make it difficult to justify the expense. Most are simply exploring ways to raise awareness levels of issues relevant to agriculture within fusion centers.

The strongest objective to participating in a fusion center was the sharing of information related to the presence of an animal disease. For example, one respondent voiced concern about reporting information to the fusion center because of the dissemination policies of the fusion center. Publicizing the presence of an animal or plant disease, if not done properly, could result in unintended consequences associated with the loss of market and trade implications. This person understood that reports sent out from the fusion center were controlled but was still concerned about dissemination.

c. Public-Private Partnerships

Engagement of industry partners and other stakeholders is a critical element of the creation of lateral mechanisms. One potential approach would be creating public-private partnerships. Most of those interviewed indicated that these partnerships

are very beneficial in working through the FAS-CAT process. In fact, one state reported that the only benefit associated with FAS-CAT was the creation of these public-private partnerships.

An intriguing example of a model public-private partnership is the Wisconsin Agro-Security Resource Network (WARN) program. The WARN initiative is comprised of governmental officials, trade organizations, extension service, and industry partners. The group "facilitates emergency preparedness between the agricultural sectors and government agencies. The WARN program serves as a clearing house and educational forum for producer-driven crisis preparedness materials and training and biosecurity programs" (WARN, 2010). A representative of WARN reported that the program is being recommended by the USDA to other agencies as a best practice. Another respondent reported efforts to adopt a similar program in that state.

An additional program mentioned which, has been implemented by several states was Agro-Guard. It is a community-policing effort specifically designed for the agriculture industry based on a traditional neighborhood watch program. This partnership between industry and local law enforcement alerts officials of suspicious activities around agriculture and food sector facilities. Agro-Guard brings together many of the stakeholders needed for the development and implementation of agroterrorism prevention programs. One of the states reported that Agro-Guard "was one of the best endeavors ever started" (Interview 10-0009, March 3, 2010).

4.   Incentives

Incentives refer to motivational techniques used to get members to support organizational goals and objectives. These incentives are the driving force for completing many of the activities that support the strategic direction of the organization. In a general sense, these incentives are designed to illicit specific behaviors such as compliance with NIMS requirements.

a. State Homeland Security Grant Program

All of the respondents reported familiarity with the State Homeland Security Grant Program (SHSGP). In addition, all of the states applied for SHSGP funds to develop and implement agriculture-related homeland security programs. Obtaining homeland security funds to support programs and initiatives is a major issue for the state departments of agriculture. The amount of funding received by agriculture agencies has ranged from no support to large annual grants each year. The recipients explained that there has been big discrepancy in funding over the last several years along with a recent decline in amounts awarded.

While the precise amount of money each of the state departments of agriculture received was not available, the total state acquisition of Department of Homeland Security funds was (see Figure 9). Six of the states interviewed received the minimum amount of funding. The majority of the states received approximately $10 million or less in SHSGP funds. This chart highlights the disparity among the states in the homeland security funds received.
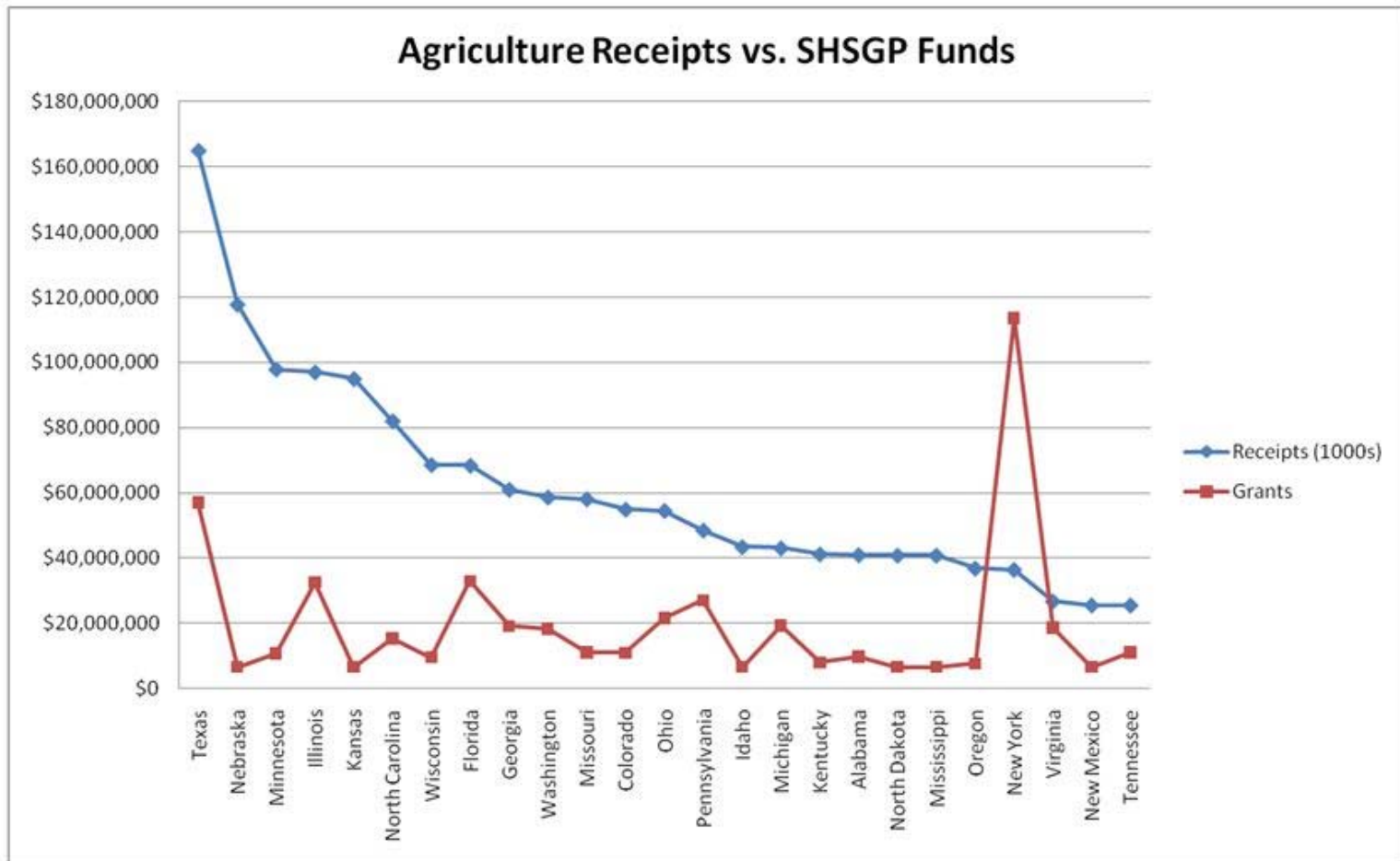
Figure 9.   Comparison of SHSGP and Agriculture Receipts

Even though the amount obtained by the departments varies, all indicated having knowledge of the programs and met eligibility requirements to qualify for funds. Several states reported that they were unable to receive any funds and explained that this was due to the limited amount received by the state as well as specific grant requirements such as passing 80% of the funds to the local level. One state reported that many of the counties received the grant funds and then returned the money to the state level to develop programs for the local level.

