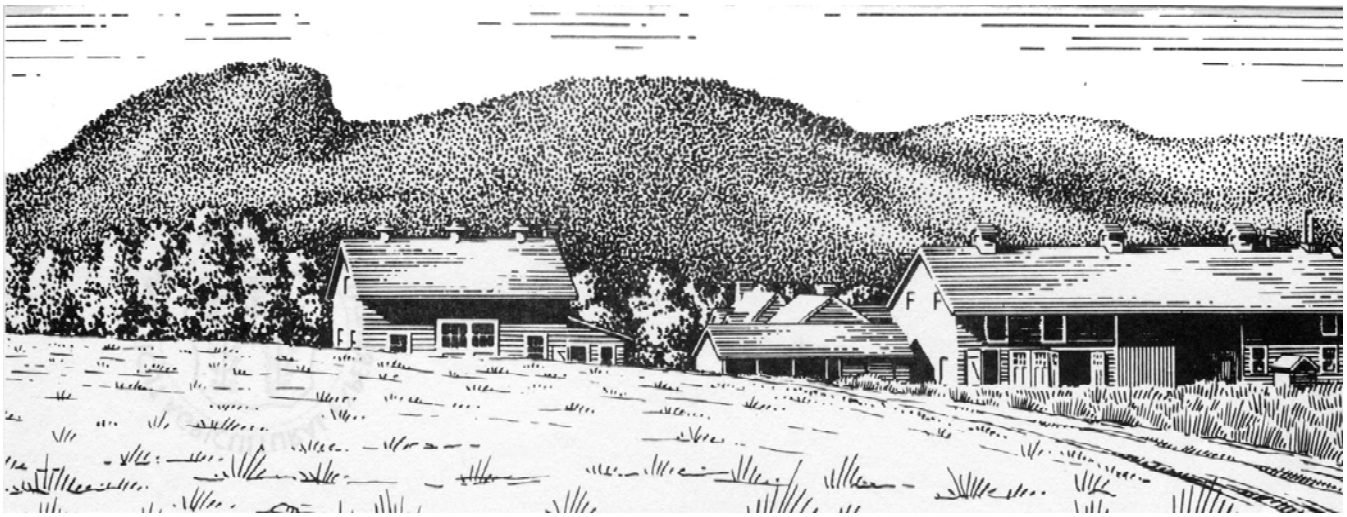
Plant Science Day

- The Annual Samuel W. Johnson Lecture
- Presentations on Research • Technical Demonstrations
- Field Experiments • Passport for Children
- Pesticide Credits • Century Farm Award • Barn Exhibits



Lockwood Farm, Hamden

Wednesday, August 6, 2008

History of Lockwood Farm, Hamden

Lockwood Farm is a research farm of The Connecticut Agricultural Experiment Station. Historically, the farm was purchased in 1910 with monies provided by the Lockwood Trust Fund, a private endowment. The original farm was 19.6 acres with a barn and a house. Since then, several adjacent tracts of land were purchased, enlarging the property to 75.0 acres.

The farm is located in the extreme southern portion of the Central Lowland Physiographic Province. This lowland region is underlain by red stratified sandstone and shale of Triassic age from which resistant lava flows project as sharp ridges. One prominent ridge, observed from the farm, is Mount Carmel, which lies to the north. The mountain is composed of basalt, a dense igneous rock commonly used as a building material and ballast for railroad tracks.

The topography of the farm is gently rolling to hilly and was sculpted by the Wisconsin glacier that overrode the area some 10,000 years ago and came to rest in the vicinity of Long Island. A prominent feature of the farm is a large basaltic boulder that was plucked from Sleeping Giant by the advancing glacier and came to rest on the crest of a hillock to the south of the upper barns. From this hillock, Sleeping Giant State Park comes into full view and is a favorite spot for photographers and artists.

The soils of the farm developed on glacial drift are composed primarily of the underlying reddish brown sedimentary rocks. The soils, characterized by reddish-brown profiles, are the well-drained Cheshire fine sandy loam (67%), the moderately well-drained Watchaug loam (10%) and the shallow-to-bedrock Sunderland fine sandy loam (16%). Along the western edge of the farm, adjacent to the Farmington Canal Greenway, lies a level terrace of stratified glacial drift. There, the well-drained Branford loam and the moderately well-drained Ellington loam (7%) dominate. Elevations on the farm range from 140 to 220 feet above mean sea level.

The farm lies in the Coastal Plain Climatological District. The local climate is influenced by its proximity to Long Island Sound that lies 9 miles to the south. The average frost-free season is 190 days, compared to 180 days at the inland Valley Laboratory in Windsor.

In 1936, a fully instrumented weather station was established on the farm. The weather data are reported to and published by the U.S. Weather Service in their cooperative observer program. The mean annual temperature for the farm is 49.0 F. A record high temperature, 104.0 F, was observed on July 4, 1949. A record low temperature, -24.0 F was recorded on February 16, 1943. The mean annual precipitation for the farm is 52.6 inches. The greatest total precipitation, 71.2 inches, was recorded in 1983. The least precipitation, 30.4 inches, was recorded in 1965. The mean annual snowfall for the farm is 32.3 inches. The greatest total snowfall, 78.5 inches, was recorded during the winter of 1995-1996. The least total snowfall, 11.3 inches, was recorded in 1972-1973.

The farm provides a field laboratory for many Experiment Station scientists who learn how to control the pathogens and insects that attack trees, fruit, and vegetables. In some experiments, scientists learn how crops grow and develop strategies for efficient crop production. All field research can be observed at Plant Science Day, held on the first Wednesday in August.

CENTURY FARM AWARD

The Century Farm Award goes to a farm that has been in family operation for more than 100 years. The recipient is selected by the Connecticut Agricultural Information Council.

CENTURY FARM CITATION

Buell's Orchard
Eastford, Connecticut

Buell's Orchard, located in Eastford, Connecticut, promotes itself as "The Best Kept Secret in the Quiet Corner of Connecticut." The farm has been in the Buell Family since Henry Buell purchased the land in 1889. He began with sheep and dairy cows and enhanced farm income by making charcoal to sell to the factories in Southbridge, Massachusetts. Peach and apple trees were added to diversify farm operation.

During the 1930's, the Buell Family also operated a sawmill on 600 acres and helped clean up woodlands after the 1938 hurricane. Like most farms in New England, there was an ability to adapt to changing conditions. The family also was a founding member in establishing Quinebaug Valley Cold Storage, a cooperative apple storage facility that still operates in Putnam, Connecticut.

In more recent years, a cider mill and caramel apple business were added. This action is yet another example of how the family utilized innovative ideas to keep the farm profitable.

Today's farm, under the ownership of Jeff and Jonathan Sandness, great grandsons of Henry Buell, now includes over 110 acres of apples, strawberries, blueberries, peaches, pears, and pumpkins. Customers enjoy roaming through the pick-your-own operations and selecting many delicious fruits to bring home. The Farm Stand offers fresh apple cider, caramel apples, preserves, pies, pumpkins, and fresh fruits and vegetables.

As Governor, I am happy to join The Connecticut Agricultural Experiment Station and the Connecticut Agricultural Information Council in presenting this Century Farm Award to Buell's Orchard and the Sandness Family, who are most deserving of this honor.

THE SAMUEL W. JOHNSON MEMORIAL LECTURE

The Station Board of Control established the lectureship to further discuss issues of concern to Connecticut residents and the Station. Professor Johnson was director of the Station from 1877 to 1900 and was a leader in the establishment of American agricultural experiment stations.

ANSWERS TO YOUR QUESTIONS

Staff members in the "question-and-answer" tent are prepared to give information on identification of insects, plant disorders, soils and their management, and other problems of growers and gardeners.

PASSPORT FOR CHILDREN

This is a special event for children to enjoy and explore Plant Science Day. There are six different stations located throughout Lockwood Farm that they can visit and receive a special stamp for their passport. Once the passport is filled, they can go to the Kid's Korner tent (K) and receive a prize. Brownies can use this to earn the "Plants Try-It!" Once the passport is complete, they can go to the Girl Scout table (Plot 69) to collect their "Try-It!"

ACTIVITY FOR CHILDREN

This is a self-guided activity. Once the activity is complete, they can go to the Kid's Korner tent (K) and receive a prize. Junior Girl Scouts can use this activity to earn the Earth Connections badge. Once this activity is complete, they can collect their badge at the Girl Scout table (Plot 69).

PESTICIDE CREDITS

Pesticide credits will be offered for attending Plant Science Day. If you are interested in obtaining pesticide credits, you must sign-in at the registration desk (Barn A) at the start of the day, between 9:30 a.m.-10:00 a.m., collect signatures for the talks, demonstration, and tours you attended, and sign-out to pick up your pesticide credit form between 2:45 p.m.-4:00 p.m.

Pesticide Credits Offered: All Categories and Private Applicators (PA): 4 hours. Applicators can assign 4 credit hours to one category or split hours among more than one category.

Visit The Connecticut Agricultural Experiment Station's web page at: www.ct.gov/caes

After the lecture, visitors may remain in the tent for lunch. Coffee and cold drinks are free.

THE 98th ANNUAL PLANT SCIENCE DAY

10:00am—Greeting

MAIN TENT, 11:15 A.M.

Louis A. Magnarelli, Director—PRESIDING

CENTURY FARM AWARD

REMARKS

Edmund Tucker
President, Experiment Station Associates

THE SAMUEL W. JOHNSON MEMORIAL LECTURE

Steve Grant
Staff Writer, The Hartford Courant
"Are We Making Progress?: A journalist's perspective on more than three decades of environmental and agricultural change in Connecticut."

PRESENTATIONS ON RESEARCH AND TECHNICAL DEMONSTRATIONS

10:00 a.m. **TECHNICAL DEMONSTRATION TENT Dr. John F. Anderson, Medical Entomologist, Department of Entomology and Dr. Francis J. Ferrandino, Plant Pathologist, Department of Plant Pathology and Ecology**
Bed Bugs In Connecticut
(15-minute demonstration, repeated twice during the day, 10:00 a.m. & 1:30 p.m.)
Bed bugs hide in beds and belongings, feed on humans, and were brought to North America from Europe in early colonial times on sailing ships. These insects were prevalent in Connecticut in the early 1900's, but were scarce from the early 1950's through the late 1990's. They are now reappearing in relative numbers in Connecticut cities. Their proliferation has been attributed to increased travel, the exchange of used bedding and furniture, limited availability of effective and approved insecticides, and insecticide resistance. A trap is being tested for use in infested apartments. The trap was made by a Connecticut company known as BioSensory. Live juvenile and adult bed bugs will be on display.

10:15 a.m. **MAIN TENT Dr. Sandra L. Anagnostakis, Mycologist, Department of Plant Pathology and Ecology**
Chestnuts Are Coming Back!
Scientists at The Connecticut Agricultural Experiment Station have been breeding chestnut trees since 1930 in a cooperative project started by Dr. Arthur Graves and soon joined by our own Dr. Donald F. Jones. Dr. Richard Jaynes joined the Station to continue this project after finishing his doctorate on chestnuts under Jones and Graves. The breeding project has already yielded orchard chestnuts adapted to Connecticut and resistant to diseases. These trees are not very tall, have a spreading form, and put all of their energy into the production of large, tasty nuts. Many are available from commercial nurseries. In contrast to orchard-form tree, timber-form trees grow tall and straight, put little energy into nut production, and produce fruit much later in their lives. Chestnuts from this project with a timber-form are currently being tested in State Forest plantings. We plan to establish a seed orchard of these trees at the Station's new Research Center in Griswold. These trees should provide disease-resistant seedling trees for reforestation throughout the state and the northeast.

10:45 a.m. **MAIN TENT Dr. Jeffrey S. Ward, Forester, Head Department of Forestry and Horticulture**
Japanese Barberry (Berberis thunbergii DC): Control Alternatives

Dense Japanese barberry stands have spread beyond manicured landscapes and are associated with a paucity of both tree regeneration and herbaceous plants in some forest stands. We developed a two-step process to control barberry that includes a non-pesticide option. Controlling barberry reduced larval and adult blacklegged tick populations. Thus, controlling barberry may benefit human health by reducing a major vector of the disease agents that cause Lyme disease, human granulocytic anaplasmosis, and human babesiosis.

11:00 a.m. **TECHNICAL DEMONSTRATION TENT Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**

Growing Your Own Transplants For Your Vegetable Garden

(15-minute demonstration, repeated twice during the day, 11:00 a.m. & 2:00 p.m.)

Growing your own vegetable transplants has many advantages. They are often less expensive to grow. They are available when you need them and you can grow the varieties you want. You also avoid the danger of diseases and insects. You can successfully grow transplants of many vegetables by following a few simple guidelines. This demonstration will show the steps necessary to grow strong and healthy tomato plants that can be transplanted in your garden. In addition, how to save seeds from a previous tomato crop will be shown. This is especially useful to those wishing to grow heirloom tomatoes.

11:15 a.m. **MAIN TENT Introductions, Award Presentations, Century Farm Award, and The Samuel W. Johnson Memorial Lecture**

11:40 a.m. **MAIN TENT Guest Speaker, Steve Grant, Staff Writer, The Hartford Courant**

"Are We Making Progress?: A journalist's perspective on more than three decades of environmental and agricultural change in Connecticut"

Steve Grant joined The Courant in 1980 as a staff writer. Until 1987, Steve covered environmental issues, state politics and government for The Courant. Since 1987, he has written extensively about nature and history for the paper.

