PLANT SCIENCE DAY

LOCKWOOD FARM, HAMDEN

WEDNESDAY, AUGUST 3, 2011

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HISTORY OF LOCKWOOD FARM, HAMDEN

Lockwood Farm is a research facility 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 other 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, which 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 is given to a farm that has been in family operation for more than 100 years. The recipient is selected by the Connecticut Agricultural Information Council.

Collins Powder Hill Farm
Enfield, Connecticut

Collins Powder Hill Farm, at 9 Powder Hill Road in Enfield, Connecticut, was established in 1868. During the late 1800's, strawberries, blueberries, vegetables, and tobacco were the main crops. There were a few animals present for meat and milk, mostly for family needs. In the early 1900's, an apple orchard became the new enterprise for the farm.

Like many Connecticut farms, diversification and adapting to changing times over the years are critical to the survival and sustainability of the farm. The Collins family developed a well-known chicken farm raising mostly breeding stock. Cows were then introduced and a dairy operation co-existed with egg and meat production.

Today, the principal family members (John and Ashley Collins and Jack and Mavis Collins) oversee a 180-acre farm with a dairy herd of about 170 cows, which includes an extensive breeding program of Holstein and Jersey stock, a composting business, and a creamery where premium ice cream is sold. Corn and alfalfa are important crops. The Collins family has about 158 acres in farmland preservation. Numerous family members and employees over several generations have contributed to the success of the farm.

As Governor, I am pleased to join with The Connecticut Agricultural Experiment Station and the Connecticut Agricultural Information Council in presenting this Century Farm Award to the Collins family, who are most deserving of this honor.

THE SAMUEL W. JOHNSON MEMORIAL LECTURE (Main Tent)

The Experiment 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 Experiment Station from 1877 to 1900 and was a leader in the establishment of American agricultural experiment stations.

ANSWERS TO YOUR QUESTIONS (Plot 22)

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 (Plot 27)

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 table (Plot 27) 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 Scouts of America table (Plot 28) to collect their "Try-It!"

ACTIVITY FOR OLDER CHILDREN (Plot 28)

A self-guided worksheet is available for all children. The activity will guide you to interact with some of the many people here today helping to put science to work for society. In addition, Girl Scouts may use the activity to earn a junior badge, a program patch for all levels, or complete steps towards their Journey Awards. Please visit the Girl Scouts of America table for details (Plot 28). All children will receive a prize when they visit the Kid's Korner table (Plot 27).

CONNECTICUT PESTICIDE CREDITS (Registration, R)

Connecticut 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 (R) 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.

Connecticut Pesticide Credits Offered: 4.25 credits in ALL supervisor categories and ALL private applicator (PA) categories.

Visit The Connecticut Agricultural Experiment Station's web page at: WWW.CT.GOV/CAES

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

THE 101st ANNUAL PLANT SCIENCE DAY

Doors open at 9:30 a.m.
Program begins at 10:00 a.m.
Event 10:00 a.m. – 4:00 p.m.

10:00 a.m.—GREETING

MAIN TENT, 11:20 A.M.

Louis A. Magnarelli, Director—PRESIDING

CENTURY FARM AWARD
Collins Powder Hill Farm, Enfield, CT

REMARKS
Ms. Pamela Weil
President, Experiment Station Associates

THE SAMUEL W. JOHNSON MEMORIAL LECTURE
Mr. Gregory M. Schaan
President & Chief Executive Officer, Imperial Nurseries, Inc., Granby, CT
"Impact of the Nursery Industry on Connecticut's Economy"

PRESENTATIONS ON RESEARCH AND TECHNICAL DEMONSTRATIONS

10:00 a.m. **TECHNICAL DEMONSTRATION TENT Mr. Ira J. Kettle, State Apiary Inspector, Department of Entomology**
Beekeeping Basics
(20-minute demonstration, repeated twice during the day, 10:00 a.m. & 1:35 p.m.)
Raising honey bees to improve agricultural production plus production of honey and beeswax has been practiced for thousands of years. These benefits establish beekeeping as an economically important agricultural profession. Caring for honey bees is also a fun hobby that can provide supplemental income. Beekeeping is not a difficult task when one understands the basic techniques and requirements. This demonstration will present the tools needed and the techniques used to get started in beekeeping.