The precise programs and initiatives supported by the SHSGP funding also varied from state to state. Those states participating in the Multi-State Partnership for Security in Agriculture reported funding to support the activities of the group. The information collected during the interviews also suggests that many of the grant-funded programs focus on specific programs such as the development of pet sheltering capabilities, enhancing laboratory safety, and purchasing equipment and supplies for response activities. As expected, all of the respondents expressed the need for additional monies to maintain existing activities or to implement new programs.

Several states have been able to create positions funded by the homeland security funds. These positions tended to focus on mission specific tasks: development of response plans, creating pet sheltering capabilities, or continuity of operations planning. This was a concern because there was little to no assurance that the positions would be long-term. This uncertainty presents challenges associated with being able to hire the most qualified personnel and being able to develop continuity in programs.

5. People

The final element of Galbraith's Star Model deals with people. This area focused on the presence of homeland security personnel and necessary training. The research questions addressing this aspect focused on the presence of homeland security personnel.

a. Homeland Security Coordinator

All of the states reported having an individual whose primary role was to coordinate the homeland security initiatives within state departments of agriculture.

Many of these individuals work full-time on emergency planning and homeland security programs, but others worked on these efforts as part of a larger responsibility. Those who worked on homeland security as part of their *other duties as assigned* frequently complained of competing demands and diminishing time.

Those agencies with a dedicated position stressed the benefit of being able to enhance the presence of agriculture to the homeland security community. In most cases, this individual represented the agriculture agency on all statewide homeland security committees and frequently responded to the emergency operations center (EOC) during emergencies. While these meetings increased the workload, most saw them as a way of bringing agriculture issues to the forefront of statewide emergency planning activities.

This research did not seek to identify the background of those participating in the research. However, this research did determine that the participants' tenure in their organization ranged from a few months to over 30 years. Many of the individuals were existing department employees transferred to their current position and given responsibility for homeland security and emergency planning. While the majority had some agriculture experience, several had backgrounds within the emergency planning discipline. In all cases, reliance upon the agriculture subject matter experts within the various divisions was common.

b.   Personnel

In terms of organizational aspects, the number of people and their roles and responsibilities within the homeland security program are relevant. Information on personnel focused on the number of people with direct responsibilities related to homeland security and not designed to identify the number of people that potentially could be involved in an incident response. This research suggests that agencies with personnel devoted to homeland security will be more likely to accomplish objective outlined in the state homeland security strategic plan, and ultimately be better prepared.

The number of people specifically assigned to homeland security program is generally small (see Table 10). On average, less than three people per agency work on

these programs. Ten states reported having a single person assigned to homeland security. On the other end of the spectrum, one program reported an approximate staff of 25 people.

Number of Employees (N=24)	
Average Number	2.83 staff members
1 staff member	12 agencies
2 staff members	6 agencies
3 staff members	2 agencies
4 staff members	1 agency
5 or more staff members	3 agencies

Table 10.   Number of Employees in Homeland Security Programs

This analysis looked only at homeland security professionals and support staff. Several states have law enforcement capabilities within the department of agriculture, and while these officers do reflect the homeland security presence in the state department of agriculture, they were not the homeland security professionals associated with this research. Several states reported personnel challenges when declining state budgets were forcing states to reduce staff and place personnel on furlough.

c.   *Training and Exercises*

Training and exercises were two issues frequently identified as critical to the success of homeland security programs. Incident command system (ICS) training and exercises commonly concerned the participants. Nearly all of them identified ICS training and National Incident Management System (NIMS) requirements as a challenge. While most agencies stipulated that staff complete basic NIMS and ICS courses (ICS-100 and ICS-200), several respondents complained there was not an agreed upon level of training necessary for agriculture responders. Many of the states that are members of Multi-State Partnership for Security in Agriculture had taken advantage of advanced ICS training (ICS-420). There is a concern among many of the respondents related to maintaining ICS

proficiency of staff given the limited number of times there have been agriculture emergencies, thus supporting the *if you do not use it, you lose it* philosophy.

Many of the participants also identified the benefit of U.S. Department of Homeland Security programs related to agriculture. Examples of these programs included training provided by the National Center for Biomedical Research and Training (LSU), the Western Institute for Food Safety and Security (UC Davis), Kirkwood Community College, and other DHS Centers of Excellence. Several respondents also indicated the value of the WMD Basic Agriculture Emergency Responder Training course at the Center for Domestic Preparedness in Anniston, Alabama.

Another major complaint area was insufficient training specifically targeted at agriculture. Much of this criticism centered on the lack of many DHS representatives and contractors agriculture knowledge. Several interviewees explained that DHS frequently did not understand the realities of state departments of agriculture in terms of capabilities or training. One person reported that a DHS contractor assigned to develop an agriculture exercise "did not know one end of the horse from the other" (Interview 10-0009, March 3, 2010).

C.   IDENTIFIED BARRIERS

Barriers relate to programs or obstacles that limit homeland security programs within the state departments of agriculture. The respondents were asked a series of questions which were designed to identify obstacles to program implementation along the elements of Galbraith's Star Model. Factors that restricted the success of programs and initiatives were determined to be barriers.

1.   Strategy

a.   State-Federal Disconnect

The most common complaint among the interviewees was that there has been a lack of guidance from the U.S. Department of Homeland Security to state departments of agriculture on how to develop homeland security programs. One interviewee stated, "The success of state departments of agriculture in the development of

homeland security programs is due to state initiative and not federal leadership" (Interview 10-0012, February 23, 2010). Another respondent reported being "disillusioned with the entire process" (Interview 10-0024, May 6, 2010). Several others made similar statements and repeatedly commented about a disconnect between DHS and the agriculture community.

Respondents seemed to have additional issues with quantity and quality of federal guidance related to homeland security programs. One of the respondents noted concern about the lack of guidance or even worse, uninformed guidance. A different interviewee expressed similar frustration in relationship to one of the DHS Centers of Excellence, when the interviewee asked, "What are we getting out of these initiatives" and then wondered, "Are these products really needed?" (Interview 10-0021, March 4, 2010). Another interviewee complained, "No one asks the state on how things should be done" (Interview 10-0008, March 9, 2010).

One frequent sentiment was that the federal government did not understand the realities of states, specifically the realities of state departments of agriculture. Respondents gave examples of programs and exercises that supported this disconnect. One respondent stated, "They [DHS] were clueless on agriculture issues" (Interview 10-0009, March 3, 2010). A central theme running through many of the interviews was that the US Department of Homeland Security lacked the leadership necessary to build up the role of agriculture in homeland security. The respondents suggested this disconnect as a sign that DHS does not take agroterrorism threats seriously and that the federal government does not understand the importance of agriculture.