Steve has undertaken a number of extended outdoor projects for the paper, writing about his experiences as he goes. He has canoed the entire 410-mile-long Connecticut River, traveled the New England shoreline from Canada to New York, walked the 360-mile route of the legendary Leatherman, hiked hundreds of miles of the Appalachian Trail and circumnavigated all of Long Island Sound in a sea kayak.

Steve's writing has been commended by numerous public, private and professional organizations, both regional and national, among them Sigma Delta Chi, the society of professional journalists, the U.S. Environmental Protection Agency and The Nature Conservancy.

A graduate of the University of Connecticut, Steve holds a Bachelor of Arts degree in English. He is a native of Waterbury, Connecticut, and currently resides in Farmington. He and his wife, Susan, are the parents of a daughter, Allison, and a son, Scott.

The Hartford Courant, a Pulitzer Prize-winning newspaper, is the oldest continuously published newspaper in the nation. The Courant's daily circulation is 190,402, Thursday is 241,638 and Sunday is 283,177. The largest daily newspaper in Connecticut, The Courant is a subsidiary of Tribune Company, one of the country's premier media companies, operating businesses in broadcasting and publishing and on the Internet. Tribune reaches more than 80 percent of U.S. households. More information about The Hartford Courant is available online at http://www.ctnow.com/about/custom/thc/.

1:15 p.m. **MAIN TENT Mr. Gregory J. Bugbee, Soil Scientist, Department of Soil and Water**

Invasive Plants: Are Our Lakes And Ponds In Peril?

Connecticut is home to more than 3000 named lakes and ponds. By providing drinking water, wildlife habitat and recreational opportunities, these bodies of fresh water are among the State's most valuable natural resources. One of the greatest threats to our lakes and ponds is the establishment and spread of non-native aquatic plants that invade ecosystems and impair recreational uses. The Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP) began in 2001 to determine the extent of the invasive aquatic plant problem and investigate novel control strategies. To quantify the number of invasive aquatic species present and their relation to native species, CAES IAPP has systematically surveyed over 133 lakes and ponds. Over 100 species of plants have been documented with 11 being classified as invasive. Invasive species have disrupted native ecosystems and become a severe nuisance in many water bodies. For instance the plant population in Candlewood Lake, our largest lake, is dominated by a single

invasive species called Eurasian watermilfoil (*Myriophyllum spicatum*). This plant grows nearly 10 feet tall and limits boating and swimming near the shore. In two other of the State's largest lakes, Lillinonah and Zoar, nearly three quarters of the plant population consists of three invasive species: Eurasian watermilfoil, minor naiad (*Najas minor*) and curly leaf pondweed (*Potamogeton crispus*). Approximately two-thirds of the water bodies surveyed contained one or more invasive species with some lakes and ponds containing four invasive species. CAES IAPP is comparing the water chemistry where invasive species occur, and the data suggest the plants have distinct preferences that can help predict which water bodies are most susceptible. Controlling invasive plants in aquatic ecosystems is particularly challenging because protecting native plants and water quality is critical and treatment methods are usually costly. Connecticut may be the gateway for invasive aquatic species into New England because most of the species are native to warmer climates and will likely appear here before moving north in a global warming scenario. Effective control measures here could have benefits that extend to our neighboring states. CAES IAPP has ongoing experiments using mechanical, biological and chemical controls. Although these management strategies hold promise, the search for highly effective long-term solutions to Connecticut's aquatic plant problems will require considerably more research.

1:30 p.m. **TECHNICAL DEMONSTRATION TENT Dr. John F. Anderson, Medical Entomologist, Department of Entomology and Dr. Francis J. Ferrandino, Plant Pathologist , Department of Plant Pathology and Ecology**

Bed Bugs In Connecticut

(15-minute demonstration, repeated twice during the day, 10:00 a.m. & 1:30 p.m.)

Bed bugs hide in beds and belongings, feed on humans, and were brought to North America from Europe in early colonial times on sailing ships. These insects were prevalent in Connecticut in the early 1900's, but were scarce from the early 1950's through the late 1990's. They are now reappearing in relative numbers in Connecticut cities. Their proliferation has been attributed to increased travel, the exchange of used bedding and furniture, limited availability of effective and approved insecticides, and insecticide resistance. A trap is being tested for use in infested apartments. The trap was made by a Connecticut company known as BioSensory. Live juvenile and adult bed bugs will be on display.

1:45 p.m. **MAIN TENT Dr. MaryJane Incorvia Mattina, Chemist, Head Department of Analytical Chemistry**

Communication And Cooperation Through Laboratory Networks: Positive Outcomes Of 9/11

In the late 1990s the Laboratory Response Network (LRN) was established as a partnership among the Centers for Disease Control and Prevention (CDC) and state departments of public health in order to enhance the capability and capacity of analyzing clinical samples for contamination. In the response to 9/11 the success of the LRN encouraged creation of additional networks with broader analytical expertise: for food, the Food Emergency Response Network (FERN), for environmental samples, the LeRN, and for radiological contamination the LRN-R. The Department of Analytical Chemistry has been a Chemistry Cooperative Agreement laboratory in the FERN since 2005. With continual opportunities to communicate and cooperate with federal and state laboratories, the enormous impact this program has had on our day-to-day operations will be discussed, highlighted by examples from our work.

2:00 p.m. **TECHNICAL DEMONSTRATION TENT Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**

Growing Your Own Transplants For Your Vegetable Garden

(15-minute demonstration, repeated twice during the day, 11:00 a.m. & 2:00 p.m.)

Growing your own vegetable transplants has many advantages. They are often less expensive to grow. They are available when you need them and you can grow the varieties you want. You also avoid the danger of diseases and insects. You can successfully grow transplants of many vegetables by following a few simple guidelines. This demonstration will show the steps necessary to grow strong and healthy tomato plants that can be transplanted in your garden. In addition, how to save seeds from a previous tomato crop will be shown. This is especially useful to those wishing to grow heirloom tomatoes.

PESTICIDE CREDIT TOUR

12:15-1:15 p.m. MEET AT REGISTRATION DESK (BARN A) Thomas M. Rathier, Soil Scientist, Valley Laboratory, Windsor

A 1-hour guided tour of selected Field Plots will be conducted by Thomas M. Rathier, Soil Scientist, Valley Laboratory. Participants can discuss experiments and topics with scientists at each station on the tour.

Stops on Tour:

- **Mr. Joseph P. Barsky, Technician, Department of Forestry and Horticulture**
  Control of Japanese barberry (Plot 46)
- **Dr. Anuja Bharadwaj, Entomologist, Department of Entomology**
  Natural products for control of the tick Ixodes scapulari (Plot 45)
- **Dr. Carole Cheah, Entomologist, Department of Entomology, Valley Laboratory**
  Biological control of hemlock woolly adelgid (Plot 16)
- **Dr. Jason C. White, Environmental Toxicologist, Department of Soil and Water**
  Phytoremediation: Using plants to clean contaminated soil (Plot 37)

2:45 p.m.–4:00 p.m. SIGN-OUT (for those requesting pesticide credits)
Attendees pick up Pesticide Credit forms at the registration table in Main Barn A.

LOCKWOOD FARM WALKING TOURS

MEET AT REGISTRATION DESK (BARN A) Dr. Robert E. Marra, Forest Pathologist, Department of Plant Pathology and Ecology
A 1-hour guided tour of selected Barn Exhibits and Field Plots will be conducted by Dr. Robert E. Marra, Forest Pathologist, Department of Plant Pathology and Ecology. Participants can discuss experiments and topics with scientists at each station on the tour.

9:45a.m. – 10:45a.m. **MORNING WALKING TOUR**, Approximately ½-mile, moderately hilly

Stops on Tour:

- **Dr. Sandra L. Anagnostakis, Mycologist, Department of Plant Pathology and Ecology**
  Ms. Pamela Sletten, Technician, Department of Plant Pathology and Ecology
  Chestnut Species and Hybrids (Plot 77)
  Dense Planting of American Chestnuts (Plot 78)
  Dwarf Hybrid Chestnut Trees (Plot 79)
- **Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**
  Pawpaw and Beach Plum Trials (Plot 83)
  Japanese Plum Variety Trials (Plot 84)
- **Dr. Sandra L. Anagnostakis, Mycologist, Department of Plant Pathology and Ecology SIGNS ONLY**
  Rocky Hill American Chestnut Trees (Plot 80)
- **Dr. Wade H. Elmer, Plant Pathologist, Department of Plant Pathology and Ecology**
  Inducing Fusarium Disease Resistance in Gladiolus (Plot 75)
- **Mr. Chas J. Mavrelion, Agricultural Science Program, Sound School Regional Vocational Aquaculture Center**
  Sound School Agricultural Science Program (Plot 76)
- **Ms. Lisa Kaczenski, Business Office**
  Eastern Bluebird Sialia sialis *Nest Box Trail* (Plot 74)

2:15p.m. – 3:15p.m. AFTERNOON WALKING TOUR, Approximately ½ mile, moderately hilly

Stops on Tour:

- **Dr. Wade H. Elmer, Plant Pathologist, Department of Plant Pathology and Ecology**
  Use of Earthworms to Suppress Fusarium Crown Rot of Asparagus (Plot 9)
- **Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**
  Sheet Composting with Oak and Maple Leaves (Plot 2)
  Vegetable Amaranth Trials (Plot 3)
  Personal-Sized Watermelon Variety Trials (Plot 4)
  Chinese Cabbage Trials (Plot 5)

Sweet Potato Trials (Plot 6)
Calabaza Squash (Plot 7)

- **Dr. Martin P. N. Gent, Horticulturist, Department of Forestry and Horticulture**
  Cultivar Trial of Greenhouse Tomato Grown in Coir Dust (Plot 12)
  Factors Affecting Composition of Hydroponic Lettuce (Plot 13)
  Ebb and Flow Watering of Potted Ornamental Plants (Plot 14)
- **Dr. Francis J. Ferrandino, Plant Pathologist, Department of Plant Pathology and Ecology**
  Environmental-Friendly Control of Powdery Mildew on Landscape Plants (Plot 15)
- **Dr. Carole A. Cheah, Entomologist, Department of Entomology, Valley Laboratory**
  Biological Control of Hemlock Wooly Adelgid (Plot 16)
- **Dr. Richard S. Cowles, Entomologist, Department of Entomology, Valley Laboratory**
  Subtleties in Chemical Control of Hemlock Woolly Adelgid (Plot 17)
- **Dr. Kimberly A. Stoner, Entomologist, Department of Entomology**
  Changing Caterpillars and their Natural Enemies on Crops in the Cabbage Family (Plot 18)

Tour of Native Shrubs

12:00pm-12:30pm MEET AT THE WOOD ARBOR OF THE NATIVE WOODY SHRUBS Dr. Jeffrey S. Ward, Forester, Department of Forestry and Horticulture

A ½-hour guided tour of our native shrub planting to be conducted by Dr. Jeffrey S. Ward, Forester, Head Department of Forestry and Horticulture. Learn about using native shrubs for naturalistic landscapes without the use of pesticides and fertilizers.

Bird and Butterfly Garden Events

11:00am MEET AT THE BIRD AND BUTTERFLY INFORMATION TABLE Jeffrey Fengler, Department of Entomology

Mr. Jeffrey Fengler will lead a "Butterfly Identification Walk".

2:00pm MEET AT THE BIRD AND BUTTERFLY INFORMATION TABLE Rose Bonito, Department of Entomology

Ms. Rose Bonito will demonstrate "Deadheading-The Practice of Removing Spent Blossoms".

BARN EXHIBITS (Barn B)

Analysis of Pesticides in Pollen Collected by Honey Bees
Departments: Analytical Chemistry and Entomology
Investigator: Dr. Brian D. Eitzer
Co-Investigator: Dr. Kimberly A. Stoner
Abstract: There are numerous threats to honey bee colonies including parasitic mites, diseases caused by viruses and microsporidia, and the widespread use of pesticides. To better understand these threats, we are examining exposure of honey bees to pesticides, including pesticides applied in the hive as well as pesticides applied in the field. We are focusing initially on pollen collected by the honey bees. As they forage in the fields, they collect pollen on their hind legs, and when they return to their hive, the pollen is knocked off their legs by a screen placed in the hive. The collected pollen is subsequently analyzed for pesticides in our laboratory.

Suppressing Soil-borne Nematodes with Biofumigants
Department: Biochemistry and Genetics
Investigator: Dr. Neil A. McHale
Abstract: Many agricultural crops are damaged by nematodes, microscopic roundworms that colonize the plant's root system. Partial control can be achieved with chemical fumigation of the soil, but this involves pesticides with a variety of safety issues. Crop residues that break down to release nematicidal compounds in the soil provide an attractive biological alternative. The most effective biofumigants are members of the mustard family (*Brassicaceae*), where nematode suppression is associated with the production of glucosinolates (GSLs). Genes controlling biosynthesis and breakdown

profiles of GSLs have been identified in *Arabidopsis thaliana*, opening a direct avenue to cloning the corresponding genes in *Brassica*. Our goal is to generate *Brassica* strains with GSL profiles targeted against nematodes most prevalent in Connecticut soils.

Can you smell me now? Chemical communication in long-horned beetles

Department: Entomology
Investigator: Dr. Claire E. Rutledge
Assistant: Ms. Mioara Scott
Abstract: When you only eat one type of tree, and that tree has to be in just the right state of decline to eat, how do you find it? And how do you find a mate in the big wide world when you are only a little beetle? This exhibit explores the ways in which long-horned beetles, a family of wood-boring beetles, use chemical signals to find food and mates. In particular, we focus on one species, the Small Japanese Cedar Borer, an immigrant from the Far East that has made itself at home in Connecticut. Understanding the ways in which these beetles navigate their world may allow us to exploit their communication systems and protect the trees in our yards and forests.

