The Connecticut Agricultural Experiment Station

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Appropriations Committee Presentation
February 24 , 2011

Good evening Senator Harp, Representative Walker, and other members of the Appropriations Committee. My name is Louis A. Magnarelli. I am the Director of The Connecticut Agricultural Experiment Station (CAES). We thank you for this opportunity to present a brief report on research progress. The topics are: food safety; agriculture; invasive insects; mosquitoes and encephalitis viruses; ticks; and the current status of bed bug infestations.

Food Safety: Connecticut General Statutes [Sec. 22-81(c)] directs the CAES to conduct analyses as required by any state agency. We also participate in a national counter-terrorism program called the Food Emergency Response Network, which is funded by the US Food & Drug Administration (FDA). The main objective is to protect our food and water supply by testing samples for toxic chemicals. The Deepwater Horizon Oil Spill in the Gulf of Mexico was a major event. Our chemists were called upon by the FDA to develop more efficient analytical chemistry methods to test seafood (shrimp, crabs, oysters, and fin fish) for polycyclic aromatic hydrocarbons, petroleum-related chemicals. We collaborated with chemists in the FDA forensic laboratory in Cincinnati and scientists in the Minnesota Department of Agriculture to develop the new methods. Our results on seafood testing played an important role in re-opening fishing waters near Alabama, Florida, and Louisiana (see attached letter from an FDA official to Governor Malloy). The FDA five-year grant for $2 million and the state-of-the-art equipment supplied to us by this agency greatly assist in analyses of foods and other products in Connecticut.

Agriculture: We are making progress on patenting a new strawberry plant called "Rubicon," which is resistant to a fungus infection of roots and a major insect pest called the black vine weevil. A patent attorney is working with us on preparing the legal documents. This important discovery will reduce pesticide use on farms and should increase profits for growers. We are also conducting field tests on rapeseed as a cover crop to control nematodes (microscopic worms) that attack the root systems of crops. The seed from this plant can also be used in biodiesel fuel production.

Invasive Insects: A new invasive insect called the brown marmorated stink bug (also known as the Asian stink bug) has entered Connecticut. This insect has caused significant crop losses in New Jersey and eastern Pennsylvania. The pest attacks fruits and vegetables, including corn, tomato, pepper, peach, nectarine, apple, pear, grapes, and red raspberry. The bugs seek shelter in homes and other buildings during the fall and can be a nuisance. Specimens have been submitted to us by state residents in Beacon Falls, Bethlehem, Bridgeport, Cheshire, Darien, Hamden, Kent, New Hartford, New London, North Haven, Norwalk, Portland, Prospect, Trumbull, Waterbury, West Haven, Windham, and Woodbridge. Programs are being developed to monitor and control this insect in crop production areas. Two important pests of trees (Asian longhorned beetle and Emerald ash borer) have not been found in Connecticut but are established, respectively, in the Worcester, Massachusetts area (about 13 miles from the Connecticut border) and in the Saugarties, New York area (about 30 miles from the Connecticut border). We adopted quarantine regulations for both pests last year to provide guidance on the control and movement of infested materials if these either tree pest enters Connecticut.

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Mosquitoes/Encephalitis Viruses: Pursuant to Connecticut General Statutes Sec. 22-81a, CAES scientists and technicians collected and identified 113,354 mosquitoes from 91 trap sites in Connecticut during 2010. These mosquitoes were identified to species, processed, and introduced into cell culture to determine if they were infected with encephalitis viruses. We are also carefully monitoring two exotic mosquitoes of Asian origin. Although 9 different virus types occur in Connecticut, West Nile and Eastern Equine Encephalitis (EEE) viruses are most important because they are prevalent and can cause human fatalities. Both viruses are widely distributed in the state. Rainfall and availability of bird hosts are important factors, along with mosquito population densities, in determining amount of risk to human beings. West Nile virus is most prevalent in Fairfield and New Haven Counties. Research results indicate that two different mosquito species that breed in catch basins and swamps play major roles in transmitting the West Nile and EEE virus, respectively. Proposed federal cuts in funding our West Nile virus surveillance and research programs could result in a significant reduction of trap sites in the state.

Ticks: The blacklegged tick transmits disease organisms that cause Lyme disease, human granulocytic anaplasmosis, and human babesiosis. Recent research results indicate that they may also be transmitting Powassan virus or a closely related organism. Field research also revealed that tick survival in forested areas is enhanced by growths of Japanese barberry because mice and other rodents, which serve as reservoirs for disease organisms and hosts for immature ticks, are protected from avian and mammalian predators. Higher microclimate humidity in barberry thickets favors tick survival. In collaboration with several land trusts, municipalities, and the Department of Environmental Protection, more than 450 acres of land have been treated to remove Japanese barberry and reduce tick abundance.

