

V(A). Planned Program (Summary)**Program # 3****1. Name of the Planned Program**

Human and Animal Health

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

| KA Code | Knowledge Area | %1862 Extension | %1890 Extension | %1862 Research | %1890 Research |
|---------|--|-----------------|-----------------|----------------|----------------|
| 722 | Zoonotic Diseases and Parasites Affecting Humans | | | 85% | |
| 723 | Hazards to Human Health and Safety | | | 15% | |
| | Total | | | 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 | 0.0 | 0.0 | 9.5 | 0.0 |
| Actual | 0.0 | 0.0 | 11.3 | 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 |
| 0 | 0 | 99934 | 0 |
| 1862 Matching | 1890 Matching | 1862 Matching | 1890 Matching |
| 0 | 0 | 1365992 | 0 |
| 1862 All Other | 1890 All Other | 1862 All Other | 1890 All Other |
| 0 | 0 | 983704 | 0 |

V(D). Planned Program (Activity)

1. Brief description of the Activity

The expected outputs are designed to benefit federal, state, and local public health officials, physicians, veterinarians, and the general public. State-generated outputs mainly include scientific publications, talks and interviews, identifying and testing ticks for the Lyme disease agent, and numbers of state residents served directly by answering inquiries. For activities, staff members will (1) disseminate information on research findings by giving talks and media interviews, (2) analyze ticks and mosquitoes, (3) answer public inquiries, and (4) inform public health officials on control methods. All activities strongly emphasize public service and include traditional and non-traditional stakeholders. Two open houses are planned annually on Station properties to allow the public to hear oral presentations on research findings and to offer comments. Results of these activities will lead to specific outcomes, such as more efficient or environmentally sound methods of tick and mosquito control and prevention of human illnesses.

2. Brief description of the target audience

Research on human and animal health benefits a broad range of stakeholders. Research findings are directly transferred to scientists via peer-reviewed journals and conferences. The general public is reached and participates in events by means of agricultural fairs, open houses, TV, radio, and newspaper articles. Media reporters frequently request information for stories. Oral

presentations will be given to public health officials in meetings and, as requested, to civic groups. Also, state residents are allowed to submit ticks through local health departments for identification and analysis for the Lyme disease agent. Results are reported to public health officials when they inform the residents. General information on tick-related research is also provided. Fact sheets and other information posted on the CAES website are made available to everyone. Although these communication venues allow for extensive contacts with the public, special efforts are made to reach underserved and under-represented groups. Information on ticks and mosquitoes is printed in Spanish. A fact sheet on beg bugs is printed in Spanish and Chinese. Displays at agricultural fairs and open houses are designed to interest children as well as adults. Public participation in agricultural fairs is particularly effective in reaching non-traditional stakeholder groups.

V(E). Planned Program (Outputs)

1. Standard output measures

| 2009 | Direct Contacts Adults | Indirect Contacts Adults | Direct Contacts Youth | Indirect Contacts Youth |
|---------------|------------------------|--------------------------|-----------------------|-------------------------|
| Plan | 3000 | 3000 | 1000 | 2700 |
| Actual | 2526 | 67742 | 1259 | 10830 |

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

Patent Applications Submitted

Year: 2009

Plan: 0

Actual: 0

Patents listed

3. Publications (Standard General Output Measure)

Number of Peer Reviewed Publications

| 2009 | Extension | Research | Total |
|---------------|-----------|----------|-------|
| Plan | 0 | 8 | |
| Actual | 0 | 12 | 12 |

V(F). State Defined Outputs

Output Target

Output #1

Output Measure

- Total research papers

| Year | Target | Actual |
|------|--------|--------|
| 2009 | 15 | 14 |

Output #2

Output Measure

- # of talks and interviews

| Year | Target | Actual |
|------|--------|--------|
| 2009 | 140 | 176 |

Output #3**Output Measure**

- # of responses to stakeholders' inquiries

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2009 | 2500 | 1607 |

Output #4**Output Measure**

- # of ticks identified or tested

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2009 | 4500 | 3404 |

Output #5**Output Measure**

- # mosquitoes identified and/or tested

| Year | Target | Actual |
|-------------|---------------|---------------|
| 2009 | 155000 | 291641 |

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

| O. No. | OUTCOME NAME |
|--------|---|
| 1 | # of residents gaining knowledge of ticks, mosquitoes, and mold |
| 2 | # of media reporters gaining knowledge of ticks, mosquitoes, and mold |

Outcome #1**1. Outcome Measures**

of residents gaining knowledge of ticks, mosquitoes, and mold

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|------|---------------------|--------|
| 2009 | 8500 | 5011 |

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

Stakeholders are concerned about bacterial pathogens transmitted by ticks, such as the spirochetes that cause Lyme disease and the agent that causes human granulocytic anaplasmosis. Both diseases have worldwide distribution in temperate areas and affect several thousand state residents. The general public, health care providers, physicians, and veterinarians are interested in accurate diagnosis of illnesses.