Partial Saturation Ebb and Flow Watering for Potted Plants

Department: Forestry and Horticulture
Investigators: Dr. Martin P.N. Gent, Dr. Wade H. Elmer, and Dr. Richard McAvoy, University of Connecticut
Assistants: Mr. Michael R. Short and Mr. Adam Causey
Abstract: An ebb and flow system can be used to water-potted ornamental plants set on a greenhouse floor. This method of sub-irrigation combats the waste of water and fertilizer in traditional overhead watering systems, because unused water is retained until the next watering cycle. Geremia Greenhouse of Wallingford Connecticut has refined this system to supply and drain the water rapidly. This limits the amount of water taken up by the pots. This innovation can help control growth and improve plant quality, and may help prevent spread of disease organisms from plant to plant. We have built a greenhouse to compare partial saturation watering to the conventional more-complete-saturation method of watering. Partial saturation watering controls plant height and enhances quality and keeping ability of crops. Ebb and flow watering develops a gradient of nutrients in the potting medium with a high concentration near the soil surface. This effect is more pronounced with partial saturation watering.

Integrated Pest Management for Winegrapes in Connecticut

Department: Plant Pathology and Ecology
Investigator: Dr. Francis J. Ferrandino
Abstract: Wine grapes and wineries are a relatively new industry in Southern New England (SNE). The first vineyard/winery in Connecticut opened for business in 1978 in Litchfield, CT. The vineyard industry in Southern New England has doubled in the last 7 years. In 2008, there will be about 750 acres planted to wine grapes on 80-85 farms throughout Connecticut, Massachusetts, and Rhode Island. There are 63 commercial wineries with projected 2008 annual sales of $17-$20 million producing about three quarters of a million gallons of wine. Wine grapes face a daunting array of fungal diseases, which, left unchecked, can significantly reduce the economic value of the crop. The likelihood of spread and infection by all grape pathogens within a vineyard is strongly dependent on local weather conditions. For this reason, CAES, together with project collaborators from UMASS, UCONN and URI are establishing a network of vineyard-based weather stations that will sample the range of climate found in SNE. These weather data combined with disease prediction models can then be used to deliver timely disease-risk assessments to growers via the internet.

Connecticut's Invasive Aquatic Plant Problem

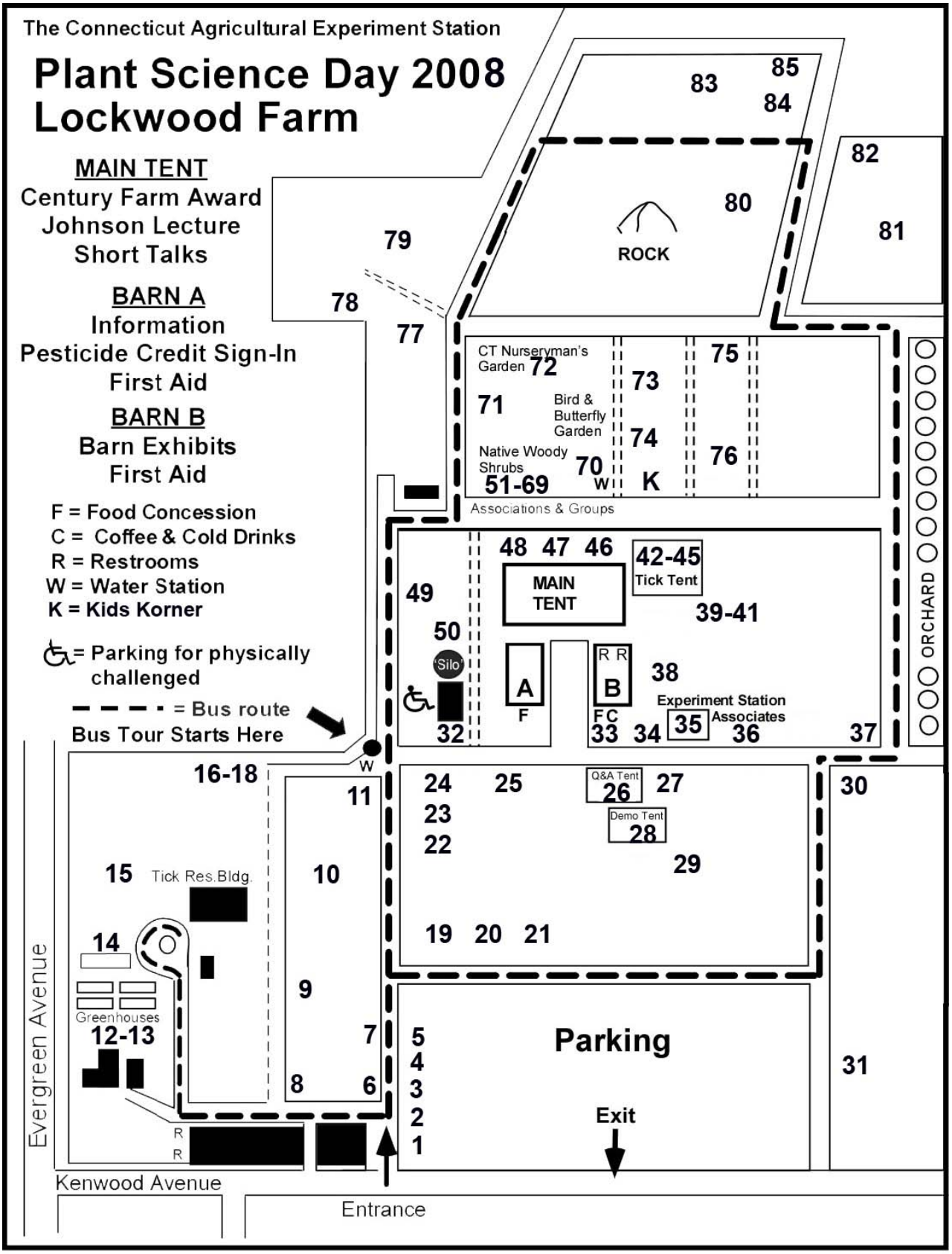
Department: Soil and Water
Investigators: Dr. Jason C. White, Mr. Gregory J. Bugbee
Assistant: Ms. Roslyn S. Selsky
Abstract: The Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP) has surveyed 133 Connecticut lakes and ponds for aquatic plants since 2004. Surveys have shown that a majority (62%) of Connecticut lakes and ponds contain at least one species of invasive aquatic plant. This exhibit will feature results from the surveys and an invasive aquatic plant management program as well as live examples of aquatic plants.

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION
The experiments exhibited here depict only a portion of the work performed by Station scientists. In addition to Lockwood Farm, Griswold Research Center, and laboratories in New Haven and Windsor, Station scientists use state forests, private orchards, lakes, and farms for their experiments. Experiments and surveys are conducted in many widely separated towns of the state.

THE EXPERIMENT STATION HAS A WEB PAGE: WWW.CT.GOV/CAES.

TO RECEIVE A COMPLETE LIST OF STATION SPEAKERS: inquire at the publications table in barn A or write to: Publications; The Connecticut Agricultural Experiment Station; P.O. Box 1106; New Haven, CT 06504-1106, phone 203-974-8447, fax 203-974-8502, or e-mail Vickie.Bomba@po.state.ct.us.

TO RECEIVE A COMPLETE LIST OF AVAILABLE STATION PUBLICATIONS: Inquire at the publications table in barn A or write to: Publications; The Connecticut Agricultural Experiment Station; P.O. Box 1106; New Haven, CT 06504-1106, phone 203-974-8447, fax 203-974-8502, or e-mail Vickie.Bomba@po.state.ct.us.



Map Not to Scale

FIELD PLOTS

Outside Organizations (#32, #34, #51-69#, and #76) invited to participate

1. Chinese Chestnut Trees
2. Sheet Composting with Oak and Maple Leaves
3. Vegetable Amaranth Trials
4. Personal-Sized Watermelon Variety Trials
5. Sweet Potato Trials
6. Chinese Cabbage Trials
7. Calabaza Squash
8. Butternuts and Heartnuts
9. Use of Earthworms to Suppress Fusarium Crown Rot of Asparagus
10. Using Soybean Meal and Corn Gluten on Turf
11. Integrated Pest Management of Eurasian Watermilfoil
12. Cultivar Trial of Greenhouse Tomato Grown in Coir Dust
13. Factors Affecting Composition of Hydroponic Lettuce
14. Ebb and Flow Watering of Potted Ornamental Plants
15. Environmentally-Friendly Control of Powdery Mildew on Landscape Plants
16. Biological Control of Hemlock Woolly Adelgid
17. Subtleties in Chemical Control of Hemlock Woolly Adelgid
18. Changing Caterpillars and Their Natural Enemies on Crops in the Cabbage Family
19. Commercial Chestnut Cultivars
20. Control of Blight on American Chestnuts
21. New Hybrid Chestnut Orchard
22. Table Grape Demonstration Plot
23. Hybrid Winegrape Cultivar and Pruning Trial
24. Comparison of Graft Union Height on Chardonnay Grapevines
25. Biochar—A Byproduct of a Biomass-to-Fuels Technology—as a Possible Soil Amendment: Consideration of Its Ability to Adsorb Agriculturally-Important Chemicals
26. Question & Answer Tent
27. Exotic Insects in Connecticut and Nearby States
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56. Connecticut Farm Bureau Association
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59. Connecticut Tree Protective Association
60. Connecticut Professional Timber Producers Association
61. United States Department of Labor/ OSHA
62. United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine
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65. United States Department of Agriculture, National Agricultural Statistics Service, New England Field Office
66. Back Yard Beekeepers
67. United States Department of Agriculture, Natural Resources Conservation Service
68. Milford Trees, Inc.
69. The Girl Scouts
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FIELD PLOTS

The plots at Lockwood Farm are planted and maintained by Experiment Station scientists with the help of Farm Manager R. Cecarelli and his assistants, R. Hannan and M. McHill and the following summer workers: M. Harris, S. Molden, and C. Remetz.

1. CHINESE CHESTNUT TREES
S. Anagnostakis *Assisted by* P. Sletten
These Chinese chestnut trees, planted by Donald F. Jones in 1941, were selected by chestnut grower W.C. Deming of Litchfield and grafted by the Hartford Park Department. The second tree from the gate is a graft of the cultivar Bartlett that was developed by the Bartlett Tree Co. in Stamford. All have been used by The Experiment Station and the American Chestnut Foundation in crosses with American chestnut trees to produce blight-resistant forest and orchard trees.

2. SHEET COMPOSTING WITH OAK AND MAPLE LEAVES
A. Maynard and D. Hill *Assisted by* A. Johnson
Many homeowners have a predominance of oak trees in their backyards. Oak leaves are known to be more resistant to decomposition than maple leaves. This experiment is investigating whether this difference in the rate of decomposition leads to decreased yields in soils amended with oak leaves compared to maple leaves and unamended controls. Undecomposed oak and maple leaves were layered about 6 inches thick in the falls of 1995-2006 and incorporated into the soil by rototilling. Last year, lettuce, peppers, rutabaga, and leeks were grown with all plots receiving the same amount (1300 lb/A) of 10-10-10 fertilizer. Yields from plots amended with oak leaves were compared to plots amended with maple leaves and the unamended controls. In 2007, lettuce yields were virtually the same for all the treatments. The greatest pepper yields were from the plots amended with oak leaves (6.8 lbs/plant) followed by plots amended with maple leaves (6.0 lbs/plant). The control plots averaged 5.6 lbs/plant. The plots amended with maple leaves averaged the greatest leek yields (9.3 oz/plant) compared to the control plot (9.1 oz/plant) and plots amended with oak leaves (8.3 oz/plant). The greatest rutabaga yields were from the control plot (11.6 oz/plant) followed by plots amended with oak leaves (10.2 oz/plant) and plots amended with maple leaves (9.2 oz/plant).

3. VEGETABLE AMARANTH TRIALS
A. Maynard and D. Hill *Assisted by* A. Johnson
Vegetable Amaranth (Callaloo) is an annual that is native to central Mexico. In Asia and the West Indies, amaranth is widely used in soup. Although it is relatively unknown as a vegetable crop in the United States, it has traditionally been cultivated throughout the humid tropics and is consumed extensively in Africa, Asia, the Caribbean, and Latin America. The greens are of considerable nutritional value being high in calcium, magnesium, iron, vitamins A and C as well as protein. In this trial, we are evaluating 8 cultivars to determine their potential as a commercial crop.

4. PERSONAL-SIZED WATERMELON VARIETY TRIALS
A. Maynard and D. Hill *Assisted by* A. Johnson
The newest watermelons in the marketplace are seedless mini “personal” watermelons. They offer an attractive alternative for the consumer that has limited refrigerator space or for small families. These melons, weighing 3-7 pounds each, first became widely available in markets in 2003. They generally have a thinner rind which means more edible flesh. Tests in Oklahoma have discovered these watermelons are an excellent source of lycopene and beta-carotene. Trials over the last three years showed that Miniput, Vanessa, and Extazy provided abundant marketable fruit. Of these three cultivars, Extazy had the greatest lycopene content and was significantly sweeter than Vanessa. Miniput had the thickest rind. Sidekick provided an excellent supply of pollen throughout the growing season and its distinctive fruit made harvesting easier. This year we are testing two new varieties and comparing them to Vanessa and Valdoria.

