

## 2012 Program Report Card: Plants and the Environment (The Connecticut Agricultural Experiment Station)

**Quality of Life Result:** All Connecticut forests and beneficial, non-invasive plants are thriving, supporting a healthy environment for all residents.

**Contribution to Result:** Insect and plant disease diagnostic and inspection services provide surveillance for new pests and integrated pest management (IPM) research to protect crops and forests from invasive insects and plant diseases. We detect emerging insects and plant diseases, facilitate trade, support jobs in the green industry, develop new management approaches, and provide information about plant health problems to state residents and the scientific community through publications and talks.

**Actual SF11 Total Program Expenditures:** \$2,092,927

**State Funding:** \$1,485,929

**Federal Funding:** \$471,841

**Other Funding:** 135,157

**Estimated SF12 Total Program Expenditures:** \$2,120,000

**State Funding:** \$1,500,000

**Federal Funding:** \$500,000

**Other Funding:** \$120,000

**Partners:** CT Dept. of Agriculture, CT DEEP, UConn Extension (Storrs), CT Green Industry Coalition, USDA, US Forest Service, homeowners and lake associations, The Nature Conservancy, CT Tree Protective Association, Federated Garden Clubs, CT Forest & Park Association, Audubon Society, CT beekeepers.

**Performance Measure 1:** Safeguard agriculture and forests in CT.

Number of phytosanitary certificates and plants or containers inspected and shipped out of state or country.

| Year | # Certificates | # Inspected |
|------|----------------|-------------|
| 2008 | 649            | 495,684     |
| 2009 | 354            | 285,296     |
| 2010 | 347            | 248,443     |

**Story behind the baseline:** A slight downward trend in the number of phytosanitary certificates issued since 2008 is likely a reflection of the recent economic downturn. Nevertheless, the green industry, the largest component of agriculture in CT, contributes \$1.022 billion to the state's economy and employs 48,000 people. Regulatory plant inspections protect jobs, support our industry and forests, and facilitate trade. Federal and state laws require that plants sold in or shipped from CT be free of insect pests and plant diseases. Our IPM research has succeeded in protecting plant health, businesses, and the environment. Using IPM, managers in 6 large nurseries were able to ship and sell 1,501,504 treated (non-infested) arborvitae & rhododendron plants (valued at \$6,285,000) in the US and Canada. Our inspectors survey for invasive pests and diseases, such as the Asian longhorned beetle (ALB), Emerald ash borer (EAB), and the oak blight *Phytophthora ramorum*.

**Trend:** ◀▶ Flat/No trend

**Performance Measure 2:** Reduce pesticides applied to plants, improve yields with better quality products for consumers, and promote environmental stewardship with accurate diagnosis.

Number of responses to plant-related inquiries and insect and plant disease diagnostic tests conducted.

| Year      | # Responses to Plant Inquiries | # Diagnostic Tests |
|-----------|--------------------------------|--------------------|
| 2008-2009 | 17,328                         | 10,651             |
| 2009-2010 | 16,192                         | 10,326             |
| 2010-2011 | 15,720                         | 6,227              |

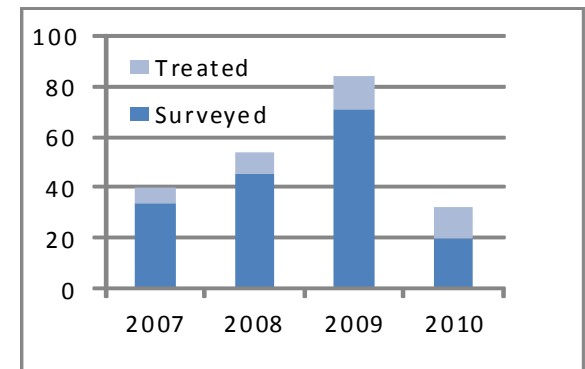
**Story behind the baseline:** Diagnoses of insect and plant disease problems were performed for state residents. Suggestions for control were given to the stakeholders, along with written information on each pest or disease. A wide range of different insect and plant disease problems are identified. In about 50% of inquiries, stakeholders visited our laboratories to seek direct assistance. In 2010, a fungus caused "late blight" of tomatoes and potatoes. Prompt diagnosis and treatment saved crops valued at about \$4,000,000 in CT and MA. Produce from MA enters CT markets. The *Plant Pest Handbook* and other publications on our website received 4,564 page views, while our publications page received 4,986 views. A new online arthropod management database is also posted on our website.

