

V(A). Planned Program (Summary)**Program # 12****1. Name of the Planned Program**

Agricultural Biosecurity

V(B). Program Knowledge Area(s)**1. Program Knowledge Areas and Percentage**

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		5%	
212	Pathogens and Nematodes Affecting Plants	5%		60%	
213	Weeds Affecting Plants	5%		5%	
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins	70%		20%	
903	Communication, Education, and Information Delivery	15%		10%	
	Total	100%		100%	

V(C). Planned Program (Inputs)**1. Actual amount of professional FTE/SYs expended this Program**

Year: 2009	Extension		Research	
	1862	1890	1862	1890
Plan	1.5	0.0	4.0	0.0
Actual	1.2	0.0	2.0	0.0

2. Actual dollars expended in this Program (includes Carryover Funds from previous years)

Extension		Research	
Smith-Lever 3b & 3c	1890 Extension	Hatch	Evans-Allen
22000	0	80120	0
1862 Matching	1890 Matching	1862 Matching	1890 Matching
22000	0	80120	0
1862 All Other	1890 All Other	1862 All Other	1890 All Other
270000	0	552803	0

V(D). Planned Program (Activity)**1. Brief description of the Activity**

Establish the Oklahoma National Institute for Microbial Forensics and Agricultural Biosecurity (NIMFAB).

Host a workshop on plant pathogen forensics for training agency personnel.

Conduct scientific research focused on plant pathogen forensics, sociological impacts of terrorist acts and other areas of agricultural biosecurity.

Develop an academic track for students seeking graduate degrees in forensic sciences dealing with microbial forensics, plant pathogen forensics and agricultural biosecurity.

Develop an undergraduate course in Agricultural Biosecurity

2. Brief description of the target audience

Key members of National and Oklahoma homeland security community (DHS, FBI, CIA, etc)
 Key members of National and Oklahoma agricultural leaders and representatives
 Oklahoma extension personnel producers and crop consultants
 Master gardeners
 Oklahoma
 OSU students and faculty
 Professional/scientific societies
 Key industries
 The public

V(E). Planned Program (Outputs)**1. Standard output measures**

2009	Direct Contacts Adults	Indirect Contacts Adults	Direct Contacts Youth	Indirect Contacts Youth
Plan	300	100	0	0
Actual	535	200	0	0

2. Number of Patent Applications Submitted (Standard Research Output)**Patent Applications Submitted**

Year: 2009

Plan: 0

Actual: 1

Patents listed

bio pathogen sensor device

3. Publications (Standard General Output Measure)**Number of Peer Reviewed Publications**

2009	Extension	Research	Total
Plan	1	4	
Actual	0	11	11

V(F). State Defined Outputs**Output Target****Output #1****Output Measure**

- Number of OSU faculty and staff affiliated with the new Oklahoma Center for Agricultural Microbial Forensics Biosecurity

Year	Target	Actual
2009	8	41

Output #2**Output Measure**

- Workshops to develop the discipline of plant pathogen forensics, train "first responders", and state and national stakeholders

Year	Target	Actual
2009	1	1

Output #3**Output Measure**

- Number of grant/contract proposals submitted in agricultural microbial forensics and biosecurity

Year	Target	Actual
2009	4	22

Output #4**Output Measure**

- Number of journal articles submitted with emphasis on agricultural microbial forensics and biosecurity

Year	Target	Actual
2009	5	14

V(G). State Defined Outcomes**V. State Defined Outcomes Table of Content**

O. No.	OUTCOME NAME
1	Number of invitations to agricultural biosecurity team members for participation in initiatives, programs, presentations, and consultations related to agricultural biosecurity and microbial forensics
2	Number of forensics-relevant journal articles published
3	Percentage of agricultural producers, handlers and processors employing at least one new (to them)practice to enhance biosecurity

Outcome #1**1. Outcome Measures**

Number of invitations to agricultural biosecurity team members for participation in initiatives, programs, presentations, and consultations related to agricultural biosecurity and microbial forensics

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Condition Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	20	36

3c. Qualitative Outcome or Impact Statement**Issue (Who cares and Why)**

A biological attack on United States crops, rangelands or forests could have severe impacts. Biocrimes, perpetrated for economic gain, are even more likely. Preparedness requires a strong national security plan that encompasses microbial forensics and criminal attribution. However, U.S. crop producers, consultants and agricultural scientists, unaccustomed to the possibility of intentional pathogen introduction, traditionally focus disease management strategies on prevention, rapid eradication or long-term management. New information, technologies and resources in microbial forensics (human, livestock and plant) are needed to enhance the nation's preparedness and responsiveness to plant health emergencies.

What has been done

1. Developed real time PCR protocols for high priority plant pathogens.
2. Developed an agricultural database for the FBI microbial rosetta stone central agricultural database.
3. Developing a molecular pathogen strain discrimination tool.
4. Developed a decision tool to assist law enforcement to determine whether a disease outbreak is natural or intentional.

Results

1. Established operation plans including model pathogens.
2. Curated 100 high consequence plant pathogens and provided information to FBI.
3. One graduate student graduated and published one manuscript.
4. Developed poster presentation for national professional meeting.

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
903	Communication, Education, and Information Delivery

Outcome #2**1. Outcome Measures**

Number of forensics-relevant journal articles published

2. Associated Institution Types

- 1862 Extension
- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

Year	Quantitative Target	Actual
2009	2	11

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

What has been done

Results

4. Associated Knowledge Areas

KA Code	Knowledge Area
212	Pathogens and Nematodes Affecting Plants
712	Protect Food from Contamination by Pathogenic Microorganisms, Parasites, and Naturally Occurring Toxins
903	Communication, Education, and Information Delivery

Outcome #3**1. Outcome Measures**

Percentage of agricultural producers, handlers and processors employing at least one new (to them) practice to enhance biosecurity

Not Reporting on this Outcome Measure

V(H). Planned Program (External Factors)**External factors which affected outcomes**

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations
- Competing Public priorities
- Other (exotic pathogens, terrorism)

Brief Explanation

1. The FBI Scientific Working Group on CBRN Threats, established in 2003 to foster inter-agency communication and to gain academic and industry contributions to the development of the field of microbial forensics, was discontinued. This action affects the number and quality of NIMFFAB interactions with the FBI.

2. Increased restrictions on the ability of foreign nationals to work on certain biosecurity-related (and dual use) projects funded by federal security agencies has affected the ability of some NIMFFAB faculty to work on these projects and also has led to our stated preference for U.S. citizens when bringing faculty members, graduate students and postdocs into our programs.

3. USDA-CSREES has restructured the research priorities and framework for developing grants, moving towards larger, multidisciplinary programs in fewer emphasis areas. This is likely to have a major impact on biosecurity awards in the future.

4. A number of high-profile food-borne pathogen outbreaks occurred in 2009, continuing a multi-year trend in the increase of foodborne illnesses. As a result, food safety was named as one of the major S&T focus areas for the Obama administration (and a priority for the White House Office of Science & Technology Policy). Further, food safety also was named as one of the five major Emphasis Areas for 2010 NIFA proposals (RFA imminent). These factors place NIMFFAB food safety researchers in a position to take advantage of potential new funding streams.

V(I). Planned Program (Evaluation Studies and Data Collection)

1. Evaluation Studies Planned

- During (during program)
- Time series (multiple points before and after program)

Evaluation Results

{No Data Entered}

Key Items of Evaluation

{No Data Entered}