5. CHINESE CABBAGE TRIALS
A. Maynard and D. Hill *Assisted by* A. Johnson
Local supermarkets have reported increased sales of Chinese vegetables. These sales coincide with the influx of immigrants from the Far East. Vegetables are staples in oriental cuisine and stir-fry cooking has become increasingly popular in the

kitchen. In 1988-1989, we tested 26 cultivars of Chinese cabbage at Lockwood Farm and Windsor. Most of these cultivars are no longer available and, since that time, new cultivars have been developed that are more disease resistant and produce higher quality heads. In 2007, 12 cultivars of Chinese cabbage were evaluated in spring and fall at Windsor and Lockwood Farm. In spring, Taranko (19.4 T/A) and Yuki (18.9 T/A) had the greatest yields. In fall, Apollo (17.8 T/A) and Mirako (17.3 T/A) had the greatest yields.

6. SWEET POTATO TRIALS

A. Maynard and D. Hill *Assisted by* A. Johnson

A 1998 Connecticut Department of Agriculture survey showed that sweet potato is one of the most popular specialty vegetables. In the South, the sweet potato is also called yam, but both are identical species. In the United States, North Carolina and Louisiana are the leading producers, but we have found that they can easily be grown in Connecticut. In this trial, we are looking for several cultivars that have short maturities (90 days). This experiment is also repeated at our Valley Laboratory in Windsor.

7. CALABAZA SQUASH

A. Maynard and D. Hill *Assisted by* A. Johnson

Calabaza squash, also known as tropical pumpkin, is mostly grown in tropical and semi tropical climates. Calabaza is highly prized by consumers of Hispanic origin. It was identified by the Connecticut Department of Agriculture as one of the most sought-after vegetables at Connecticut's 88 farmers' markets. We are developing a cultivar that produces fruit on shorter vines by saving seeds from plants that have produced fruit within two feet of the plant. These seeds are planted at Lockwood Farm and Windsor and selections are again made. Fruit that mature on short vines is appealing to northern growers because the majority of fruit can mature before frost. Fruit that form on longer vines do not always reach maturity. Last year, 84% of the plants at Lockwood Farm produced fruit within two feet of the plant compared to 67% of the plants at Windsor. Selections will continue for several more years.

8. BUTTERNUTS AND HEARTNUTS

S. Anagnostakis *Assisted by* P. Sletten

Seedling butternut (*Juglans cinerea*) and heartnut (*J. ailantifolia*, Japanese walnut) were planted here in 2008 to test their resistance to the serious diseases that are eliminating American butternuts from their habitat. Most of the "butternut" trees in Connecticut that we have examined are, in fact, hybrids of butternut with heartnut, including the former National Champion Butternut. These small trees came from Tennessee, and will be checked for species as well as for disease resistance.

9. USE OF EARTHWORMS TO SUPPRESS FUSARIUM CROWN ROT OF ASPARAGUS

W. Elmer *Assisted by* P. Thiel and C. Connelly

Greenhouse trials have shown that when earthworms were added to pots filled with soil infested with Fusarium pathogens, asparagus plants had less disease and were larger. These plots were planted the spring of 2007 to determine if earthworm activity can enhance yield. These plots are being monitored for growth and disease, and yield will be recorded next spring.

10. USING SOYBEAN MEAL AND CORN GLUTEN ON TURF

A. Maynard and D. Hill *Assisted by* A. Johnson

Soybean meal is a byproduct in the production of biodiesel fuel from soybeans. It is about 7% nitrogen and can be used for animal feed and as an organic fertilizer. Corn gluten meal is a byproduct in the production of cornstarch. It can also be used for animal feed and as an organic fertilizer. It has also been found to be an effective preemergent natural herbicide . In this demonstration plot, we are evaluating the effectiveness of these organic fertilizers in the growth of turf compared to conventional lawn fertilizer. All plots received the same amount of nitrogen (1 lb/1000 sq. ft.).

11. INTEGRATED PEST MANAGEMENT OF EURASIAN WATERMILFOIL

M. Marko and J. White *Assisted by* A. Russell, R. Rende

Eurasian watermilfoil, *Myriophyllum spicatum*, (milfoil) is the most common invasive aquatic plant in Connecticut and is present in 24% of the waterbodies surveyed by CAES from 2004-2006. Milfoil can remain unnoticed in a lake for years, then suddenly grow, forming a dense canopy that outcompetes native vegetation, destroys fish spawning areas, impairs natural aesthetics, decreases property values, impedes navigation, and dangerously impacts recreational activities. Management of nuisance milfoil populations is typically by chemical (herbicides) or mechanical (harvesters) control methods. Public concern remains over the safety of herbicides in recreational water bodies used for fishing, swimming and drinking. Mechanical control provides short-term control, but results in fragmentation that actually spreads the plant to unaffected regions. Biological control is an alternative to problematic chemical and mechanical controls. The milfoil weevil,

Euhrychiophsis lecontei, is a native insect already present in many Connecticut waterbodies that can control milfoil under certain conditions. Our goal is to provide a novel technique that integrates the use of herbicides and insects to reduce herbicide applications. The resulting technique would be an effective, affordable, and safe way to control nuisance milfoil populations.

12. CULTIVAR TRIAL OF GREENHOUSE TOMATO GROWN IN COIR DUST

M. Gent *Assisted by* M. Short, and A. Causey

Coir dust is a byproduct of coconuts (the shell and husk) that can be used as a potting medium. This renewable resource could replace peat as the primary ingredient of plant growth media. Coir can support growth of potted ornamentals for one to two months, but there have been no studies of its use for growing a crop of greenhouse tomatoes for six months or more. We are using Coir to grow eight varieties of tomato that are popular with commercial growers. The study will determine which of these varieties are most suitable when grown in Coir medium. In addition, we are testing the effect of recycling the nutrient solution, in order to reduce effluent from greenhouse facilities. This would abate concerns related to pollution of land and groundwater by agricultural operations. A system in which solution is passed once through the crop is compared to one that completely recycles the nutrient solution. Composition of the solution and plant tissue is compared for the two systems, with an emphasis on the effect of changes in solution growth and fruit production of tomato.

13. FACTORS AFFECTING COMPOSITION OF HYDROPONIC LETTUCE

M. Gent *Assisted by* M. Short, and A. Causey

The composition of lettuce leaves is affected by environment, sunlight and temperature, and by the nature of the fertilizer used to grow the plants, such as the concentration of nitrate. Thus, the nutritional value of lettuce changes with time of year and fertilization practices. We set up a continuous-recirculation hydroponics system to grow lettuce. Crops of lettuce are planted and harvested at various times during the year, to compare results under conditions that differ in light and temperature, or nitrate availability. The rate of growth, dry matter content and leaf area are determined when plants are harvested. Sub-samples of plant material are freeze-dried to analyze the tissue for mineral elements, nitrate, sugars, and other metabolites. These studies will determine how environment changes composition and dietary value of greenhouse-grown lettuce.

14. EBB AND FLOW WATERING OF POTTED ORNAMENTAL PLANTS

M. Gent *Assisted by* M. Short, and A. Causey

Ebb and flow can be used to water potted ornamental plants set on a greenhouse floor. This method of sub-irrigation combats the waste of water and fertilizer in traditional overhead watering systems, because unused water is retained until the next watering cycle. However, conventional ebb and flow systems operate slowly and achieve nearly complete saturation of the root medium with each watering cycle. There is no ability to restrict the water provided to the plants. Geremia Greenhouse has refined this method to achieve partial saturation of the potting medium with ebb and flow watering. The water or fertilizer solution is delivered and removed rapidly, resulting in less water absorbed by the pots. This improves plant quality and lessens spread of disease. In our new greenhouse, we compare a conventional system for sub-irrigation with one that achieves partial saturation to determine: 1) Uptake and leakage of water and fertilizer, and plant growth response. 2) Spread of disease from plants inoculated with pathogens. 3) Efficacy of methods of filtration and in-line sterilization of return water to mitigate problems due to spread of disease. 4) Post harvest quality in a controlled environment after production under the two watering systems.

15. ENVIRONMENTALLY-FRIENDLY CONTROL OF POWDERY MILDEW ON LANDSCAPE PLANTS

F. J. Ferrandino

Many ornamental plants commonly used around Connecticut homes are subject to powdery mildew. This disease is caused by a fungus that grows on the surface of plant tissue giving the foliage a white powdery appearance. The result is relatively unsightly and the fungus weakens infected plants by feeding on the sugar the plant produces and by blocking sunlight, which limits the ability of the plant to produce more sugar. This plot is planted to a number of common perennial landscape plants (lilac, deciduous azalea, bee balm and phlox) as well as common annual flowers (zinnia, china aster and cosmos), which are susceptible to powdery mildew. Environmentally-friendly foliar sprays, including milk (20% in water), Potassium bicarbonate (1% in water) and light horticultural oil (1% in water), will be compared to chemical fungicides in their ability to control the disease.

16. BIOLOGICAL CONTROL OF HEMLOCK WOOLLY ADELGID

C. Cheah

Connecticut's eastern hemlocks, *Tsuga canadensis*, have been under siege since the first detection of *Adelges tsugae*, hemlock woolly adelgid (HWA) in southern Connecticut in 1985. From 1986-2000, the adelgid spread to infest every one of the 169 towns in Connecticut. There has been no large-scale chemical intervention in the state's forests and state parks to combat HWA in Connecticut. In response to the HWA threat, the Station and the USDA Forest Service discovered, reared and released *Sasajiscymnus tsugae* (origin: Japan) for biological control evaluations in Connecticut, starting in 1995. To date, > 176,000 *S. tsugae* have been released in 26 sites statewide in Connecticut, with 80% of releases occurring between 1995 and 2001. Starting in 2005, dramatic recovery of adelgid-impacted, previously declining hemlocks was recorded in many of the older established release sites, in all types of soil types, sites and hemlock habitats. This hemlock recovery has persisted in recent years while hemlock mortality has been negligible in *S. tsugae* release sites since 2001. Although HWA winter mortality can significantly reduce adelgid populations in CT during severe winters (2003 and 2004), recent winters in 2006, 2007 and 2008 have been mild, leading to the recent reinvasion of HWA, reigniting the threat of HWA to our hemlock forests.

17. SUBTLETIES IN CHEMICAL CONTROL OF HEMLOCK WOOLLY ADELGID

R. Cowles

Hemlock woolly adelgid may be suppressed with foliar sprays of insecticides, usually horticultural oil, or with systemic insecticides applied to the soil or trunk of the tree. Systemic insecticides have an advantage in reaching all portions of a tree or shrub, a characteristic that is especially useful for densely sheared hedges or trees that are too tall or inaccessible to spray. Field experiments with forest trees demonstrated that the minimum effective dosage for imidacloprid (Merit) insecticide was related to the diameter of the tree. Smaller trees require much smaller quantities of insecticide per unit of stem diameter than larger trees. This relationship took considerable time to be revealed, because imidacloprid moves slowly in trees and the full effects from a single soil application may require 2 – 3 years to observe. The slow movement of imidacloprid also relates to its ability to bind to organic matter, which prevents it from leaching when applied to most soils. A new tablet formulation of imidacloprid (CoreTect), was developed based upon my research; this product is being targeted for forest applications in the southern Appalachians, where it is especially urgent to find a way to protect riparian trees. A new systemic insecticide, dinotefuran (Safari), is an extremely mobile systemic and can start killing adelgids on large trees within 2 – 3 weeks after having been applied as a soil drench or as a spray to the base of the trunk. The extreme water solubility of dinotefuran will imply that great care should be exercised in using this product, so that it will not contaminate nearby streams or ground water.

18. CHANGING CATERPILLARS AND THEIR NATURAL ENEMIES ON CROPS IN THE CABBAGE FAMILY

K. Stoner *Assisted by* T. Zarrillo, M. Lowry, and N. Brettschneider

Cross-striped caterpillar (*Evergestis rimosalis*) has become a common pest of plants in the cabbage family in eastern and central Connecticut in recent years. Before the 1990s, this species was mainly found from Delaware, Maryland and Virginia to the south. The primary natural enemy of this caterpillar, the wasp *Cotesia orbenae*, has spread into Connecticut with its host. The parasitic wasps attacking the imported cabbageworm (*Pieris rapae*), the most common caterpillar on plants in the cabbage family, have also changed. A species released in Massachusetts and Connecticut in the 1980s, *Cotesia rubecula* has replaced the closely related species *Cotesia glomerata* as the most common parasitoid of imported cabbageworm.

19. COMMERCIAL CHESTNUT CULTIVARS

S. Anagnostakis *Assisted by* P. Sletten

These grafted trees are cultivars 'Colossal,' 'Nevada,' and 'Bouche de Betizac'. 'Colossal' is the most frequently planted commercial cultivar in the U.S., with large acerages on the west coast. Cultivar 'Nevada' is the pollinizer usually planted to provide pollen for 'Colossal'. We are evaluating the potential of these kinds of chestnut trees for Connecticut.

20. CONTROL OF BLIGHT ON AMERICAN CHESTNUTS

S. Anagnostakis *Assisted by* P. Sletten

These American chestnut trees were planted in 1976 when they were 3 years old. Chestnut blight cankers were treated for 4 years, from 1978 to 1981, with our biological control using hypovirulent strains of the blight fungus. The control is working well to keep the trees alive and fruiting. Some of the trees are growing better than others. We do not know which trees were from seed collected in Wisconsin and which were from Michigan. It is possible that the difference in their ability to thrive in the presence of blight and hypovirulence indicates genetic differences in resistance. The grafted tree in the center of the east row is from an "American" chestnut in Scientist's Cliffs, MD, and the original tree resisted blight for many years (it may be a European hybrid). It definitely has some resistance, and is the best looking tree in the plot. Two grafted trees at the southeast corner are (Chinese X American) X American (cultivar 'Clapper') and have intermediate resistance to blight.