The development of new mandates on state government was another issue raised by the respondents. Examples of these programs were compliance with pet sheltering requirements and the participation in critical infrastructure (i.e., FAS-CAT) programs. Many of the participants explained that there was inadequate federal support related to these programs. One interviewee stated, "We need federal support…the Feds just don't understand their own requirements" (Interview 10-0020, March 3, 2010). A

concern raised during many of the interviews is that the federal government appears to be moving away from collaboration in the development and implementation of homeland security programs. Clovis succinctly explained,

> The tone and directness moved from partnering and facilitation to dictating more and more requirements for compliance with non-legislated regulatory regimes based on limited theoretical development and no appreciation for the impact in dollars and labor on state and local officials charged with public safety, emergency management, and homeland security responsibilities. (2008, p. 4)

b. *Critical Infrastructure Programs*

The connection between agriculture and critical infrastructure programs presents other challenges for state departments of agriculture. Many states expressed concern about the lack of information provided to them for dealing with critical infrastructure. According to participants, the state departments of agriculture did not have enough information to complete critical infrastructure assessments. The challenge, as with many of the critical infrastructure initiatives, is getting the industry to provide the necessary information to develop protection programs.

Another obstacle is that critical infrastructure programs tend to focus on assets and not the typical systems (the interconnection of disparate assets). The systems-based approach in the food and agriculture sector presented many problems related to annual data calls during which states upload critical infrastructure information into a DHS database. A common criticism of many respondents related to the lack of understanding of the interconnections within the food and agriculture sector. One respondent likened the food and agriculture sector to a web or a chain-linked fence. The individual explained that if you remove one link the entire system falls apart. The complaint was that DHS just did not understand how all of the pieces came together

The development and implementation of FAS-CAT is one of those programs that evoked a range of response. Most of the respondents understood the intent of the FAS-CAT initiative from a federal perspective but were unable to identify a benefit to the state. A common sentiment was that the state received no benefit from using FAS-CAT. To suggest that there was great frustration over FAS-CAT is to put it mildly.

During the roll out of the new version of FAS-CAT (which took place during the period of time these interviews were being conducted), many of the respondents were able to take part in a training Webinar on the new software. However, the tool was not available to the states, and the web-based version (which would be required for submission) was under development. The states discovered that the FAS-CAT was not compatible with the Infrastructure Data Collection Application (the DHS critical infrastructure database) and therefore not suitable for uploading critical infrastructure information. This was taking place less than three weeks before the data was required.

Many of the states, already facing challenges associated with limited staff, pointed to this situation as a sign of disconnect. The respondents interviewed after the Webinar complained that DHS has adequate resources and personnel to work on these projects, but the states, on other hand, lack the staff to work on these initiatives under these deadlines. In addition to personnel challenges, the states repeatedly questioned the value of the process and the relevance of the data collected.

c.   *Target Capabilities*

Another issue related to the disconnect between the federal government and state departments of agriculture was the reference to the Target Capabilities List. In December 2003, President Bush released Homeland Security Presidential Directive-8 to establish national policy related to strengthening preparedness. This required the development of the National Preparedness Guidelines. These guidelines were comprised of three elements: the National Planning Scenarios, the Target Capabilities List (TCL), and the Universal Task List (UTL).

This research did not seek to determine the level of involvement of state departments of agriculture related to these three areas. Only one state mentioned the connection between the TCL and their agency's role in homeland security. Given the lack of direct questions related to the TCL, it is impossible to draw too many conclusions. If the TCL serves as a "framework to guide operational readiness planning, priority setting, and program implementation at all levels of government" (DHS, 2007, p. iii), the lack of

reference does raise some concerns. The TCL contains two specific references to agriculture: *food and agriculture safety and defense* and *animal disease emergency support*. These two capabilities identify desired activities and outcomes. The lack of reference is a potential example of a disconnect between expectations of DHS and the realities of state departments of agriculture.

A part of the explanation for the lack of reference to these national planning guidance documents is that many of the requirements contained in the TCL are unrealistic and unattainable (DHS, 2003; Clovis, 2008). Based upon this research, many of the staffing and resource requirements would not be present in any individual state, and even the capabilities of a regional approach would like not be sufficient. Respondents reported that a large-scale outbreak (even when contained within a single state) would create ripple effects across the nation. The primary focus of all states would be to control the situation within their own state before responding to a crisis elsewhere.

2. Structure

a. Maintaining Silos

While most of the interviewees acknowledged acceptance of agriculture as a member of the homeland security community, there was still a sense of being a lower class member. Even though most states have made great progress in adopting an all-hazards approach, several respondents reported continuing problems related to including agriculture in other aspects of homeland security. One of the interviewees explained that instead of tearing down the walls between the disciplines, that U.S. Department of Homeland Security was building new silos.

One of the participants mentioned the need for "cross pollination" of agriculture issues within the homeland security community. A concern is the homeland security community's lack of involvement in agriculture. The majority of the participants explained that they frequently reached out to other agencies to be involved in training and exercises, but, at the same time, many mentioned their limited involvement in other organizations' activities.

b.   *National Focus on Acts of Terror*

Many of the respondents expressed frustration over the dominant focus of program on acts of terrorism and not on the natural spread or accidental introduction of diseases. Several interviewees explained that the sole focus on acts of terrorism was additional proof that DHS did not understand agriculture. In research related to challenges to national preparedness, Clovis explained, "This divergence in perspective [sole focus on acts of terrorism] has led to ever-increasing tensions between the national government and state and local governments when policies related to homeland security national preparedness are at issue" (2008, p. 1).

Several of the participants explained that the greatest threat facing states was not likely acts of terrorism but naturally occurring incidents. While understanding the consequences of a terrorist act, the respondents explained that their plans typically concern disease outbreaks. In one worst-case scenario, one state addressed the simultaneous spread of FMD into several feedlots. This approach, according to the respondent, was not to focus on an act of terrorism, but instead, the driving force was to examine typical animal movement patterns between feedlots.

3.   **Lateral Mechanisms**

a.   *Multi-State Agriculture Groups*

Even though nearly all of the respondents reported benefits associated the multi-state agriculture groups, most identified time commitments to these groups as an area of concern. The highest level of time commitment seemed to be associated with the Multi-State Partnership for Security in Agriculture because of the many programs that the organization provides to its members. While this presented an obstacle, it did not dissuade them from acknowledging the overall benefits of the organization; however, it does create a challenge to organizations with limited staff.

There were also some critics associated with these organizations. One interviewee explained that the regional organizations were *too much talk* and *not enough action*. This individual wanted to see more direct action and tangible benefits before agreeing to participate in the organization. Another individual, whose state was a member

of a regional group, commented that regionalization might be overdone. This person did not understand how working with other states would benefit their agency in training or incident response.

b.   *Information Sharing*

Another obstacle identified related to communication barriers and the lack of information sharing programs between DHS and state agencies. Frequently comments related to programs such as FAS-CAT. Many respondents reported communication barriers associated the development and implementation of homeland security programs with several specifically indicating that the greatest challenge related to critical infrastructure programs. One respondent felt that balancing both the agriculture and homeland security disciplines prohibited the free flow of information because their program seemed to fall between the cracks.

4.   Incentives

a.   *Limited Funds*

Nearly all of the participants identified funding as the greatest barrier to accomplishing more homeland security initiatives. This issue included both state budgetary funding and State Homeland Security Grant Program (SHSGP) funds. Many of the respondents reported that both of these funding streams were declining. They referred to the recent DHS decision to change from competitive grants to straight allocation based on legislatively mandated minimums, the DHS' risk methodology; and program effectiveness has decreased the funds made available to each state.