What has been done

During prior reporting periods, antibody tests were developed to help diagnose infections in people and domesticated animals. Tests were subsequently developed for deer and mice to facilitate field studies of these zoonotic diseases.

Results

Following publications in peer-reviewed journals, there was interest in the scientific community to use published methods to perform diagnostic assays. To honor requests, positive and negative reference sera were sent to 4 out-of-state laboratories along with specific information on how to conduct the antibody tests. These activities had immediate impact because assays developed at CAES are now being used at the University of Minnesota, Abaxis (Union City, California), The National Veterinary Institute (Oslo, Norway), and the Royal Veterinary College (London, England). The use of these assays should improve confirmation of Lyme disease and granulocytic anaplasmosis infections in humans, dogs, deer, and mice, thereby preventing illnesses.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 722 | Zoonotic Diseases and Parasites Affecting Humans |
| 723 | Hazards to Human Health and Safety |

Outcome #2**1. Outcome Measures**

of media reporters gaining knowledge of ticks, mosquitoes, and mold

2. Associated Institution Types

- 1862 Research

3a. Outcome Type:

Change in Knowledge Outcome Measure

3b. Quantitative Outcome

| Year | Quantitative Target | Actual |
|------|---------------------|--------|
| 2009 | 30 | 33 |

3c. Qualitative Outcome or Impact Statement

Issue (Who cares and Why)

Reporters frequently seek information on mosquitoes, ticks, and associated diseases and are interested in new knowledge gained from research on the spread of disease organisms in nature and the status of tick and mosquito population densities. Lyme disease is prevalent in Connecticut. West Nile virus, an exotic pathogen, is now firmly established in North America. Moreover, the Eastern Equine Encephalitis (EEE) virus has re-emerged after several years of low prevalence and can cause human and horse deaths. This disease has a 30% human fatality rate. The detrimental effects of vector-borne pathogens on humans and horses illustrate the importance of monitoring for emerging pathogens and changes in the status of endemic disease organisms.

What has been done

There were at least 33 reporters who sought information on mosquitoes, encephalitis viruses, ticks, tick control, or tick-transmitted disease organisms. By interviewing scientists conducting field and laboratory investigations, the reporters gained new knowledge of mosquitoes and ticks and transferred this information to the general public. Tens of thousands of stakeholders were kept informed of recent research findings and the significance of new scientific advances.

Results

There were more than 65 news stories on mosquito and tick population numbers, prevalence of viral or bacterial infections in these arthropods, and methods of control. Articles written by 26 (79%) of 33 reporters accurately transferred results to stakeholders. These actions had impact because upon learning about the presence of the EEE virus in 23 towns, state officials responded by increasing public service announcements encouraging state residents to prevent mosquito bites. There were no human cases of EEE. Also, more than 3,000 state residents learned about the Station's diagnostic services available to test ticks for the Lyme disease agent and submitted 3,404 ticks for identification and analyses. Stakeholders learned whether or not ticks were infected and received a letter reporting results and a fact sheet describing how these arthropods transmit the Lyme disease organism. During the past year, 1,870 ticks were not engorged with blood, and since no transmission of pathogens occurs until blood engorgement, there was no need for unnecessary antibiotic treatment. The immediate benefits are a well-informed public, reduced costs for analyzing ticks, and less antibiotics being used in treatment.

4. Associated Knowledge Areas

| KA Code | Knowledge Area |
|---------|--|
| 722 | Zoonotic Diseases and Parasites Affecting Humans |
| 723 | Hazards to Human Health and Safety |

V(H). Planned Program (External Factors)

External factors which affected outcomes

- Natural Disasters (drought, weather extremes, etc.)
- Economy
- Appropriations changes
- Public Policy changes
- Competing Public priorities
- Competing Programmatic Challenges

Brief Explanation

Because of budget cuts, the number of available vehicles for field visits was reduced. This factor made it difficult to collect specimens. There were no changes in public policy, competing priorities, amounts of grant funding, or competing programmatic challenges.

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

1. Evaluation Studies Planned

- After Only (post program)
- Before-After (before and after program)
- During (during program)

Evaluation Results

"During program" and "after only" evaluations were conducted to assess program effectiveness. The treatment of mosquito larval habitats, following news releases of West Nile and EEE virus infections in mosquitoes, successfully reduced mosquito populations at selected, key sites. Surveys of stakeholders revealed positive responses to news releases to warn the public about infected mosquitoes.

Key Items of Evaluation

Data were collected mainly by on-site verbal input or written evaluations conducted following talks to civic groups. A survey was conducted to assess changes in behavior regarding prevention of mosquito and tick bites, and there were face-to-face interactions with reporters and other stakeholders. During this reporting period, there was a total of 286 citations for scientific articles written by 8 scientists.