21. NEW HYBRID CHESTNUT ORCHARD
S. Anagnostakis Assisted by P. Sletten
These small trees are from some of our hand-pollinated crosses done in previous years, and were planted as seedlings. All are hybrids of American chestnut trees and blight-resistant Chinese, Japanese, or hybrid trees. They will be grown to evaluate their blight resistance in the presence of the biological control that we assume will move over from the adjoining plot. The trees that look most like American chestnut trees and have good blight resistance will be used in future crosses for timber trees. Others will be developed as orchard trees for Connecticut growers. The paper bags on the trees cover hand-pollinated flowers from this year's crosses.

22. TABLE GRAPE DEMONSTRATION PLOT
W. Nail *Assisted by* A. Johnson
The row to the south and the two rows to the north of the hybrid winegrape trials consist of the seedless table grapes Canadice and Vanessa (red), Himrod (green), and Jupiter (black). The vines were planted in 2006 and will bear their first (small) crop this season. Each row will be pruned to a different training system beginning in 2009: Vertical Shoot Positioning, Hudson River Umbrella, and Smart-Dyson.

23. HYBRID WINEGRAPE CULTIVAR AND PRUNING TRIAL
W. Nail *Assisted by* A. Johnson
Connecticut's mild, humid growing seasons and cold winters prevent the successful cultivation of many well-known winegrape cultivars. Many varieties fail to ripen properly in most years. Less cold-hardy cultivars suffer extensive damage or death during and after severe winter freeze events. The hybrid cultivars Chambourcin, Seyval, Villard Blanc, and Villard Noir are being evaluated for yield and fruit quality. Comparisons of cane and cordon pruning are also being evaluated.

24. COMPARISON OF GRAFT UNION HEIGHT ON CHARDONNAY GRAPEVINES
W. Nail *Assisted by* A. Johnson
The coldest layer of air during a radiation freeze is immediately above the soil or snow level. By elevating the graft union, the labor and expense of burying the graft union might be avoided. Chardonnay vines, Dijon clone 96 on C3309 rootstock, were transplanted to the vineyard in spring, 2007. Half are of standard grafting height and half have the graft union 26 inches above ground. Comparisons for yield, fruit quality, and winter damage will begin in 2009.

25. BIOCHAR—A BYPRODUCT OF A BIOMASS-TO-FUELS TECHNOLOGY—AS A POSSIBLE SOIL AMENDMENT: CONSIDERATION OF ITS ABILITY TO ADSORB AGRICULTURALLY-IMPORTANT CHEMICALS
J. Pignatello, J. White, and W. Elmer
An alternative energy technology currently under development converts waste biomass into fuels and a charcoal-like byproduct known as 'biochar'. Being highly stable to decomposition, biochar represents a sequestered form of carbon that may further mitigate climate change. But what to do with all that carbon? A potential commercial outlet is agriculture, since biochar is thought to improve soil fertility. However, because biochar strongly adsorbs organic chemicals, it is important to determine the effects—beneficial or otherwise—on the leachability and biological availability of agriculturally important chemicals such as herbicides, insecticides and incidental hazardous soil contaminants. We have taken pioneering steps towards that goal. We have found that the adsorbent strength of biochar weakens as it is exposed to natural soil organic matter. Planned experiments will identify the critical properties of biochar controlling its adsorbent strength and will determine the effects of biochar amendment rate on herbicide efficacy, herbicide leachability, uptake of contaminants by crop plants and earthworms, and the activity of natural signaling chemicals (allelochemicals) exuded by crop plants and their pests.

26. QUESTION AND ANSWER TENT
B. Balogh, R. Hiskes, M. Inman, T. Rathier, and G. Ridge
This is a great opportunity to ask the experts about growing plants, testing soil and identifying plants, plant diseases, and insects. Bring samples of soil, symptomatic plants, and insects for testing and identification. Visit the displays and pick up fact sheets about current insect and disease problems.

27. EXOTIC INSECTS IN CONNECTICUT AND NEARBY STATES
C.T. Maier *Assisted by* T. Zarrillo, M. Lowry, and R. Tellar
Insects accidentally introduced from foreign countries have a costly impact upon agriculture and biodiversity in North America. The negative effect upon agriculture can be reduced by early detection and prompt implementation of management programs. During the past decade, we have detected many new alien insects in Connecticut, and have studied certain aspects

of their biology. We have investigated the distribution, hosts, and period of adult activity of the small Japanese cedar longhorned beetle (*Callidiellum rufipenne*)—a wood-boring pest of coniferous landscape plants; the Asian apple tortrix (*Archips fuscocupreanus*)—a potential leafroller pest of fruit trees and other plants; the European green pug (*Pasiphila rectangulata*)—a blossom-feeding pest of apples and pears; and the European needleminer (*Batrachedra pinicolella*)—a pest of spruces. In our display, we summarize our findings and show specimens of a wide variety of exotic insects.

28. DEMONSTRATION TENT

See the Program page 5-7 for a schedule of Technical Demonstrations

29. CAES WEATHER STATION

We are a participant in the National Oceanic and Atmospheric Administration's (NOAA) Cooperative Weather Observer Network. It is the nation's largest and oldest weather network. We have been making observations since 1936. The network was established under the Organic Act of 1890 to formalize the collection of meteorological observations and establish/record climate conditions in the United States – primarily for agricultural purposes. Many people recorded weather observations long before that time. John Campanius Holm's 1644-45 weather records, for example, are the earliest known climate records in the United States. Subsequently, many others –including George Washington, Thomas Jefferson, and Benjamin Franklin, also maintained weather records. Today, more than 11,000 Cooperative Weather Observations across the United States donate more than one million hours each year to collect daily hydro-meteorological data. The network of 11,000 volunteer weather observers are located at non-airport locations where people live, work, play and grow their food (i.e. locations include urban, suburban and rural areas, farms, mountaintops, national state and local park settings).

30. COMPOSTING LEAVES USING THE STATIC PILE METHOD

A. Maynard and D. Hill *Assisted by* A. Johnson

Since the 1991 ban on disposing leaves in landfills, large-scale leaf composting has spread throughout Connecticut. Some 84 municipalities are currently composting their leaves. In static pile composting, leaves are piled and the internal temperature of the pile is monitored. As the leaves decompose, the temperature in the center of the pile reaches a temperature of about 140^{o}F. When the temperature decreases, the pile is turned and fresh material is introduced to the center of the pile. Turning also aerates the pile. Leaf compost is seen here in various stages of decomposition. The finished compost is used in experiments here at Lockwood Farm and at the Valley Laboratory in Windsor.

31. NUT ORCHARD

S. Anagnostakis *Assisted by* P. Sletten

This orchard of grafted nut trees was planted by Richard Jaynes in the spring of 1981. There are several named cultivars of chestnut and other nut trees included. Last year and this year we planted several new nut cultivars that we want to test for their production potential in Connecticut.

32. VERIZON TELEPHONE TRANSMISSION SILO

Learn about the cellular transmission tower.

33. MOSQUITO TRAPPING AND TESTING PROGRAM FOR WEST NILE AND EASTERN EQUINE ENCEPHALITIS VIRUSES

T. Andreadis and P. Armstrong *Assisted by* J. Shepard, M. Thomas, S. Finan, M. Bernardo, E. Calandrella, S. DelRegno, K. Fradette, E. Frank, D. Lazo, W. McConaughy, T. McTague, L. Meany, K. Prapayotin, and M. Torretta

West Nile and Eastern Equine Encephalitis viruses are firmly established in Connecticut and continue to be significant public health and veterinary threats with annual re-emergence throughout the state. The surveillance and research activities undertaken by The Connecticut Agricultural Experiment Station are integral to the public health response to these mosquito-borne viruses in Connecticut and have provided critical information on the epidemiology of the viruses and the ecology of the mosquito vectors in the northeastern US. This information is used by the State Department of Public Health in the issuance of health alerts and to direct preemptive and emergency mosquito control activities by the State Department of Environmental Protection. Trapping is conducted daily from June through October at 91 locations statewide. The objectives of the program are to provide: 1) early evidence of local virus activity; 2) information on the abundance, distribution, identity and infection rates of potential mosquito vectors; 3) data that are used to assess the threat of WNV and EEE to the public and; 4.) guide the implementation of mosquito control measures. Since 1996, The Connecticut Agricultural Experiment Station has trapped and tested over 1.4 million mosquitoes. A total of 556 isolations of WNV have been made from 17 different species of mosquitoes, and a total of 202 isolations of EEE have been made from 18 species of mosquitoes. The principal foci of WNV activity in Connecticut have been identified as densely populated residential communities in coastal Fairfield

and New Haven Counties. The principal foci for EEE activity are in more rural locales located in the southeastern corner of the state. We have observed a correlation both temporally and spatially between the isolation of WNV and EEE from field-collected mosquitoes and the elevated risk of human infection that typically extends from late July through September in Connecticut.

34. THE FARMER'S COW

The Farmer's Cow is an innovative, premium milk brand produced and marketed by Connecticut family-owned dairy farms. The Farmer's Cow was formed in response to consumers' interest in purchasing fresh, naturally produced, local products. Collectively, The Farmer's Cow member farms milk 2,300 cows and manage over 6,000 acres of Connecticut farmland. The Farmer's Cow milk is currently available in over 100 grocery stores throughout the state. A complete listing of retailers is shown at www.thefarmerscow.com. The Farmer's Cow is sold in half gallon cartons in whole, 2 percent, 1 percent, and skim varieties. Chocolate milk and single-serve packaging are under development. The owners of The Farmer's Cow are active members in The Connecticut Farmland Trust and The Working Lands Alliance who are working to protect and preserve Connecticut farmland. They were also the founding members of "Very Alive," a non-profit organization dedicated to the promotion of Connecticut Agriculture. Connecticut farms contribute $2 billion annually to the local economy[1]. 51 percent of Connecticut farmland is in dairy or dairy support. In 2003, there were 191 dairy farms remaining in Connecticut[2]. The Farmer's Cow owners are: Paul and Diane Miller, Fairvue Farms, Woodstock; Bill, Tom and Greg Peracchio, Hytone Farm, Coventry; Ned and Renee Ellis, Mapleleaf Farm, Hebron; Jim and Don Smith, and Nate Cushman, Cushman Farms, Franklin; Peter Orr and Family, Fort Hill Farms, Thompson; Robin and Lincoln Chesmer, Graywall Farms, Lebanon. Further information can be found at www.thefarmerscow.com, www.ctfarmland.org, and www.workinglandsalliance.org.

35. EXPERIMENT STATION ASSOCIATES

Information is available on this organization formed to help promote scientific advances at The Connecticut Agricultural Experiment Station.

36. ARE PLANT PATHOGENS CAUSING SALT MARSH DIEBACK?

W. Elmer, J. LaMondia *Assisted by* P. Thiel and C. Connelly

A large dieback of smooth cord grass (*Spartina alterniflora*) occurred in 1999-2002 along intertidal creeks that feed into Connecticut's Long Island Sound. Most of these areas have not recovered. The phenomenon is called Sudden Vegetation Dieback (SVD). Although drought is strongly associated with SVD, plant pathogenic fungi called Fusarium may be involved. We have demonstrated that combining drought and Fusarium can be fatal to young plants. We have also found parasitic root knot nematodes at SVD sites and hypothesized that the presence of these pathogens sites may hinder the ability of Spartina to re-colonize dieback sites.

37. PHYTOREMEDIATION: USING PLANTS TO CLEAN CONTAMINATED SOIL

J. White *Assisted by* T. Arsenault

Phytoremediation is a novel technique in which plants are used to remove inorganic and organic pollutants from contaminated soils and sediments. The plant species used depends very much on the pollutant. Some effective plants have been found for heavy metals such as arsenic and cadmium, as well as for organic solvents such as trichloroethylene. Persistent organic pollutants (POPs) such as DDT/DDE and PCBs are much more problematic. Phytoremediation research at CAES has focused on developing a plant-based remedial approach for these and other recalcitrant organic contaminants. The current experiments are evaluating hybrid crosses of cucurbits known to accumulate weathered DDE (in roots and stems) with closely related plants known not to take up the pollutant.

38. HEIRLOOM TOMATO TRIALS

A. Maynard and D. Hill *Assisted by* A. Johnson

Interest and sales of heirloom tomatoes have increased dramatically in the past 10 years. More and more consumers are willing to forego appearance for that real old-fashioned tomato taste. But growing heirloom tomatoes can be a challenge. Heirlooms tend to have poor disease resistance and have lower yields when compared to hybrid tomatoes. They are also more susceptible to cracking due to their tender skin. In this trial, we are evaluating 10 varieties here and at our Valley Laboratory in Windsor. We are comparing yields, disease resistance, and timing of harvest. Last year, Thessaloniki (23.4 lb/plant) and Bloody Butcher (15.2 lb/plant) had the greatest yields for the 10 cultivars evaluated.

39. PREDOMINANT MOLDS ON WATER-DAMAGED DRYWALL

D. Li

A fungal succession experiment was conducted on drywall units, which are subject to water damage at a monthly interval. Three batches of samples were taken. The fungal compositions and infestation areas are positively related with the levels and durations of water damage. Results showed that infested areas have enlarged significantly, fungal biodiversity has increased, and fungal composition shifted. *Stachybotrys chartarum*, *Ulocladium* spp., *Chaetomium globosum*, *Spegazzinia tessarthra*, *Curvularia* spp. and *Phoma* sp, etc. became dominant species following one year of water damage. The predominant fungi shifted to the hydrophilic group.