One of the respondents indicated that agriculture programs do not get an equal amount of funding as other initiatives. "Most of the money goes to prevent things that 'go boom' and agriculture does not get much," explained one respondent (Interview 10-0006, February 22, 2010). Another respondent said that part of the problem is that "agriculture is still new" to homeland security (Interview 10-0020, March 3, 2010). Nearly all of the respondents reported keeping agriculture issues in front of their State Administrative Agency (SAA) in case SHSGP funds become available.

Many of the respondents reported that the limited amount of funding has forced their agency to be creative in the use of grants. This creativity relates to the development and implementation of regional programs. One state developed a collaborative initiative in which homeland security funds would be passed down to the county-level and then the county would turn over the money to the state department of agriculture to develop agriculture programs which would be implemented on the local level. While this is a laudable approach, it relies on the county to see the value of agriculture in its jurisdiction.

A concern related to the SHSGP funds is that many of the more rural states do not receive an equal share of homeland security monies. In 2010, 21 states received the legislatively mandated minimum ($6,613,200) including six of the states interviewed for this research. This presents many challenges and underscores the position that agriculture interests are not valued highly within the U.S. Department of Homeland Security. A comparison of SHSGP funds and agriculture receipts (see Figure 9) supports the claim of many respondents that homeland security funds do not support the threats connected to agroterrorism.

5. People

a. *Limited Personnel*

The majority of all interviewees reported the lack of personnel as a challenge to homeland security programs (see Table 10). A new concern facing many of the states relates to mandatory furlough days. Even states not facing furloughs expressed concerns about keeping funding levels constant, so they can maintain staffing levels; many explained that expanding staffing positions was doubtful. Nearly all of the respondents reported that they would like to hire additional staff members. Some of the individuals interviewed explained that they are looking at SHSGP funds to support staffing problems but recognized the challenges associated with these grants.

Most of the respondents reported taking some steps in the development and implementation of pet-related programs, but the amount of involvement varied dramatically. Several respondents explained that they had hired staff to support these

initiatives; others reported reliance on volunteers. Examples of programs to support these pet sheltering initiatives were state animal response teams (SARTs) and county animal response team (CARTs). Additional examples of involvement included helping develop response plans incorporating pets and using homeland security grant funds to purchase equipment and supplies in the support of pet care activities.

b.   Lack of Qualified Personnel

Several respondents discussed the importance of cross-utilization of employees during emergencies and exercises. One of the obstacles is that some of the disciplines within agriculture do not have similar skill sets. For instance, a respondent explained that many of the employees in food inspection, meat inspection, and dairy programs all require similar skills and training; however, the respondent stated that skills sets of plant industries staff would not be well suited for a food-related incident. Many of the other states, however, reported training staff members for all types of agriculture incidents.

D.   SUMMARY OF SUCCESS FACTORS AND BARRIERS

The research identified success factors and barriers related to the development of homeland security programs within state departments of agriculture (see Table 11). These elements are centered around the organization design components associated with Galbraith's Star Model.

Organization Design Component	Success Factors	Barriers
Strategy	**All-hazards** Common goal in the **State Homeland Security Strategy** Adaptable to interest of other organizations **ESF approach** (Role clarity) Target Capabilities List (Role clarity)	**DHS lack of agriculture knowledge** Lack of goal clarity – **state-federal disconnect** Focus on discipline-specific programs Programs built in isolation
Structure	**Program focuses on entire agency (all-hazards)** **Program coordinator (homeland security position)** **Coordinated internal planning activities** Formalized coordination through agriculture groups Role clarity (ESF approach) Dedicated assets (internal planning groups)	**Maintaining "silo" approach** Inadequate resources Lack of agency support **National focus on terror** (non risk-based approach) Obligations to complete multiple organizations (excessive time commitments)
Lateral Mechanisms	**Collaboration in multi-state agriculture group** **Information sharing with fusion centers** Technical interoperability (through agriculture groups) Training and exercises **Public-private partnerships** Multi-discipline approach	DHS disconnect with state departments of agriculture Communication barriers (**no information sharing**) **Obligations to complete collaboration tasks** Lack of participation in multi-agency organization Still building "silos"
Incentives	Collaboration Regionalization approach to get more DHS funding **State Homeland Security Grant Program**	Limited State Homeland Security Grant Program funds DHS focus on urban areas (hurts agriculture) Competition for limited resources (**DHS funding**) No direct USDA funding to support activities
People **Issues in bold are primary success factors and barriers and are discussed in detail in this research.**	Professionalism (**personnel**) Reliance on agency subject matter experts **Training and exercises** Dedicated to agriculture and state	Multiple job duties (HLS is not the only hat) **Lack of personnel** (specifically dedicated to HLS) **Lack of understanding of agriculture issues** (DHS) Lack of competency of federal government (do not understand state level realities)

Table 11.   Summary of Factors Affecting Organization

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V.   CONCLUSIONS AND RECOMMENDATIONS

Data are ways of expressing things, and information is the arrangement of data into meaningful patterns. Knowledge is the application and productive use of information, and wisdom, finally, is the discerning use of knowledge.

Davis & Botkin, 1995, p. 42

A.   INTRODUCTION

Agroterrorism is a real concern facing the United States. The very nature of agriculture makes it open to attack. The vulnerabilities of agriculture, including animals, plants, and the food supply, are located at all points along the "farm to fork" continuum. While most experts agree that even though the economy would likely be the primary target during an agroterrorism attack, there could be some potential human health effects.

The U.S. Department of Agriculture and the U.S. Department of Homeland Security have been incorporating agriculture in many of the federal homeland security initiatives. Many of the efforts to protect agriculture have been included in the National Response Framework and the accompanying Emergency Support Function #11. Activities associated with the National Infrastructure Protection Plan list agriculture as one of the most vital industrial sectors in the United States. These federal initiatives should support and be supported by efforts on the local level. Therefore, there is a need to create a framework that enhances the joint efforts of state and federal agencies.

State departments of agriculture, however, have not uniformly developed homeland security programs. In most cases, the placement of homeland security programs within specific units often forces agencies to develop a narrow programmatic focus. While the most threats relate to animal diseases, the location of the program in certain administrative units limits their scope. This can be seen in the exclusion of certain aspects of the food and agriculture sector from common planning approaches.

Through the evaluation of homeland security programs within state departments of agriculture, numerous examples of success factors emerged. As one state reported, however, "The success of state departments of agriculture in the development of

homeland security programs is due to state initiative and not federal leadership" (Interview 10-0012, February 23, 2010). Respondents suggested that factors like collaboration, public-private partnerships, and organizational structure led to the successful development and implementation of homeland security programs.

This research was also able to identify many of the challenges facing state departments of agriculture in the development of homeland security programs. The most common barriers were associated with lack of information sharing, a disconnect between the federal and state government, and inadequate funding. To overcome these barriers, the implementation of a series of recommendations is critical.

The uniqueness relating to the roles and responsibilities of state departments of agriculture makes the development of a single model program problematic. It is, however, possible to identify elements of a model program that state departments of agriculture could selectively implement. These elements include placement of the program within the agency, the focus of the program, and involvement in collaborative initiatives. The recommendations of this research offer solutions to many of the challenges facing state departments of agriculture.

