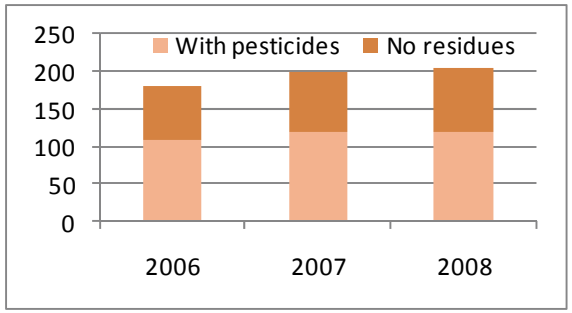
The Connecticut Agricultural Experiment Station Program Report Card: Crop Quality and Food Safety

Quality of Life Result: All Connecticut residents have access to safe products and safe, locally-grown, high-quality food.

Contribution to Result: By conducting research on new crops for our farmers and testing for pesticides and other contaminants, we provide new locally grown crops for our farmers and farmers' markets, help preserve farmland, and reduce exposure to unwanted chemicals in our food. Results are disseminated to state residents and the scientific community through publications and talks.

Partners: CT Depts. of Agriculture, Consumer Protection, and Public Health; US FDA, USDA, US EPA; CT farmers and markets; food banks.

Performance Measure 1: Reduce exposure of CT residents to food and other products containing pesticides or other unwanted chemicals.



Story behind the baseline: With increased commerce from foreign countries and with our domestic, large-scale food processing, there is greater potential for product contamination. Sometimes foods and other products contained unwanted chemicals, such as pesticide residues. For example, pomegranate juice contained benomyl and was recalled. Other discoveries include detection of lead paint in toys (2 recalls), sanitizer fluids in CT milk (analyzed within 4 hours of receiving samples), melamine in dog food and wafer rolls (2 recalls), and ethylene glycol in toothpaste and fruit punch. Our tests resulted in 3 national recalls in 2008. These regulatory actions ensure consumer access to safe foods and other products.

Proposed actions to turn the curve: Pesticide extraction and analyses generally take about 4 days. New methods will be developed to detect lower amounts of pesticides more efficiently and to more quickly remove unsafe foods and other products from commerce. Further staff reductions or program cuts will greatly impede work output.

Performance Measure 2: Develop new crops for CT farmers that offer fresh and nutritional food for CT residents.

Number of new crops and cultivars evaluated.

Year	# Crops Evaluated	# Cultivars Evaluated
2006	8	96
2007	9	93
2008	10	106

Story behind the baseline: There is increased public interest in growing new specialty crops with little or no pesticides. Cultivars (varieties) of fruits and vegetables and different cultural methods have been field-tested. Recently, different crops, such as Chinese cabbage, were high yielding and could be grown in CT with little or no pesticides. Yields averaged about 17.5 tons/acre. At a retail price of about $0.99 per pound, there is a potential crop value of about $38,400 per acre. Farmers are including this crop in their farm operations; 24 CT farmers are growing 9 specialty crops with low-cost cultural methods. At fruit growers' requests, beach plums were evaluated at our farms for CT production. With an expected value of $52,270 per acre, two of CT's largest commercial orchards now include beach plums, which are in consumer demand and can be made into a premium jelly.

Proposed actions to turn the curve: New information on crop programs will be transferred to farmers at grower meetings. A brochure was mailed to 500 farmers on the new crops program, but additional lectures will be given to describe new study results.

Performance Measure 3: Improve soil quality and minimize the use of fertilizers on lawns and nursery stock.

Total soil tests performed.

Year	# Soil Tests
2006	10,018
2007	10,377
2008	11,699

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 are concerned about reduced water quality. A benefit of testing soil samples is less fertilizer leaching into surface and ground water and less detrimental effects to Long Island Sound. Around 4-5% of soils tested do not need additional fertilizer, thus saving those homeowners $11,700 in fertilizer costs.