40. CONNECTICUT WEEDS AND WILD PLANTS
T. Mervosh *Assisted by* D. Reiss and B. Ross
Plants found growing wild in fields and landscapes of Connecticut are displayed. Taxonomy, life cycles, and toxicity/edibility information will be presented. Special emphasis will be placed on non-native, invasive plant species. Weed control questions will be addressed.

41. OILSEED CROPS FOR BIODIESEL
J. LaMondia *Assisted by* M. Salvas
Biodiesel is an alternative fuel, produced from either vegetable oils (such as soybean or canola) or from waste greases. Typically, biodiesel blends, ranging from 5% biodiesel with 95% diesel up to 20% biodiesel with 80% diesel, are being used in the Northeastern U.S. in compression-ignition (diesel) engines and as a replacement for home heating oil. Canola and soybean rotation crops can be used to control weeds and pests such as plant parasitic nematodes and fungi. The seed meals remaining after oil extraction also have utility as plant fertilizers. In these plots, plants are being grown to evaluate adaptability to Connecticut soils, seed and oil yield and quality, and meal suitability as fertilizer and as soil amendments to control soilborne pathogens.

42. SERUM ANTIBODIES TO WEST NILE VIRUS IN NATURALLY EXPOSED AND VACCINATED HORSES
L. Magnarelli, S. Bushmich (UConn-Storrs), J. Anderson, M. Ledizet (L^2 Diagnostics), and R. Koski (L^2 Diagnostics) *Assisted by* T. Blevins, B. Hamid, Dr. N. Bonafe (L^2 Diagnostics), and Dr. L. Kramer (New York State Department of Health)
A newly developed polyvalent enzyme-linked immunosorbent assay (ELISA) and a standard plaque reduction neutralization test (PRNT) verified the presence of West Nile virus antibodies in horses immunized with two different vaccines and in horses naturally exposed to this mosquito-transmitted pathogen in Connecticut. Concentrations of serum antibodies in the three study groups were similar. Although the PRNT was more specific than the ELISA, both serological tests were useful in laboratory diagnosis and can be used in field studies to monitor virus activity.

43. LYME DISEASE IN TICKS FROM CONNECTICUT CITIZENS
J. Anderson and B. Hamid *Assisted by* E. Alves
2008 is the third year that we have selectively tested deer ticks, based on the amount of blood engorgement. All ticks submitted by municipal health departments are identified to species and degree of engorgement, but only engorged ticks are tested for the presence of the Lyme disease bacterium, *Borrelia burgdorferi*. Studies by other researchers have shown that ticks that have not become engorged with blood do not transmit the disease organism.

In 2007, 2,602 black-legged (deer) ticks (*Ixodes scapularis*) were received, as well as 159 American dog ticks (*Dermacentor variabilis*) and 36 lone star ticks (*Amblyomma americanum*). 35% (479 of 1,388) of the tested black-legged ticks were infected with the Lyme disease organisms. The average time between receipt of a tick and reporting on the tick to the senders was reduced from 24 days in 2005 to 8 days in 2007.

44. THE “DEER” TICK IXODES SCAPULARIS
K. Stafford *Assisted by* A. Bharadwaj, H. Stuber, L. Colligan, and K. Dugas
The blacklegged tick or “deer” tick *Ixodes scapularis* transmits the agents of Lyme disease, babesiosis, and granulocytic anaplasmosis. Observe live and preserved ticks under the microscope. Lyme disease continues to be an important public health concern in Connecticut with 3,058 reported human cases in 2007. An updated Tick Management Handbook is available.

45. NATURAL PRODUCTS FOR THE CONTROL OF THE TICK IXODES SCAPULARIS
A. Bharadwaj and K. Stafford *Assisted by* H. Stuber, L. Colligan, and K. Dugas
With the award of a new grant from the Centers for Disease Control and Prevention (CDC) in April 2008, we began experiments working with essential oils such as nootkatone originally extracted from Alaska yellow cedar that have been

shown to kill ticks. An initial field trial was conducted with nootkatone and with nootkatone in combination with the entomopathogenic fungus *Metarhizium anisopliae* in the summer of 2008 to determine field efficacy at actual home sites. Another aspect of this grant is formulation development. This work may lead to another alternative to traditional insecticides for tick control.

46. JAPANESE BARBERRY CONTROL

J. Ward and S. Williams *Assisted by* J.P. Barsky

Dense Japanese barberry stands have spread beyond manicured landscapes and are associated with a paucity of both tree regeneration and herbaceous plants in some forest stands. Our study examined a two-step process to control barberry. Initial treatments (prescribed burning, mechanical mowing with a drum chopper, or mechanical mowing with a brush saw) reduced the size of established barberry clumps. The second, follow-up step (application of herbicide (triclopyr, glyphosate) or directed flame with a propane torch) treated the sprouts that develop after initial treatments. Excellent control of barberry can be achieved by using either propane torches or herbicides. Herbicide applications are less expensive and more effective for larger clumps. Propane torches may provide an organic alternative in parks, nature preserves, or forests where herbicide use is restricted and barberry infestations are still small.

47. INCREASED WHITE-FOOTED MOUSE AND BLACKLEGGED TICK ABUNDANCES IN JAPANESE BARBERRY INFESTATIONS

S. Williams and J. Ward

Japanese barberry (*Berberis thunbergii*) is an escaped exotic invasive plant that forms dense stands throughout forested areas of the northeastern United States. We hypothesized that dense Japanese barberry undergrowth provides woodland rodents, primarily white-footed mice (*Peromyscus leucopus*), with cover and protection from raptors and terrestrial mammalian predators such as eastern coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), fisher (*Martes pennanti*), and to a lesser extent, house cats (*Felis domesticus*). As a result, white-footed mouse populations should be higher in Japanese barberry infestations than in adjacent forests with little or no barberry cover. Because small rodents are a primary host for larval and nymphal blacklegged ticks (*Ixodes scapularis*), we also hypothesized that tick densities would be higher in Japanese barberry infestations. To test our hypotheses, white-footed mice were live-trapped in each of three treatment areas (full barberry infestation, managed barberry infestation, and no barberry) at each of three replicate sites in Connecticut. Traps were set at each site for 300 trap nights from July – September 2007. Captured mice were ear-tagged, a blood sample was drawn, and the number of larval ticks on each mouse was recorded. In addition, adult ticks were sampled on a 1 x 200 meter dragline using a 1 x 1 meter drag cloth for each treatment/site combination. There were three sample dates during October-November, 2007.

48. INVASIVE AQUATIC PLANT PROGRAM

G. Bugbee, M. Marko, C. Vossbrinck, and J. White *Assisted by* R. Selsky, M. Cavadini, A. Russell, R. Soufrine, and R. Rende

Connecticut lakes and ponds face an imminent threat from non-native invasive plants. Recently introduced plants such as Eurasian milfoil, variable milfoil and fanwort are of great concern. Their dense stands often reach the surface and interfere with recreational uses. Invasive species drastically alter native ecosystems leading to the decline of native plants, fish and other beneficial organisms. Researchers, in the Department of Soil and Water, are documenting our states invasive aquatic plant problem and studying management options. We are continuing a statewide inventory of freshwater aquatic vegetation. During 2004 - 2007 vegetation in 133 lakes and ponds was surveyed and mapped. Over 100 plant species have been documented with 11 of them being invasive. Approximately two-thirds of the water bodies contained one or more invasive species. Requests for station assistance in managing unwanted aquatic vegetation are frequent. A search is underway to discover novel ways to control invasive aquatic plants. These include reduced risk herbicides and biological agents such as the Eurasian water milfoil weevil and grass carp. At this plot, you will see our aquatic plant surveillance and control boats and underwater video equipment. A researcher will be available to discuss problems you are having with your lake or pond.

49. ENVIRONMENTALLY-FRIENDLY CONTROLS FOR POWDERY MILDEW ON CUCURBITS USING FOLIAGE SPRAYS BASED ON COMPOST TEA AND MILK

M. DeBacco *Assisted by* F. Ferrandino

Powdery mildew is a major problem on pumpkins, squash, cucumbers, and melons grown in the Northeast. The fungus that causes the disease grows over the leaves giving the appearance of a fine white dusting of powder. Serious infections cause yellowing and eventual death of affected leaves. Fortunately, since the fungus grows externally on the surface of the leaf some relatively non toxic foliar sprays give some measure of control.

50. USING LEAF COMPOST IN HOME GARDENS
A. Maynard and D. Hill *Assisted by* A. Johnson
Annual amendment of soil with leaf compost prevents compacting and crusting of the soil surface and promotes root growth and infiltration of rain. In these plots, addition of 1-inch of leaf compost annually since 1982 increased organic matter from 5.9 to 12.6%. Increased root growth in the amended soil allows plants to utilize nutrients in a greater volume of soil than plants in untreated soil of greater density. We are measuring the effect of reduced rates of fertilization (2/3, 1/3, 0 of normal rates) and compost amendments on the yields of several vegetables by comparing them with yields from unamended controls. We are also measuring the nutrient status of the soils in each plot throughout the growing season. Each year since 1982, yields on the leaf compost amended plots fertilized at 2/3 and 1/3 the normal rate have been consistently greater than on unamended plots with full fertilization.

51. CONNECTICUT DEPARTMENT OF AGRICULTURE
R. Macsuga
A photo exhibit will highlight Connecticut agriculture. Brochures and pamphlets will be available, along with information on Farm Reinvestment Program grants, Public Act 490 and farming, and agriculture and taxes. www.ct.gov/doag

52. UNIVERSITY OF CONNECTICUT MASTER GARDENERS
J. Hsiang
The Master Gardener Program is an Educational Outreach Program that is part of the University of Connecticut Cooperative Extension System. The program started in 1978 and consists of horticulture training and an outreach component that focus on the community at large. Master Gardeners are enthusiastic, willing to learn and share their knowledge and training with others. What sets them apart from other home gardeners is their special horticultural training. In exchange for this training, Master Gardeners commit time as volunteers working through their local Cooperative Extension Center and the Bartlett Arboretum in Stamford to provide horticultural-related information to the community.

53. CONNECTICUT GREEN INDUSTRIES
B. Heffernan
The Connecticut Green Industries represents The Connecticut Greenhouse Growers Association (CGGA) and The Connecticut Nursery and Landscape Association (CNLA). CGGA is the trade association for Connecticut's great Greenhouse Industry, representing nearly 200 growers of potted plants. http://www.flowersplantsinct.com/cgga/cggaindex.htm CNLA is Connecticut's Trade Association for Growers of Trees, Shrubs, Perennial-Annual Flowers, and Nurseries, Garden Centers, Landscapers and Landscape designers. http://www.flowersplantsinct.com/cnla/cnlaindex.htm

54. Connecticut Fund for the Environment
K. Broatch
Connecticut Fund for the Environment is a non-profit organization dedicated to protecting and improving the land, air and water of Connecticut and Long Island Sound. We bring people together to make a difference in the health of our environment. Our extensive legal and scientific expertise ensures that our actions are supported by thorough research and thoughtful analysis—leading to results that benefit current and future generations. http://www.ctenvironment.com

55. CONNECTICUT INVASIVE PLANT WORKING GROUP
D. Ellis
The Connecticut Invasive Plant Working Group (CIPWG) is a statewide organization whose members gather and convey information on the presence, distribution, ecological impacts, and management of invasive plant species. We promote the use of native or non-invasive ornamental alternatives throughout Connecticut and work cooperatively with researchers, conservation organizations, government agencies, the green industries, and the general public to identify and manage invasive species pro-actively and effectively. The CIPWG website, www.hort.uconn.edu/cipwg provides timely information on non-native invasive plants, including a list of Connecticut invasive species, management information, invasive plant alerts, fact sheets, invasive plant legislation, photos, and a calendar of events. For additional information, or to join the CIPWG electronic mailing list, contact Donna Ellis 860-486-6448; email donna.ellis@uconn.edu.

56. CONNECTICUT FARM BUREAU ASSOCIATION
K. Dunai
Farm Bureau is a non-governmental, voluntary organization of farm families united to find solutions for concerns facing production agriculture in our counties, state and nation. Connecticut Farm Bureau provides farmers with a strong clear voice

in state and national issues. Volunteer leaders and staff work closely with state and federal regulatory agencies and elected officials on issues ranging from economic viability, property rights, taxation, land use planning to labor laws and farmland preservation. One of our goals is to elevate the stature of agriculture in our state. Through education, market promotion and legislative advocacy, we strive to increase farm income and to improve the quality of life not only for Connecticut farmers, but also for their consumers. www.cfba.org

57. CONNECTICUT CHAPTER OF THE SOCIETY OF AMERICAN FORESTERS
V. O'Donnell
The Society of American Foresters (SAF) is the national scientific and educational organization representing the forestry profession in the United States. Founded in 1900 by Gifford Pinchot, it is the largest professional society for foresters in the world. The mission of the Society of American Foresters is to advance the science, education, technology, and practice of forestry; to enhance the competency of its members; to establish professional excellence; and, to use the knowledge, skills, and conservation ethic of the profession to ensure the continued health and use of forest ecosystems and the present and future availability of forest resources to benefit society. SAF is a nonprofit organization meeting the requirements of 501 (c) (3). SAF members include natural resource professionals in public and private settings, researchers, CEOs, administrators, educators, and students. www.safnet.org.

58. THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION: DIVISION OF FORESTRY
C. Donnelly and R. Rocks
The CT Department of Environmental Protection Division of Forestry performs a range of services for the citizens of Connecticut, who live in a state that is 60 percent forested. Among its responsibilities, DEP Forestry manages nearly 162,000 acres of state-owned forestlands for the health and diversity of the forest and the benefit of those who live in Connecticut. We also work with private forestland owners, who own 1.54 million acres of forest, and municipalities on matters relating to proper forest management, forest health, wildland fire control, the certification of forestry professionals and general technical support and outreach regarding CT's 1.86 million total acres of forest.