This chapter presents recommendations for enhancing the capabilities of homeland security programs within state departments of agriculture. While not all elements are applicable to all agencies, these recommendations offer potential solutions and are aimed at state departments of agriculture, state homeland security agencies, and the federal government.

B.   RECOMMENDATIONS

This research identified success factors and barriers to homeland security programs within state departments of agriculture. Based upon the analysis of the interviews a series of recommendations are being proposed. Using a modified version of Galbraith's Star Model, it is possible to link organizational design components and success factors and barriers (see Figure 10). The five elements of the Star Model interweave to control and shape the behavior of the organization (see point A). In turn, this behavior affects performance and culture. All of these elements directly influence

implementation of success factors and the presence of barriers. These activities have the potential to influence the organization and then shape performance and culture (see point B). In essence, the organizational factors (Star Model) produce the opportunities in which the implementation of success factors is possible. The feedback loop (see point C) will contain the elements of a model program.
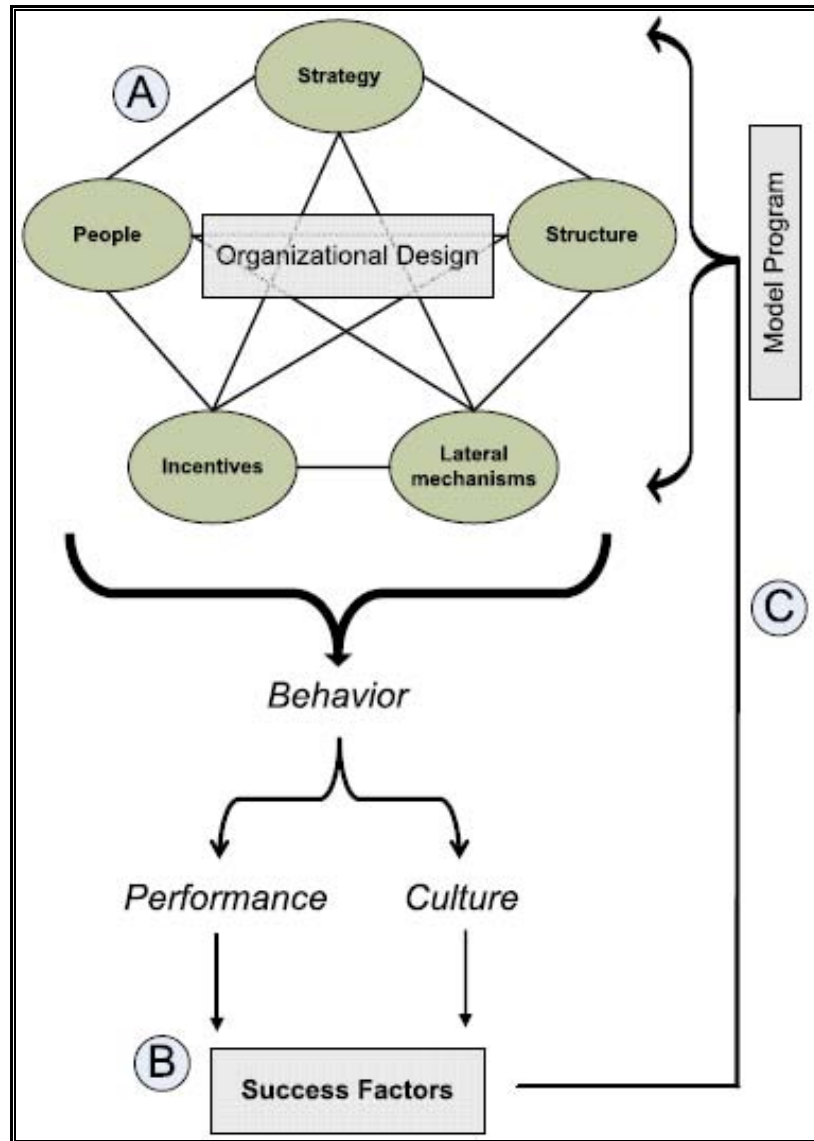

Figure 10.   Modified Galbraith Star and Success Factors (From Galbraith, 2009)

1. Strategy

a. *Proposal 1: Develop an All Hazard Approach*

Homeland security programs within state departments of agriculture must address all hazards. In most agricultural agencies, this would include animals, plants, and food. Building around all hazards is critical to preparing for and responding to all of the threats associated with agroterrorism. It is critical that the organization design ensure that all activities should support the all hazards focus. The state departments of agriculture must coordinate this all-hazards approach with all relevant stakeholders in government and the private sector.

b. *Proposal 2: Include Agriculture in Homeland Security Strategy*

Agriculture issues should be included in the State Homeland Security Strategy. Representatives of the state departments of agriculture must work closely with the State Administrative Agency (SAA) to ensure that the State Homeland Security Strategy contains relevant goals and objectives related to agriculture. The key to this process is to strengthen the relationship between the department of agriculture and the SAA. The inclusion of agriculture would support elements of the Target Capabilities List and is critical to the all-hazards approach needed. Building this connection to include agriculture within broader homeland security issues is a continuous process.

c. *Proposal 3: Communicate Agriculture Needs*

State departments of agriculture need to initiate interaction with agriculture policy makers like the National Association of State Departments of Agriculture (NASDA), representatives of the Food and Agriculture Sector Coordinating Council, and the U.S. Department of Homeland Security. Policy makers need to understand the importance of agriculture and the importance of collaboration if the regional groups are to be successful. It is critical that issues discussed on a planning level are explained to policy makers to ensure there is not a disconnect between DHS and the

agriculture community. An additional element of this communication relates to developing an understanding of the needs and capabilities of state departments of agriculture.

d. *Proposal 4: Participate in Critical Infrastructure Programs*

State departments of agriculture need to become engaged in critical infrastructure protection programs and work with the state coordinating group and private industry. The initial step is for the state departments of agriculture to identify stakeholders representing the critical infrastructure within the food and agriculture sector. Another key is for members of the food and agriculture sector to work within the homeland security community to ensure that statewide critical infrastructure programs include agriculture interests. Part of this involvement would be to engage private industry and other critical infrastructure as partners in the developing a process to use FAS-CAT in agriculture infrastructure assessments.

2. Structure

a. *Proposal 5: Place Program Within Executive Branch*

The findings of this research suggest that the location of the homeland security program within state departments of agriculture is critical to the success of the program. Specifically, the program should be located within the executive unit of the state department of agriculture. This placement would provide overall agency perspective necessary to coordinate the activities of the different disciplines. All internal and external partners must see this position as representing the entire agency. Another argument for the executive branch placement is that if the homeland security program lies within a specific discipline, it is possible that agency would develop too narrow of a focus. Individuals interviewed indicated that placing the homeland security program outside the traditional disciplines (i.e., animal health, plants, or food) is critical to overall success.

b. *Proposal 6: Create of Emergency Planning Liaison Program*

The research recommends state departments of agriculture create an internal planning and response group to coordinate all agency operations. This program

should include members from all of the disciplines represented in the agency and should hold regular meetings and training sessions. Members would be the subject matter experts who would provide technical support to the emergency operations. These individuals would also serve as the primary contacts within each division. The focus of this agroterrorism planning group should be on all hazards related to the food and agriculture sector. A function of these individuals would be to provide a conduit for training needs to be passed from the homeland security program to all relevant department employees.