Proposed actions to turn the curve: Information will be included in soil-test reports to advise state residents on the proper use of fertilizers to prevent environmental contamination. Field studies have been designed to determine minimal amounts of fertilizers needed to reduce costs for proper Christmas tree growth in farms. Results will be transferred to growers at public meetings.

The Connecticut Agricultural Experiment Station Program Report Card: Plants and the Environment

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 corps and forests from invasive insects and plant diseases. We detect emerging insects and plant diseases, facilitate trade, develop new management approaches, and provide information about plant health problems to state residents and the scientific community through publications and talks.

Partners: CT Dept. of Agriculture, CT DEP, 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 certificates and plants or containers inspected and shipped out of state or country.

Year	# Certificates	# Inspected
2006	582	569,714
2007	572	669,283
2008	649	495,684

Story behind the baseline: 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 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. The majority of plants inspected for shipments were pest free. Our IPM research has succeeded in protecting plant health, businesses, and the environment. Using IPM, managers in 3 large nurseries were able to ship and sell 350,000 treated (non-infested) arborvitae plants (valued at $12,250,000) in the US and Canada. Our inspectors survey for invasive pests and diseases, such as the Asian long-horned beetle and the oak blight *Phytophthora ramorum*.

Proposed actions to turn the curve: New research and outreach efforts have been initiated to protect trees and nursery crops and to increase public awareness of invasive beetles. State quarantine regulations are being written. Information will be transferred at town and grower meetings, ag fairs, and in training foresters and Master Gardeners. Activities will reach over 50,000 people.

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 inquiries and insect and plant disease diagnostic tests conducted.

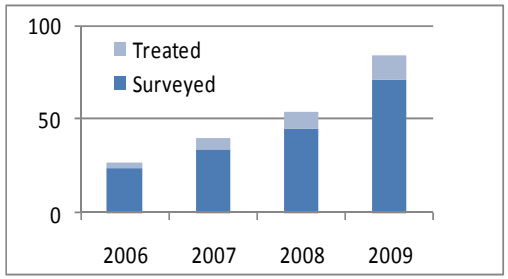
Year	# Responses to Inquiries	# Diagnostic Tests
2006-7	22,213	12,081
2007-8	19,381	10,915
2008-9	19,179	10,651

Story behind the baseline: Diagnoses of insect and plant disease problems were performed on 33,647 samples submitted by stakeholders in person or by mail. Results and suggestions for successful control were given to the stakeholders, along with written information on each pest or disease. In about 49% of the inquiries, stakeholders visited our laboratories to seek direct assistance. A wide range of different insect and plant disease problems are identified. For example, there were 1,131 different insects and plant pathogens diagnosed in 2008-09. On our enhanced website, the *Plant Pest Handbook* received 10,079 page views, while our publications page received 11,412 page views in the past 2 years.

Proposed actions to turn the curve: A critical plant diagnostician position was refilled, which will allow for the development of new, low-cost assay methods and continued interaction with state residents to reduce pesticide use, enhance crop quality, and to protect the environment.

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

Cumulative number of lakes surveyed and those receiving treatment.



Story behind the baseline: Invasive aquatic plants reduce water quality, recreation, and property values. Of the 162 lakes surveyed starting in 2004, 62% contained 1 or more invasive plants. Research on chemical and biological control, and molecular identification of weeds restored water quality in 12 lakes during 2006-09. Lower amounts of an herbicide (2,4-D) successfully removed the weed variable water milfoil from Bashan Lake in East Haddam; use of 75-100 pounds/acre rather than 200 pounds/acre resulted in cost savings of about $4,000. This 10-acre lake is largely free of this plant.

Proposed actions to turn the curve: Volunteers will be trained to recognize, survey, and report on invasive aquatic weeds. Studies using grass carp and predatory beetles for biological control of aquatic weeds will be evaluated to improve water quality, further reduce chemical use, and reduce treatment costs.

The Connecticut Agricultural Experiment Station Program Report Card: Human and Domestic Animal Health

Quality of Life Result: All Connecticut residents and their domestic animals are healthy.