Bed Bugs: Bed bug infestations continue to spread in hotels, apartments, homes, schools, and other buildings. This is due primarily to the pest's resistance to insecticides and a highly mobile human society. We have organized a statewide group of professionals to educate pest control operators, building superintendents, and the general public on methods of control and preventive steps in reducing risk of bed bug infestations. Our scientists are also testing insecticides for control and developing methods to assess effectiveness of management programs in human dwellings.

Current Budget Status: The CAES expenditure for FY 2010 was $10,695,713. This amount is subdivided as follows: state general fund ($6,508,891), federal grants ($3,786,412), and other extramural funds ($400,410). The latter mainly represent private and industry contributions.

Please feel free to e-mail me at Louis.Magnarelli@ct.gov or to contact me by phone (203) 974-8440 if you have questions. Thank you.

Sincerely,

Louis A. Magnarelli

Louis A. Magnarelli, Ph.D.
Director

DEPARTMENT OF HEALTH & HUMAN SERVICES

Food and Drug Administration
Rockville MD 20857

FERN

Uniting Federal, State and Local Laboratories for Food Emergency Response

Governor Dannel P. Malloy
Office of the Governor
State Capitol
210 Capitol Avenue
Hartford, CT 06106

Dear Governor Malloy:

As the US FDA Director of the Food Emergency Response Network (FERN) I am writing to express our appreciation for the work performed by the Connecticut Agricultural Experiment Station, Department of Analytical Chemistry under the direction of the FDA/FERN in response to the Deepwater Horizon Oil Spill.

As you know, the Deepwater Horizon Oil Spill threatened to cripple the Gulf area seafood industry. The oil from the Deepwater Horizon well contaminated a large number of Gulf state fisheries in Louisiana, Alabama, Mississippi, and Florida which resulted in an almost total shutdown of the industry. The closures were based on the public health threat from contamination of seafood by polyaromatic hydrocarbons (PAHs), the principal toxicologic concern. To address this threat, a detailed reopening protocol was implemented involving an extensive chemistry testing program. This protocol outlined specific levels of concern for each PAH that the labs were tasked to measure. Two methods were used in the chemistry testing portion of the protocol, a method developed by NOAA and a PAH screening method. The Connecticut Agricultural Experiment Station, Department of Analytical Chemistry's activities were critical to the development and implementation of this PAH screening procedure. Without this method, the safe and rapid reopening of the Gulf state fisheries would not have been possible.

The FERN is tasked with integrating the nation's food-testing laboratories at the local, state, and federal levels into a network that is able to respond to emergencies involving biological, chemical, or radiological contamination of food. The FERN plays a number of critical roles related to food safety and defense, specifically prevention, preparedness, response and recovery, which are directly in line with the agency's mission of promoting and protecting the public health. The development, operation, and ultimately, the success of a network like the FERN is largely dependent upon quality federal and state inter-agency participation and cooperation. The work performed by the Connecticut Agricultural Experiment Station, under the leadership of Dr. Jason White, Chief Scientist at the Department of Analytical Chemistry, truly exemplifies the mission of the FERN, and is an outstanding example of how federal and state cooperative efforts provide the most effective and efficient means to ensure the safety of our nation's food supply.

The Connecticut Agricultural Experiment Station, Department of Analytical Chemistry has been a FDA/FERN Chemistry Cooperative Agreement Laboratory since 2005. Over the years, the FERN has worked closely and successfully with Department of Analytical Chemistry staff to increase analytical capability and capacity for a number of high priority agents. However, the threat of PAH contamination in seafood posed by the Deepwater Horizon Oil Spill was anything but expected. One of the hallmarks of a superior laboratory is the ability of the staff and institution to rapidly adapt to fill a need during a time of crisis. The Connecticut Agricultural Experiment Station, Department of Analytical Chemistry unequivocally showed this ability when they worked closely with the FDA Forensic Chemistry Center and FDA/FERN

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Chemistry Cooperative Agreement Staff to quickly establish, validate and implement a rapid LC-MS screening method (Screen for the Presences of Polycyclic Aromatic Hydrocarbons in Select Seafoods Using LC-Fluorescence) for detection of PAHs in seafood.

In response to the Deepwater Horizon Oil Spill, the FERN coordinated FDA FERN Chemistry Cooperative Agreement Laboratory analysis of seafood samples for re-opening of state waters. The Connecticut Agricultural Experiment Station, Department of Analytical Chemistry analyzed 30% of all re-opening seafood samples for PAHs, which included shrimp, crab and oyster samples from Florida, Louisiana and Alabama. The laboratory provided a maximum analytical capacity of 20 samples per day, and on average turned around 10 samples within 24 hours of receipt of sample. Dr. Jason White's group established an efficient and consistent operation in this laboratory and produced high quality work as exemplified by the reports of data posted by the group. The excellent analytical service provided by Dr. White's group complemented the FDA response to this national disaster at a very significant level.
Again, the FERN would like to convey our sincere thanks and appreciation for the Connecticut Agricultural Experiment Station, Department of Analytical Chemistry's large and significant contributions to ensuring the safety of the national food supply.

Tim McGrath

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