3.　　Lateral Mechanisms

a.　　*Proposal 7: Engage in Activities With the SAA*

The research also indicates that state departments of agriculture should build a relationship with the State Administrative Agency (SAA). This participation should foster two-way communications and strengthen the place of agriculture within the homeland security community. This involvement should trigger mechanisms for including agriculture in the State Homeland Security Strategy and in other homeland security initiatives within the state. It is critical that the SAA and other agencies understand the role of the state departments of agriculture as a member of the statewide homeland security community.

b.　　*Proposal 8: Engage in Fusion Center Activities*

An analysis of this research recommends that state departments of agriculture participate in the State Intelligence Fusion Center. This participation should support information sharing related to agroterrorism threats. Not all state departments of agriculture will need to hire an analyst to work in the fusion center, but it is important to develop the contacts in order to make some direct involvement possible. This provides the fusion center staff with an understanding of what threat information is relevant to agriculture agencies as well as for the fusion center to provide the state departments of agriculture with an understanding of what information they can provide back up to the fusion center.

An element of enhancing working relationships with the intelligence fusion center is the creation of a Terrorism Liaison Officer position within state departments of agriculture. The TLO is a functional position and acts as the lead coordinator on issues related to terrorism. Typically, the TLO fulfills a range of duties including an interagency representative, a subject matter expert, and a terrorism intelligence analyst. This position would create an important link to the fusion center and the intelligence community.

c.   *Proposal 9: Participate in Multi-state Agriculture Group*

Participation in multi-state agriculture groups is essential for the success of the homeland security programs within state departments of agriculture. Gordon argues, "It is not possible to defend American agriculture against foreign or domestic terrorism if multi-state collaborative initiatives focused on food security [and other elements of the food and agriculture sector] are not developed" (2004, p. 39). This research and other studies related to regionalization suggest that this approach provides a synergistic benefit to member agencies. State departments of agriculture should devote resources to support the activities of these multi-state agriculture groups. In regions where there is not an established organization, the state should continue discussing the development of a multi-state agriculture organization.

Simply having multi-state agriculture group is not enough. These organizations need to connect a dedicated funding stream, have a defined focus, and be able to provide tangible benefits to its members. According to research conducted by Gordon:

> To be effective the partnership should have strong principles and objectives. It should create a system for states to participate in joint planning, education, training and exercise opportunities to build a unified approach in building state and federal surveillance and response capacity; it should promote awareness of agro-security issues within all levels of government; it should improve coordination and information sharing among agencies at the federal, state and local levels to prevent and respond as well as develop joint strategies for maintaining public and consumer confidence. (Gordon, 2004, p. 2)

While these organizations all provide some benefits to members, it is clear that some are further along in complying with the items identified by Gordon. Existing and any new organizations need to remain vigilant to the needs of the member states, and member agencies need to communicate training and planning needs to the multi-state agriculture groups.

d.   *Proposal 10: Form Agriculture Public-Private Partnership*

The research also recommends that state departments of agriculture form public-private partnerships. This group should be something like the Wisconsin Agroterrorism Resource Network (WARN), Agro-Guard, or an ESF-11 task force and should include members of state and local government, law enforcement, and private industry. Developing a mechanism through which all stakeholders can communicate and collaborate is the primary intent of these public-private partnerships.

Budgetary problems might present some challenges related to these types of organizations. However, the ability to collaborate on the development of programs does have the potential to lessen the economic burden of individual agencies. Successful programs will require involving private industry. These programs need to be separate from the typical regulatory emphasis of many state departments of agriculture. The intent of these public-private partnerships is to develop solutions to the challenges agriculture faces related to agroterrorism.

e.   *Proposal 11: Create a State-Level Agro-Security Council*

The research recommends that state departments of agriculture form a state-level agro-security council (or public-private partnership, see above). The agro-security council should include representation of federal, state, and local governments. An essential role of this group is to coordinate the development of agriculture-related response plans and to ensure that responders have adequate training and equipment. Membership in this group needs to be diverse. Representatives should include agriculture, public health, mental health, emergency management, extension service, fusion center, law enforcement, and other relevant agencies.

f. Proposal 12: Enhance Information Sharing

Many of the respondents identified the lack of shared information and the federal-state disconnect as barriers to the development of homeland security programs. This information sharing should occur between all levels of government and should involve the private sector. Many of the respondents complained that the U.S. Department of Homeland Security was not adequately sharing information, and this was creating problems related to the development and implementation of programs.

4. Incentives

a. Proposal 13: Maintain Eligibility to Receive SHSGP Funds

The state departments of agriculture need to maintain eligibility to receive SHSGP funds. While this typically would be a good policy decision, several states indicated that they were not sure of eligibility requirements and were not familiar with the process for applying for homeland security funding. Working with the SAA to maintain familiarity and compliance with the SHSGP eligibility would enable the agency to apply for funding when the opportunities exist.

An element of this approach is that state departments of agriculture take an active role in evaluating grant applications related to food and agriculture. For instance, the state departments of agriculture should be consultants on investment justifications related to pet sheltering. The SAA should rely on the state departments of agriculture as a subject matter expert in the development and implementation of food and agriculture sector investments.

b. Proposal 14: Provide Funding to Multi-State Agriculture Groups

The research has shown that the multi-state agriculture groups are valuable to the completion of many homeland security initiatives. The challenge facing many state departments of agriculture is how to provide funding to multi-state agriculture groups. States face limits in the amount of funding available through SHSGP. In many cases, state agencies are ineligible for funding or receive a minor amount. In the mid-Atlantic

region, one state was willing to provide funding to the MAAEMA but none of the other states could contribute. The challenge is that SHSGP funds are decreasing while the demand is still increasing.

Several states recommended that the U.S. Department of Homeland Security evaluate its policy of providing direct funding to these groups. This would mean that the money used to fund these multi-state agriculture initiatives would not compete for other state projects. Obviously, the money would have to come from other sources, and that has the potential to create problems related to homeland security programs. The state departments of agriculture, however, understood that providing direct funding was simply a way to work around SHSGP restrictions.

5.   People

a.   *Proposal 15: Create Homeland Security Coordinator Position*

This research identified the importance of an individual to coordinate the implementation and development of homeland security programs within the state department of agriculture. This person should serve as the conduit for all internal and external interaction. The roles and responsibilities should include serving as the liaison to the state emergency operations center and the state intelligence fusion center.

b.   *Proposal 16: Develop Agriculture Training Programs*

The research participants identified the importance of agriculture training and exercise programs. A common concern was that DHS and the USDA had not enough agriculture-specific homeland security training. Part of the development of exercises and training is for the federal government to reach out to the state departments of agriculture in an effort to understand their needs. State departments of agriculture should also take advantage of existing training opportunities available through the DHS and the USDA.

Many state departments of agriculture are facing a challenge relating to incident command training and exercises. While some states have been able to provide adequate ICS training, the concern is maintaining proficiency in the use of ICS. The time and effort necessary to develop relevant ICS for agriculture agencies is forcing some states to re-evaluate the use of ICS during emergencies.