At Plant Science Day, the DEP Forestry program will have representatives of the Private and Municipal Lands program, which focuses its efforts on outreach to the public regarding private forestlands and municipal tree programs, and from the Forest Practices group, which focuses its efforts on certification of forestry professionals and the quality of work performed on forestlands throughout the state. Questions regarding forests, trees, and forest and tree professionals are all fair game for this group.

59. CONNECTICUT TREE PROTECTIVE ASSOCIATION
R. Smith
CTPA is a non-profit, non-partisan association, made up largely of tree care professionals from Connecticut. CTPA promotes the protection and care of trees in Connecticut, and encourages the ongoing improvement of tree care practices among tree workers. www.ctpa.org

60. CONNECTICUT PROFESSIONAL TIMBER PRODUCERS ASSOCIATION, INC.
L. Manville
The Connecticut Professional Timber Producers Association, Inc. (CTPTPA) was formed in 2007 from the old Connecticut Wood Producers Association (Woodpac) of the 1970s. The mission of CTPTPA is to address the growing need for an organization to represent the vital interests of the harvesters and sawmills of Connecticut, to promote the use of Connecticut's renewable forest resources, and to enhance the image of the Connecticut forest products industry throughout the state by way of the following activities: A. Communicate information to the membership; B. Institute ethical guidelines and demand a high degree of professional ethics among its members. Establish Forest Practice Standards for the timber harvesting and forest products profession; C. Promote safety within the profession; D. Promote Best Management Practices (also known as BMP's) for the timber harvesting profession; E. Promote education in the fields of forestry, timber harvesting, and forest products both within the Association and outside; F. Promote superior utilization of forest products; G. Promote the use of Connecticut wood products; and H. Publish a Connecticut Forest Profession directory and publish periodically an industry newsletter. www.timproct.org

61. UNITED STATES DEPARTMENT OF LABOR/ OSHA
L. May
Our agency's purpose is to assure safe and healthy working conditions for working men and women. Our Federal website is: www.osha.gov. Our local office is located in Bridgeport, CT. Our phone number is 203-579-5581. Our exhibit will have

literature available on topics including, but not limited to: chemical safety, tree trimming, chain saws, wood chippers, heat stress, teen worker safety, and construction.

62. USDA, ANIMAL AND PLANT HEALTH INSPECTION SERVICE, PLANT PROTECTION AND QUARANTINE
E. Chamberlain
The mission of Plant Protection and Quarantine: APHIS-PPQ safeguards agriculture and natural resources from the risks associated with the entry, establishment, or spread of animal and plant pests and noxious weeds. Fulfillment of its safeguarding role ensures an abundant, high-quality, and varied food supply, strengthens the marketability of U.S. agriculture in domestic and international commerce, and contributes to the preservation of the global environment.
http://www.aphis.usda.gov/

63. CONNECTICUT GROUNDSKEEPERS ASSOCIATION
D. Tice
The Connecticut Groundskeepers Association is a membership organization for Connecticut landscaping and grounds keeping professionals and affiliates. http://www.cgka.org

64. CONNECTICUT FARMLAND TRUST
K. Matus
The Connecticut Farmland Trust (CFT), established in 2002, is a statewide private non-profit conservation organization dedicated to protecting Connecticut's farmland. CFT's mission is to: 1.) Protect Connecticut's prime farmland for agricultural use by acquiring agricultural conservation easements and farmland; 2.) Assist landowners, local land trusts, town officials, and state agencies in identifying and protecting threatened agricultural land; and 3.) Enhance agricultural diversity, agricultural economic development, environmental quality, and rural character. The Connecticut Farmland Trust accepts donations of farmland and agricultural conservation easements as well as purchases farmland and agricultural conservation easements. In its first three years, CFT has protected 7 active farms, totaling more than 675 acres. For more information about CFT or options for protecting farmland, please contact Elisabeth Moore, Director of Projects, Connecticut Farmland Trust, 77 Buckingham Street, Hartford, CT 06106, phone: 860-247-0202, fax: 860-247-0236, email: emoore@ctfarmland.org, website: www.ctfarmland.org.

65. USDA, NATIONAL AGRICULTURAL STATISTICS SERVICE, NEW ENGLAND FIELD OFFICE
G. Keough
Agricultural statistics are important by providing an accurate, unbiased picture of the New England region and U.S. agriculture. Measurement of present and prospective supplies furnishes a sound basis for judgment and action by farmers, agri-businesses, researchers, marketing programs, and agencies which service farmers who take the time to provide the data to make these reports possible.

USDA's National Agricultural Statistics Service (NASS) is a network of 46 field offices (including the New England office in Concord, NH) serving all 50 states and Puerto Rico through cooperative agreements with state departments of agriculture or universities. These field offices regularly survey thousands of farm operators, ranchers, and agri-businesses who voluntarily provide information on a confidential basis. Consolidating these reports with field observations, objective yield measurements, and other data, statisticians then produce state statistics. These statistics are forwarded to NASS headquarters in Washington, D.C., where they are combined and released to the public.

The Internet site contains agricultural statistics, an online data base, all reports, links to other pertinent sites, and even to Kids Page that is targeted to education on agricultural topics. The national website is at http://www.usda.gov/nass while the homepages for New England and each of the six states are at http://www.nass.usda.gov/Neng (CT, NH, ME, MA, RI, VT). For more information, contact us via email at nass-nh@nass.usda.gov or 603-224-9639.

As part of the USDA, the federal program includes the Census of Agriculture conducted every five years and Annual Statistics Program. The Ag Census publishes all agricultural commodities at the state and county level. The Annual Statistics Program provides timely state level statistics limited to major crop and livestock commodities and a few data series at the county level. Confidentiality is guaranteed to anyone providing information to NASS regardless if it is acting in the federal or state capacity. According to federal law, the mail list is confidential and can never be given or sold to any other entity, public or private (this includes other government agencies). Individual data are exempt from requests under the Freedom of Information Act and exempt from subpoena. Data are only published at an aggregate level so that no one can derive information about any single operation. http://www.nass.usda.gov

66. BACK YARD BEEKEEPERS ASSOCIATION
T. Conley
The purpose of the BYBA is to provide our membership with interesting and practical information about the "how-to's" of beekeeping. The club also provides the general public with educational programs about honey bees and the benefits of beekeeping in our communities. The BYBA is a non-profit, charitable organization. With over 250 members, our association has grown to become one of the Nation's largest regional clubs for beekeeping hobbyists. Some of our members are just getting started as beekeepers, and some have enjoyed this hobby for years. All share an interest in the wonderful and remarkable world of the honey bee.

67. USDA, NATURAL RESOURCES CONSERVATION SERVICE
C. Donzella and K. Kolesinskas
The Natural Resources Conservation Service (NRCS) is an agency of the United States Department of Agriculture. For nearly 70 years, we have worked cooperatively with landowners, conservation districts, federal, state, and local governments, and citizens from urban and rural communities to restore and enhance the landscape. NRCS soil conservationists, soil scientists, agronomists, ecologists, engineers, planners, and other specialists promote land stewardship by providing technical assistance through teams to address surface and groundwater quality; wetlands, riparian areas, and biodiversity; aquatic and terrestrial habitat; and impacts of landuse changes. NRCS teams work on all of Connecticut's landscapes: agricultural, wetlands and riparian areas, suburban, rural, urban centers, and forested. Our mission is to conserve and sustain our natural resources. Our vision is to be a natural resource focused, interdisciplinary team providing assistance to restore and protect watershed ecosystems for sustainable communities.

68. MILFORD TREES, INC.
M. Ludwig
Our mission is to increase and enhance our urban forest canopy by planting diverse tree species predominantly through partnerships with schools, organizations, businesses and the City of Milford so that we will create a healthier environment and a better quality of life for residents. With our partners, we promote the preservation of healthy trees and the proper planting, maintenance and replacement of public trees. We maintain trees at Shadyside Nursery, educate the public about the importance of trees, periodically update the Tree Inventory and manage both the Legacy Arboretum and the Memorial Tree Program. Our outreach program to other communities has been ongoing since 2001. ludwigsmail@snet.net, www.milfordtrees.blogspot.com

69. THE GIRLS SCOUTS
T. Arsenault
Established on March 12, 1912 by Juliette Gordon Low, the mission of Girl Scouts is to build girls of courage, confidence, and character, who make the world a better place. Today there are 3.6 million Girl Scouts, consisting of 2.7 million girls and 928,000 adult members. In Girl Scouts, girls discover the fun, friendship, and power of girls together. Through a myriad of enriching experiences, such as extraordinary field trips, sports skill-building clinics, community service projects, cultural exchanges, and environmental stewardships, girls grow courageous and strong. For more information contact our local Girl Scout council at http://www.girlscoutscttrails.org.

70. NATIVE WOODY SHRUBS
J. Ward *Assisted by* D. Tompkins
Native woody shrubs offer an alternative to exotics commonly used in landscaping. This collection of shrubs was assembled in 1962 and in 1976 it was arranged in its present form with a dry site on the gravel mound and moist site in the shallow, plastic-lined depression. Many of these shrubs flower in the spring; their flowers can be seen in the photographs. Others, such as sweet pepperbush, spirea, and buttonbush, flower in summer. Witch-hazel flower in early autumn. Birds are frequent visitors to the garden and quickly eat the mature fruit. These shrubs survive with minimal maintenance. Occasional mowing, annual removal of dead stems, and replenishment of mulch are performed. These shrubs have never been fertilized, watered, or treated for disease.

71. BEES, TREES, AND COMMODITIES: THE SURVEY AND INSPECTION TEAM
V. Smith, T. Blevins, J. Fengler, I. Kettle, S. Sandrey, and P. Trenchard
Our personnel uphold state laws enacted to protect Connecticut's vegetation from injurious insects and diseases. Each year we inspect 7,500 acres of nursery stock grown in over 300 nurseries for insects and diseases. When problems are found, control remedies are suggested. We inspect agricultural products to be shipped to foreign or interstate destinations, and we

survey Connecticut's woodlands to find troublesome pests such as the gypsy moth, forest tent caterpillar, and the hemlock wooly adelgid. Examples of insect pests and plant diseases are exhibited. Insect survey maps are shown. Connecticut has about 350 beekeepers tending over 2,600 colonies of honey bees. A task of the Experiment Station is to seek out and eliminate contagious bee diseases and parasitic mites. There will be displays of insects that attack ornamentals, live honey bees, a beehive and various beekeeping equipment, as well as wasps and hornets and their nests. Forest Health Highlights will be available as handouts to the public.

72. CONNECTICUT NURSERYMENS' GARDEN

The Connecticut Nurserymens' Gardens are showcases of plants discovered or hybridized and introduced to the horticultural trade by Connecticut nurserymen. Similar gardens are at the Valley Laboratory in Windsor and the Main Laboratories in New Haven. All plants were donated by members of the Connecticut Nurserymens' Association and planted in 1986-87. Introductions feature evergreen and deciduous azaleas, mountain laurel, maple, pine, hosta, iris, and other flowering and foliage plants. A brochure containing maps of all three gardens and a brief description of the plants are available.

73. BIRD AND BUTTERFLY GARDEN

R. Bonito, J. Fengler, and J. Canepa-Morrison

The Bird and Butterfly Garden is a partnership of The Connecticut Agricultural Experiment Station and the Federated Garden Clubs of CT/Spring Glen Garden Club. This garden creates several favorable habitats for our native birds, butterflies, and pollinating insects and helps us determine which plants may work best in Southern Connecticut gardens. At this time of year the garden is at its peak performance with plants thriving in the garden and meadow. Plant labels are placed near the plants in the garden to provide the botanical and common name. Throughout the day we update our list of birds, butterflies and moths spotted in the garden. The Bird & Butterfly Garden at Lockwood Farm is listed in the 'Nature Conservancy Open Days Directory for New England'.

Do you have a butterfly garden or would you like to start one? The Station can provide you support by answering your questions and recommending ways for you to enjoy a butterfly garden small or large on your patio or in your yard.

74. EASTERN BLUEBIRD *SIALIA SIALIS* NEST BOX TRAIL

L. Kaczenski

A Bluebird trail consists of a minimum of 6 nesting boxes spaced a hundred yards or more apart. Here at Lockwood Farm we have 16 nesting boxes located along the fencing beginning at the entrance of the cottage, along the Christmas tree farm, the vineyard then across the farm between the orchard and the weather station. Success of a trail greatly depends on weekly monitoring of the nesting boxes; close monitoring is needed to prevent House Sparrows from nesting in them. House Sparrows and the European Starling are a non-native invasive species introduced to North America in the 1800's; both of which are cavity nesters and both are very aggressive and have contributed greatly to the decline of Bluebirds. There is also nesting competition with Tree Swallows, House Wrens, Tufted Titmice and Chickadees. The population decrease of the Eastern Bluebird declined seriously enough to reach a critical status by the mid 1900's due to habitat destruction, over use of pesticides and nest predation by the House Sparrow and Starling. Bluebird trails across North America have greatly increased their numbers and due to this increase they are not protected under the U.S. Endangered Species Act. This trail is registered with The Birdhouse Network; the data collected during the weekly monitoring (inhabitants, clutch size, predation, successful fledging, etc.) are submitted to the Cornell Lab of Ornithology helping scientist's with their research of the Eastern Bluebird.