Contribution to Result: By conducting surveillance, testing mosquitoes and ticks, and implementing pest management practices, we alert citizens to risk of exposure to biting insects and ticks and inform them how to reduce their risk of disease in an environmentally safe manner through publications and talks.

Partners: CT Department of Public Health, CT DEP, UConn (Farmington), CT Chief State Attorney's Office, local health departments; US CDC, USDA; professional landscape and pest control associations, housing authorities, The Nature Conservancy, community Lyme disease support groups, veterinarians.

Performance Measure 1: Improve tick testing and reporting of infectious disease agents.

Ticks are identified and tested for the Lyme disease agent for CT residents.

Year	#Ticks	#Tested	#Pos	%Pos
2006	4855	2314	520	23
2007	2602	1388	479	35
2008	3120	1470	340	23

Story behind the baseline: Prevalence of tick-borne infections has increased in CT. Physicians make treatment decisions based on the results of tick testing with the goal of preventing Lyme disease. Tick test results inform people about the risk of infection near their homes and if the attached tick is infected. A total of 15,350 tick handbooks, some printed with General Assembly support, have been distributed to assist CT residents with least-toxic tick control options. There were 117,000 downloads of the handbook from our website. With CDC support, our research on natural and biological tick control has lead to registration of a fungal agent to be commercially available in 2011 as an alternative to synthetic pesticides. This advancement will protect the environment.

Proposed actions to turn the curve: Unengorged ticks will no longer be tested for the Lyme disease agent, as unfed ticks do not transmit the disease organism. This decision will reduce costs by about 60% and improve reporting turn around time from 3-4 weeks to 1-2 weeks. Talks will be given to inform residents about tick control.

Performance Measure 2: Monitor changes in West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE) virus infections in moquitoes.

Mosquitoes identified and tested (up to 50 mosquitoes/ pool) for viruses .

Year	#Tested	WNV	EEE
2006	197,793	219	3
2007	157,476	69	5
2008	211,657	191	0
2009	291,641	33	120

Story behind the baseline: Encephalitis viruses can cause death in people and horses. People make decisions on outdoor activities and use repellents based on results of mosquito testing and cases of reported disease. There were 8,065 page views of the CT Mosquito Management Program on our website during 2007-2009. A survey found that 72% of residents are more likely to avoid exposure and use a repellent when infected mosquitoes are detected. Public notification activities were successful. There were no human cases of WNV or EEE in CT in 2009.

Proposed actions to turn the curve: Additional research will be conducted to clarify the epidemiology of the EEE virus. Updates on the Station's website and weekly press releases will inform residents about virus infections so that protective measures can be taken to prevent human cases. If state and federal program funding is cut, the number of mosquito trapping sites will be greatly reduced or the program will be eliminated.

Performance Measure 3: Reduce indoor mold problems and help CT residents avoid allergies, bed bugs, and tick-transmitted infectious agents.

Homeowners and scientists gain knowledge of human pests, pathogens and diseases through talks and interviews, research papers, and direct contacts.

Year	# Talks	# Papers	# Direct Contacts
2007	139	17	5,679
2008	204	25	3,683

Story behind the baseline: Mold infestations from water damage in human dwellings can cause allergies and destroy wood and dry wall. We inspected 4 public buildings at the request of officials and identified mold problems. Successful remediation programs were implemented and indoor air quality was improved. Tick populations are increasing due to the rise in wildlife populations. Bed bug problems are increasing due to travel and resistance to pesticides. Bed bugs constituted 9% (501) of all insect inquiries last year. Two highly successful, full-capacity bed bug forums were held at the Experiment Station. Prevention of human illnesses and distress due to mold, bed bugs, or ticks relies on the dissemination of reliable information and new research findings.

Proposed actions to turn the curve: More press releases and talks to civic groups are planned to disseminate research findings. With the assistance of a bed bug advisory group, local health departments will be contacted to increase dissemination of bed bug and tick management information. As a partner with the Ridgefield Health Department, a special tick prevention program will continue.