Organization Design Component	Recommendations
Strategy	**Proposal 1: Develop an All-hazards Approach** **Proposal 2: Include Agriculture in the State Homeland Security Strategy** **Proposal 3: Communicate Agriculture Planning Needs Related to Homeland Security** **Proposal 4: Participate in Critical Infrastructure Programs**
Structure	**Proposal 5: Place Program Within Executive Branch of the State Department of Agriculture** **Proposal 6: Create An Agriculture Emergency Planning Liaison Program**
Lateral Mechanisms	**Proposal 7: Engage in Activities with the SAA** **Proposal 8: Engage in Fusion Center Activities** **Proposal 9: Participate in Multi-State Agriculture Group** **Proposal 10: Form Agriculture Public-Private Partnerships** **Proposal 11: Create a State-level Agro-Security Council** **Proposal 12: Enhance Information Sharing Among Stakeholders**
Incentives	**Proposal 13: Maintain Eligibility to Receive Homeland Security Grant Programs** **Proposal 14: Provide DHS Funding to Multi-state agriculture groups**
People	**Proposal 15: Create Homeland Security Coordinator Position** **Proposal 16: Develop Agriculture Training Programs**

Table 12.   Summary Table of Recommendations

C.   PROGRAM EVALUATION

The evaluation of a homeland security program provides a useful approach to identify the presence of success factors in specific state department of agriculture programs. To assist in assessment, an evaluation checklist was developed to enable state department of agriculture a means to select which recommendations to implement. Specifically, a "checklist provides an efficient and user-friendly format to share such lessons learned" (Wingate, 2002, p. 1). Information collected during this research was used to generate an evaluation tool (see Appendix D: Evaluation Checklist). This evaluation tool provides a mechanism for state departments of agriculture to perform a self-evaluation of homeland security programs. Agencies can utilize this checklist to identify programmatic areas (i.e., strategy, structure, later mechanisms, incentives, and people) which need to be addressed.

D.   MODEL PROGRAM

There is no single model program that could be implemented in all state departments of agriculture. The roles and responsibilities of state departments of agriculture are so different that it is not possible to create a single model. It is possible, however, to develop a series of program elements or initiatives that state departments of agriculture could implement. The recommendations outlined in this chapter are elements of a homeland security program. Not all suggested elements will work in every state. However, these recommendations do provide some guidance as states evaluate the homeland security programs related to agriculture.

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APPENDIX A: TOTAL AGRICULTURE RECEIPTS

This appendix contains the list of total agriculture receipts for each state. This analysis uses data collected by the USDA Economic Research Service. The focus of this research was on the 32 states with the highest agriculture receipts.

Rank	State	Value ($1,000)	% of U.S.
1.	California	31,835,183	13.20%
2.	Texas	16,498,398	6.84%
3.	Iowa	14,652,946	6.07%
4.	Nebraska	11,779,728	4.88%
5.	Minnesota	9,794,912	4.06%
6.	Illinois	9,708,304	4.02%
7.	Kansas	9,502,727	3.94%
8.	North Carolina	8,210,497	3.40%
9.	Wisconsin	6,864,150	2.85%
10.	Florida	6,843,731	2.84%
11.	Arkansas	6,604,400	2.74%
12.	Georgia	6,107,025	2.53%
13.	Indiana	6,043,191	2.51%
14.	Washington	5,868,196	2.43%
15.	Missouri	5,818,727	2.41%
16.	Colorado	5,501,155	2.28%
17.	Ohio	5,459,380	2.26%
18.	Oklahoma	5,054,570	2.10%
19.	South Dakota	4,877,484	2.02%
20.	Pennsylvania	4,859,336	2.01%
21.	Idaho	4,349,253	1.80%
22.	Michigan	4,312,320	1.79%
23.	Kentucky	4,126,185	1.71%
24.	Alabama	4,103,235	1.70%
25.	North Dakota	4,090,864	1.70%
26.	Mississippi	4,089,158	1.70%
27.	Oregon	3,691,554	1.53%
28.	New York	3,653,431	1.51%
29.	Arizona	3,065,603	1.27%

30.	Virginia	2,684,393	1.11%
31.	New Mexico	2,564,863	1.06%
32.	Tennessee	2,561,984	1.06%
33.	Montana	2,238,979	0.93%
34.	Louisiana	2,225,803	0.92%
35.	South Carolina	1,909,099	0.79%
36.	Maryland	1,743,357	0.72%
37.	Utah	1,253,154	0.52%
38.	Wyoming	1,104,702	0.46%
39.	Delaware	933,843	0.39%
40.	New Jersey	866,719	0.36%
41.	Vermont	581,773	0.24%
42.	Maine	553,830	0.23%
43.	Hawaii	549,830	0.23%
44.	Connecticut	526,580	0.22%
45.	Nevada	454,344	0.19%
46.	West Virginia	422,871	0.18%
47.	Massachusetts	413,954	0.17%
48.	New Hampshire	168,871	0.07%
49.	Rhode Island	63,825	0.03%
50.	Alaska	52,987	0.02%

APPENDIX B: RESEARCH COVER LETTER

The top 32 top agriculture-producing states received following letter to solicit participation in this research.

State of West Virginia
DEPARTMENT OF AGRICULTURE
Gus R. Douglass, Commissioner

Janet L. Fisher
Deputy Commissioner

Steve Hannah
Deputy Commissioner

My name is Dr. Matthew Blackwood, and I am the Homeland Security Coordinator with the West Virginia Department of Agriculture. I am involved in a Master's program at the Center for Homeland Defense and Security at the Naval Postgraduate School. Currently, I am conducting research on homeland security programs within state departments of agriculture and would like to schedule a telephone interview to discuss homeland security initiatives within your agency.

This interview should be conducted with the individual most knowledgeable of homeland security programs within your agency. If you are not the individual with the most knowledge of these programs, please forward this letter to that person.

Your participation in this research is important to the development of a model homeland security program for state departments of agriculture; the larger the number of respondents the more valid the model will be. Please be assured that your identity will be kept strictly confidential. Subjects will not be identified by name or agency. All data will be kept on a password protected computer and will only be accessed by myself. It is expected that the interview will last 1 hour.

I will also provide the informed consent form indicating your rights in the research.

I will be contacting your agency in approximately 1 week to ask whether or not you would be willing to take part in this research and that you have received this letter. I can be contacted by telephone or through e-mail.

Sincerely,

Matthew J. Blackwood, PhD

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APPENDIX C: RESEARCH GUIDE

A. Introduction
1. How do you view the connection between agriculture and homeland security?
2. How do you believe agriculture should be involved in homeland security programs?
   a. Should agriculture be a member of the homeland security community?
   b. What level of involvement should there be?
   c. What is the connection between agriculture and other agencies related to homeland security?

B. Organizational structure
1. Please describe your homeland security program:
   a. Is it a formal program? By that I mean, does it exist or is it just "other duties as assigned"?
   b. Location within your agency: (executive, stand alone, animal, plant, food)
   c. Staff: _____ (numbers, titles)
   d. Primary focus: (animal, plant, food, all hazard, _____)
   e. IMT/ICS experience: (none, taken ICS training, formal IMT)

2. Do you have an operational budget for homeland security programs?

3. Do you apply for grants through your state homeland security agency?
   a. Have you ever received money for homeland security programs?
   b. How did you use the grants?