75. INDUCING FUSARIUM DISEASE RESISTANCE IN GLADIOLUS

W. Elmer *Assisted by* P. Thiel and C. Connelly

Fusarium corm rot of gladiolus is found wherever gladioli are grown. Specific strains of a soil fungus called Fusarium cause the disease. Corms were soaked for 20 min in different rates of a chemical call Actigard that induces plants to become disease resistant. Corms were also soaked in spore suspensions of another strain of Fusarium that can protect plants from infection. In 2007, we found that both treatments provide season-long protection from the damage caused by the disease.

76. SOUND SCHOOL AGRICULTURAL SCIENCE PROGRAM

Students from the Sound School

This is a unique opportunity for students from New Haven who are interested in studying/pursuing a career in Agricultural Science. This is a public high school within the City of New Haven. Our program operates on a 12-month basis in partnership with The Connecticut Agricultural Experiment Station. Today you see an example of students planting, growing, caring and eating fresh vegetables and herbs from their garden, which they have taken care of this summer. Excess produce is used in local soup kitchens.

Our Partnership with the City of New Haven "Youth @ work" program assists in the development of work-based skills under the direct supervision and instruction of a certified Vocational Agriculture Teacher. Please visit our web site: www.soundschool.com.

77. CHESTNUT SPECIES AND HYBRIDS
S. Anagnostakis *Assisted by* P. Sletten
These trees are part of the large collection of species and hybrids of chestnut maintained by The Connecticut Agricultural Experiment Station. Great differences can be seen in chestnut blight resistance, form, and nut production. Hypovirulent strains of the blight fungus help protect them from lethal cankers (see CONTROL OF BLIGHT ON AMERICAN CHESTNUTS, plot 20). Plants of all seven species of chestnut are growing here. In 1994, two seedlings from the Caucasus Mountains of Russia that are true European chestnut were planted, but only one has survived our Connecticut winters. European chestnut trees from Turkey have also done poorly. Two trees of the chinquapin, native to Florida, are planted across the road from an Allegheny chinquapin from Pennsylvania. The cultivar 'Lockwood' is at the southwest corner of the plot.

78. DENSE PLANTING OF AMERICAN CHESTNUTS
S. Anagnostakis *Assisted by* P. Sletten
In 1982, 300 seedling American chestnut trees from Michigan were planted in two dense plots. We treated the north plot with hypovirulence for blight control (see CONTROL OF BLIGHT ON AMERICAN CHESTNUTS, plot 20), and it looks slightly better than the south plot.

79. DWARF HYBRID CHESTNUT TREES
S. Anagnostakis *Assisted by* P. Sletten
These hybrid trees are the results of crosses done in 1934 by Arthur Graves followed by intercrossing by Hans Nienstadt in 1951 and selection by Richard Jaynes from 1970 to 1973. One of the parents in the hybrids was the dwarf species *Castanea seguinii*, and the selected trees that remain produce abundant nut crops and have remained small. These are important parents in our selections of orchard-type trees for Connecticut. The cultivar 'Little Giant' was released to the nursery industry in 1999, 'Hope' in 2003, and 'King Arthur' in 2005 (see signs). New hybrid and species trees are planted next to these dwarf hybrids.

80. ROCKY HILL AMERICAN CHESTNUT TREES
S. Anagnostakis *Assisted by* P. Sletten
Seed collected from selected American chestnut trees in Rocky Hill in 1985 grew into the trees planted here. They are used as female parents in our crosses and are being treated with hypovirulence (see CONTROL OF BLIGHT ON AMERICAN CHESTNUTS, plot 20) to keep them alive.

81. PINOT GRIS CULTURAL TRIALS
W. Nail *Assisted by* A. Johnson
A planting of 288 Pinot Gris vines was established in 2004. Half of the vines are on 101-14 rootstock, and the other half are on C3309. Vines on C3309 have had greater winter mortality and increased incidence of crown gall. Horticultural oil was applied at bloom in 2006-2008. Application of oil reduced photosynthesis and fruit set, resulting in less compact clusters that may be more resistant to late-season fruit rot diseases. Beginning in 2007, comparisons between fruit zone leaf removal on both sides and only on the east side were done.

82. HYBRID AND VINIFERA WINEGRAPE CULTIVAR TRIAL
W. Nail *Assisted by* A. Johnson
The Connecticut component of NE-1020: Multi-State Evaluation of Winegrape Cultivars and Clones consists of 24 hybrid and vinifera cultivars. The vineyard was planted in late spring, 2008. Some of the new cultivars are unreleased selections from breeding programs at Cornell University and the University of Minnesota, while others are newly available cultivars from cool and cold climate areas of Europe. The new cultivars are being compared to established cultivars, which are the same for all states with similar climatic conditions. This planting is the second largest NE-1020 planting in the eastern states. Another, smaller, cultivar evaluation plot has been established at the Windsor station.

83. BEACH PLUM TRIALS
A. Maynard and D. Hill *Assisted by* A. Johnson

Beach plum (*Prunus maritime* Marsh.) is a fruiting shrub native to the coastal dunes of the Northeastern United States. Beach plum jam has become a premium product especially in the Cape Cod region. Currently, consumer demand for beach plums is greater than the supply. Commercial production is the only way to meet the demand for beach plums and its relatively low growth habit makes it ideal for a pick-your-own operation. In its native seaside habitat, beach plums grow very slowly and bear fruit sporadically. Growth in more fertile soil should be more vigorous and crop size will be improved. In spring 2003, 210 beach plum seedlings were planted at Lockwood Farm and 96 at the Valley Laboratory. These seedlings were raised at Cornell University from seeds collected from 35 sites from Maine to Delaware. The trees are evaluated annually and select elite individuals will be propagated as possible cultivars in the future. In 2007, total production from Windsor was estimated to be 922 lbs. from 79 plants. Heavy yielding plants produced as much as 36 lb./plant in 2007. In 2007, the percentage of plants producing was 87%. Estimated total yield at Lockwood Farm was 155 lbs. as the effects of the deer browse were still evident.

84. JAPANESE PLUM VARIETY TRIALS

A. Maynard and D. Hill *Assisted by* A. Johnson

As wholesale marketing of major tree fruits becomes unprofitable, many Connecticut growers are turning to retail sales of their fruit. For a retail operation to be successful, there must be a diversity of products. Thus, many growers are interested in adding minor specialty fruits to their operations. Consequently, we have expanded our New Crops Program to include fruits. This trial, also repeated at the Valley Laboratory in Windsor, includes 12 cultivar/rootstock combinations of Japanese plum. At Windsor, the greatest yields in 2007 were from Shiro (45 lb/tree) and Obilnaja (34 lb/tree). Trees at Mt. Carmel have been damaged by deer browse and black knot disease.

85. WHITE BIRCH RESEARCH ORCHARD

C. Rutledge *Assisted by* M. Scott

Non-native white birches in landscape and nursery settings in Connecticut are vulnerable to a number of insect pests. These include the bronze birch beetle, which attacks the vasculature of the tree's trunk, and birch sawflies and birch leafminers which attack the foliage of the trees. Together these insects are responsible for killing many white birch trees causing substantial financial losses to nurseries, landscapers and homeowners. The orchard was established in the spring of 2005 with the assistance of 5 Connecticut Nurseries; Millane Nurseries, Inc. in Cromwell, Young's Nurseries, Inc. in Wilton, Planters' Choice in Newton, Robert W. Baker Nursery in West Suffield, and Pride's Corner Farms, Inc. in Lebanon. The orchard will allow future research into the biology, ecology, and management techniques for these important pests.

Index of Scientists' Names and their Field Plot Numbers

Scientist's Name	Field Plot Number (Bold type indicates primary location)
Anagnostakis, S.	1, 8, 19, 20, 21, 31, 77, 78, 79, 80, **Main Tent**
Anderson, J.	**43, Demo Tent**
Andreadis, T.	**33**
Armstrong, P.	**33**
Balogh, B	**26**
Bharadwaj, A.	**45**
Bugbee, G.	48, **Barn B**, Main Tent
Cheah, C.	**16**
Cowles, R.	**17**
Dingman, D.	**Technical Demonstration Tent**
Douglas, S.	**Main Tent**
Eitzer, B.	**Barn B**
Elmer, W.	9, 25, **36**, 75
Ferrandino, F.	15, 50, **Barn B**
Gent, M.	12, 13, 14, **Barn B**
Hamid, B.	**43**
Hill, D.	**2, 3, 4, 5, 6, 7**, 10, 30, 38, 50, 83, 84
Hiskes, R.	**26**
Inman, M.	**26**
Krol, W.	**Barn A**
LaMondia, J.	36, **41**
Li, D.	**39**
Magnarelli, L.	42, **Main Tent**
Maier, C.	**27**
Marko, M.	**11, 48**
Marra, R.	**Walking Tour**
Mattina, M.	**Main Tent**
Maynard, A.	**2, 3, 4, 5, 6, 7**, 10, 30, 38, 50, 83, 84, Demo Tent
McHale, N.	**Bus Tour, Barn B**
Mervosh, T.	**40**
Nail, W.	**22, 23, 24**, 81, 82
Peterson, R	**Bus Tour**
Pignatello, J.	**25**
Rathier, T.	**26**
Ridge, G.	**26**
Robb, C.	**Barn A**
Rutledge, C.	85, **Barn B**
Schultes, N.	**Barn B**
Smith, V.	**71**
Stafford, K.	**44, 45**
Stoner, K.	**18, Barn B**
Ward, J.	**46, 47**, 70, Main Tent
White, J.	11, 25, **37**, 48, Barn B
Williams, S.	**46, 47**
Winiarski, J.	**26**

History of The Connecticut Agricultural Experiment Station

The Connecticut Agricultural Experiment Station is one of a national network of state agricultural experiment stations. Experiment Stations are a cooperative research effort of the states and federal government to solve with local, regional, and national problems. The Station has existed for 133 years.

The Connecticut Agricultural Experiment Station, the first agricultural Experiment Station in the United States, grew out of the efforts of Samuel W. Johnson, a professor of agricultural chemistry at Yale University. Johnson had seen an agricultural experiment station when he did post graduate studies in Germany during the 1850s. He saw how the science of chemistry could be used to aid farmers and campaigned for 20 years until one was established by the Connecticut legislature in 1875. Initially opened in a chemistry laboratory at Wesleyan University in Middletown, the Station was moved to Yale in 1877, where its first bulletin reported on analysis of a fertilizer that had little agricultural value. In 1882, the Station moved to its present location on Huntington Street in New Haven. Besides Lockwood Farm, its outdoor laboratory in Hamden, the Station also has a research farm and laboratories in Griswold and Windsor.

Through the years, many important discoveries have been made by researchers at The Connecticut Agricultural Experiment Station. For example, vitamin A was discovered as an outgrowth of studies of the chemical composition of foods. The first practical hybrid of corn was developed, and many experiments in increasing the yield of corn were conducted at Lockwood Farm by Donald F. Jones. This discovery led to the doubling of yields of corn crops throughout the nation and led to more abundant and lower cost of food for mankind. Also, at Lockwood Farm, experiments were conducted which led to the development of organic fungicides, some of which are still in use to combat plant diseases. These fungicides replaced toxic heavy metals previously used to control plant pathogens. The first culture of the West Nile virus in North America was made at the main campus in New Haven.

Research at the Station covers plants and their pests, such as diseases and insects, the pests of man and animals such as mosquitoes and ticks, growth of the state's forests, methods of enhancing the growth of plants by protecting them from pests and increasing crop yields through cloning of genes, and studies of environmental contamination and ways to reduce application of pesticides or their impact on the environment. New research has been started on crops for biodiesel fuel production. Staff at the Station also analyze fresh fruits and vegetables for excess pesticide residues, test fertilizers and animal feeds for compliance with label claims, and screen a wide variety of foods as a part of the federal and state's food safety monitoring programs.

Some current research includes:

- Release of a lady beetle to control the hemlock woolly adelgid, which is killing hemlocks throughout the state.
- Studies of the pathogen that causes Lyme disease and means of controlling the tick vector.
- Treatments to reduce the toxicity of organic contaminants in water.
- Studies of natural changes in Connecticut's forests.
- Ways to control insect pests of plants using non-chemical means.
- Surveys and studies of the eastern equine encephalitis virus, West Nile virus, and other encephalitis viruses in mosquitoes.
- Enhancing growth of crops through the use of compost as a substitute for fertilizer.
- Finding new crops for Connecticut farmers and studying the best varieties of existing crop plants for Connecticut conditions.
- Studies of invasive aquatic plants and methods of control.
- Finding the cause of salt marsh grass dieback.

The experiments at Lockwood Farm are only a portion of these conducted by Station scientists. Scientists also perform experiments in New Haven, Griswold, and Windsor and carry out other experiments in state forests and on private lands.

PLANT SCIENCE DAY is held annually in August at Lockwood Farm, 890 Evergreen Avenue, Mt. Carmel, Hamden. Friends of the Experiment Station are invited to an *Open House* held in April at our New Haven laboratories on 123 Huntington Street.

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION, founded in 1875, is the first state agricultural experiment station in America. It is chartered by the General Assembly to make scientific inquiries and experiments regarding plants and their pests, insects, soil and water, and to perform analyses for State agencies.

OFFICE AND MAIN LABORATORIES

123 Huntington Street; New Haven, CT 06504-1106, 203-974-8500, toll free, statewide, 1-877-855-2237

VALLEY LABORATORY

153 Cook Hill Road; Windsor, CT 06095-0248, 860-683-4977

LOCKWOOD FARM

890 Evergreen Avenue; Hamden, CT 06518-2361, 203-974-8618

GRISWOLD RESEARCH CENTER

190 Sheldon Road; Griswold, CT 06351-3627, 860-376-0365

THE STATION'S WEB PAGE AT: WWW.CT.GOV/CAES

7/21/2008