**Trend:** ▼ No

**Performance Measure 3:** Reduce invasive aquatic plants with less cost and negative impact to the environment.

**Story behind the baseline:** Invasive aquatic weeds reduce water quality, recreation, and property values. Of the 185 lakes surveyed between 2004 and 2010, 61% contained 1 or more invasive plants. Research on chemical and biological control, and molecular identification of weeds restored water quality in 12 lakes during 2006-2010. During 2010, native and invasive aquatic vegetation was mapped at 8 new and 11 previously surveyed water bodies. Our surveys provide the most complete aquatic and water chemistry databases available in any state.

Cumulative number of lakes surveyed and those receiving treatment.



**Trend:** ▲ Yes

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**Performance Measure 4:** Number of soil tests performed to help to improve soil quality and minimize the use of fertilizers on lawns and nursery stock.

Number of soil tests performed.

| Year      | # Soil Tests |
|-----------|--------------|
| 2007-2008 | 10,377       |
| 2008-2009 | 11,699       |
| 2009-2010 | 9,971        |
| 2010-2011 | 10,190       |

**Story behind the baseline:** Fertilizers are used extensively by homeowners, landscapers, golf course managers, and farmers. In many cases, these chemicals are applied without knowledge of soil quality. This practice can lead to polluted surface and groundwater, thereby encouraging rapid growth of algae and invasive aquatic plants. People who own or rent lake-front properties have expressed concern over reduced water quality. A benefit of testing soil samples is less fertilizer leaching into surface and groundwater and Long Island Sound. Around 23% of soils tested did not need additional fertilizer, thus saving homeowners about \$18,820 in fertilizer costs in 2010. In related work, field studies have been designed to determine minimal amounts of fertilizers needed for proper Christmas tree growth in farms. The long-term benefit is a cleaner environment and lower costs of farming.

**Trend:** ▲ Yes

**Performance Measure 5:** Dissemination of new scientific findings to the public and other scientists.

Number of homeowners and scientists gaining knowledge of plants and the environment through talks and media interviews, research papers, and direct contact.

| Year | # talks | # papers | # contacts |
|------|---------|----------|------------|
| 2008 | 834     | 88       | 46,286     |
| 2009 | 755     | 90       | 41,017     |
| 2010 | 749     | 86       | 48,407     |

**Story behind the baseline:** Public service and access to our findings are an important component for all performance measures. CAES scientists partner with stakeholders and participate in their organizations as members or officers, conduct workshops or meetings and experiments on stakeholders' properties as well as on CAES research farms, provide diagnostic services and training on good farming practices and other methodologies, and disseminate written information on research findings by presenting scientific displays at agricultural fairs and giving talks and interviews to civic groups. Staff members work with the media and provide information on scientific discoveries, and educate teachers and, thereby, indirectly reach youth. Two open houses were held on CAES properties to allow the public to hear oral presentations on research results and to offer comments. Increasingly, information and all our publications are readily available on the CAES website.

**Trend:** ▲ Yes

**Proposed actions to turn the curve:**

New research and outreach activities have been initiated to protect trees and nursery crops. For example, CAES participated in a multistate Forest Pest Survey and Outreach Project to increase public awareness about ALB and EAB. We directly reached at least 31,000 CT residents through the USDA funded program and found that stakeholder concerns about the invasive beetles is high. New state quarantine regulations will be enforced and a cooperative agreement was signed with DEEP to work together and share resources to protect our forests. Research was conducted to evaluate chemical controls to protect trees.

The presence and characteristics of invasive aquatic plants will continue to be documented to help improve control strategies and reduce chemical use. For example, studies using predatory beetles for biological control are being evaluated; 16,000 beetles were released to control Eurasian water milfoil in Candlewood Lake in 2008 and 16,000 additional weevils were released in 2010. Four lakes originally surveyed in 2004 or 2005 were resurveyed to measure how invasive plants are affecting plant communities over time. Volunteers have been trained to recognize, survey and report invasive aquatic weeds. The CAES website will continue to be enhanced to inform the public and provide increased, easy access to the public of our survey and research findings.

**Data Development Agenda:** The USDA requires a five year Plan of Work and the collection of data to document the impact of research in annual reports. Detailed summaries of our outreach and research are compiled annually in our Record of the Year. These are all available on the CAES website. The Station will continue to collect data to measure impact on how much we did, how well we did it, and how better off CT stakeholders are through our research and outreach efforts.