4. How do you think that a homeland security program should be structured in an agriculture agency?
   a. What would be the optimum way to organize a program?
   b. Should these programs be placed within the agriculture agency or within a homeland security agency?

C. Collaboration

1. In what types of activities is your agency involved with other governmental agencies in your state?
   a. What do you see as the benefits of multi-state initiatives activities?
   b. Do other agencies (in your state) understand the role of agriculture in homeland security?
   c. Do you work with the Homeland Security State Administrative Agency? How? In what types of activities?
   d. Do you work with your state intelligence fusion center? How? In what types of activities?
   e. Do you work with the state office of emergency management? How? In what types of activities? Are agriculture issues covered in the state response plan?

2. What do you see as the role of collaboration in agriculture and homeland security?

3. What are some challenges or obstacles associated with collaboration?
   a. Have you found a way to address those issues?
   b. What are some of the lessons you have learned?

4. Describe your working relationship with federal agencies:
   a. USDA:
   b. DHS:
   c. FBI:
   d. Others:

D. Success Factors
1. What are 2 to 3 homeland security initiatives your agency is doing of which you are most proud?
2. What are some best practices you are using? (collaboration, IMT, technology)
3. What prevents you from doing more of these types of activities?

E. Programmatic needs
1. What are your jurisdiction's greatest unmet needs?
   a. Much of the literature and the testimony of some state officials before Congress concerns related to animal movement in and out of states. What are your thoughts about this issue?
   b. Another concern raised in the literature deals with the lack of interconnection between many of the disease testing labs. Specifically, some officials have called for a coordinated network of state agriculture testing laboratories. What are your thoughts about this issue?
2. What worries you most about agriculture and homeland security?
3. What is the greatest homeland security threat to agriculture?
   a. Do you expect an agroterrorist attack on the U.S. in the next 5 years? What?
   b. What are the terrorist organizations with which are you most concerned?

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APPENDIX D: EVALUATION CHECKLIST

Homeland Security Program
Evaluation Checklist for State Departments of Agriculture

This checklist is for performing final, summative metaevaluations. This evaluation utilizes factors based on the Galbraith Star Model. For each of the 44 standards the checklist includes 10 checkpoints identified in organizational research. It each standard be scored based upon the presence of that checkpoint element.
Then judgments about the adequacy of the subject evaluation in meeting the standard can be made as follows: Poor, Fair, Good, Very Good, or Excellent.

Strategy – To meet the requirements for Strategy, the program should:

☐	Address all hazards within the homeland security program
☐	Align with Emergency Support Functions
☐	Address relevant aspects of the Target Capabilities Lists
☐	Align with agriculture issues in the State Homeland Security Strategy
☐	Incorporate agriculture plans into state emergency operations plans
☐	Contain agricultural resources in critical infrastructure programs
☐	Establish communication lines with state homeland security agencies
☐	Develop a long-term homeland security strategy
☐	Include representatives in state-level homeland security planning task forces
☐	Develop collaborative initiatives with homeland security partners

☐ 9-10 Excellent   ☐ 7-8 Very Good   ☐ 5-6 Good   ☐ 3-4 Fair   ☐ 0-2 Poor

Structure – To meet the requirements for Structure, the program should:

☐	Be located with Executive Division or is stand alone
☐	Include an internal planning task force (representations all of all divisions)
☐	Focus on entire agency (across agriculture disciplines)
☐	Include a homeland security coordinator position
☐	Develop initiatives using a risk-based methodology
☐	Have organizational (administrative) support
☐	Include a formalized coordination for all homeland security programs across the state
☐	Have sufficient authority to accomplish homeland security program
☐	Develop coordination through existing agriculture groups
☐	Have adequate resources to accomplish missions

☐ 9-10 Excellent   ☐ 7-8 Very Good   ☐ 5-6 Good   ☐ 3-4 Fair   ☐ 0-2 Poor

Lateral Mechanisms – To meet the requirements for Lateral Mechanisms, the program should:

☐	Include participation in multi-state agriculture organization
☐	Include a partnership with state intelligence fusion center
☐	Include a terrorist analysts position (Terrorism Liaison Officer)
☐	Participate in a multi-disciplinary approach to agriculture threats and planning
☐	Be involved in public-private partnerships (with primary focus on agriculture issues)
☐	Establish communication channels with state homeland security agencies
☐	Include effective communication and information sharing with other state agencies
☐	Include technical interoperability with other homeland security agencies
☐	Include an internal multi-disciplinary approach – planning and coordinating focus
☐	Develop a critical infrastructure planning approach

☐ 9-10 Excellent   ☐ 7-8 Very Good   ☐ 5-6 Good   ☐ 3-4 Fair   ☐ 0-2 Poor

Incentives – To meet the requirements for Incentives, the program should:

☐	Maintain eligibility to receive State Homeland Security Grants
☐	Use of SHSGP funds to address all-hazards (support programs beyond agriculture)
☐	Participate in regional approach
☐	Develop additional mechanisms to develop funding streams
☐	Include leadership support and commitment to homeland security programs
☐	Reduce competition for resources through collaborative initiatives (with other agencies)
☐	Develop working relationship with state homeland security agencies
☐	Develop partnerships (with counties or state agencies) to attract SHSGP funds

☐ 8 Excellent   ☐ 6-7 Very Good   ☐ 4-5 Good   ☐ 2-3 Fair   ☐ 0-1 Poor

People – To meet the requirements for People, the program should:

☐	Include a dedicated homeland security staff
☐	Include a terrorism Liaison Officer program has been established
☐	Develop an internal program to utilize agency subject matter experts
☐	Establish a training and exercise program for homeland security staff
☐	Support the involvement of personnel state-level homeland security task forces
☐	Define the roles and responsibilities of personnel across homeland security community

☐ 6 Excellent   ☐ 5 Very Good   ☐ 3-4 Good   ☐ 1-2 Fair   ☐ 0 Poor

Summary Assessment
To determine overall success of the homeland security program, take the individual scores from the evaluation and place in the following table. Place the number in each category in the summary calculation table. Use the number in each category to develop an overall assessment of the homeland security program.

	Excellent	Very Good	Good	Fair	Poor
Strategy	❑	❑	❑	❑	❑
Structure	❑	❑	❑	❑	❑
Lateral Mechanisms	❑	❑	❑	❑	❑
Incentives	❑	❑	❑	❑	❑
People	❑	❑	❑	❑	❑

Number of Excellent ratings (0-5)   _____ **x** 5 = _____

Number of Very Good (0-5)   _____ **x** 4 = _____

Number of Good (0-5)   _____ **x** 3 = _____

Number of Fair (0-5)   _____ **x** 2 = _____

Number of Poor (0-5)   _____ **x** 1 = _____

Total score: = _____

Total score: = 21 to 25   **Excellent**

Total score: = 17 to 20   **Very Good**

Total score: = 13 to 16   **Good**

Total score: = 9 to 15   **Fair**

Total score: = 5 to 8   **Poor**

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