10:20 a.m. **MAIN TENT Dr. Chris T. Maier, Entomologist, Department of Entomology**
The Brown Marmorated Stink Bug: Another Harmful Invasive Insect from Asia
The brown marmorated stink bug may be one of most destructive insects ever introduced into North America. Since its discovery in Pennsylvania in 2001, this Asian stink bug has spread, mainly with the assistance of humans, to over 30 states. It was first recorded in Connecticut in 2008, with the number of records increasing each year after its initial discovery. The stink bug is particularly feared because it has a very broad host range, which includes apples, peaches, corn, tomatoes, peppers, soybeans, and various nut

crops. Last year this invasive bug caused millions of dollars of damage to fruit, vegetable, and nut crops in the mid-Atlantic states. Researchers and farmers now face the formidable task of learning how to reduce the impact of this alien pest.

10:50 a.m. **MAIN TENT Dr. Victoria L. Smith, Deputy State Entomologist, Department of Entomology**

Healthy Plants—Healthy Business: Support of the Green Industry by Inspection

We work to assure the quality of the agricultural products leaving the state and to maintain the health of forests and Connecticut's agricultural industry. In 2010, the Office of the State Entomologist completed registration and inspections for over 475 nursery growers and dealers of plants and plant products. Over 450 certificates of export were issued for plant commodities moving out of state or out of country. Over 675 beekeepers registered 4,200 hives, and nearly 800 of these were inspected for diseases of honey bees. In addition, surveys were conducted for a variety of exotic pests and diseases, and the health of our forests was assessed by aerial survey. Our goal is to safeguard agriculture and forests of Connecticut through surveys to detect infestations, through monitoring of the health and vitality of the forests, and through inspection and registration of commodities and producers to assure their fine quality.

11:05 a.m. **TECHNICAL DEMONSTRATION TENT Dr. Gale E. Ridge, Entomologist, Department of Entomology**

Introduction to Bed Bugs, Self-Protection and Management

(20-minute demonstration, repeated twice during the day, 11:05 a.m. & 2:05 p.m.)

What is a bed bug and how can people protect themselves from these insects when traveling? How does one detect a bed bug infestation in the home? This demonstration will answer these important questions and show how to be proactive, not reactive, to bed bugs. Also presented will be guidance on how to manage bed bugs if an infestation is confirmed.

1:20 p.m. **MAIN TENT Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**

The Experiment Station's New Crops Program

Small farm sizes in Connecticut have resulted in marketing shifts from wholesale contracts with local supermarkets to direct retail sales. Consumers used to a wide variety of fruits and vegetables in large supermarkets are seeking a greater diversity of ethnic and specialty crops at farmers' markets and roadside stands. To help farmers make informed decisions, The Connecticut Agricultural Experiment Station established The New Crops Program and has studied over 40 different fruits and vegetables including heirloom tomatoes, calabaza, globe artichoke, sweet potatoes, and callaloo. Research included both variety trials and experiments to determine the best cultural methods for growing each crop in Connecticut.

1:35 p.m. **TECHNICAL DEMONSTRATION TENT Mr. Ira J. Kettle, State Apiary Inspector, Department of Entomology**

Beekeeping Basics

(20-minute demonstration, repeated twice during the day, 10:00 a.m. & 1:35 p.m.)

Raising honey bees to improve agricultural production plus production of honey and beeswax has been practiced for thousands of years. These benefits establish beekeeping as an economically important agricultural profession. Caring for honey bees is also a fun hobby that can provide supplemental income. Beekeeping is not a difficult task when one understands the basic techniques and requirements. This demonstration will present the tools needed and the techniques used to get started in beekeeping.

1:50 p.m. **MAIN TENT Dr. Goudarz Molaei, Medical Entomologist, Department of Environmental Sciences**

To Bite or Not to Bite: Mosquitoes and Transmission of West Nile and Eastern Equine Encephalitis Viruses in Connecticut

During the last decade, we have witnessed the introduction and unprecedented expansion of West Nile virus throughout North America, and more recently the resurgence of the Eastern Equine Encephalitis virus in the northeastern USA. These viruses are maintained in natural transmission cycles involving specific mosquitoes and wild birds. Mosquito species that feed on both birds and mammals transmit the virus to humans. The role of mosquitoes in virus transmission among wild birds and for infecting humans will be presented as part of our ongoing efforts at the Center for Vector Biology & Zoonotic Diseases.

2:05 p.m. **TECHNICAL DEMONSTRATION TENT Dr. Gale E. Ridge, Entomologist, Department of Entomology**

Introduction to Bed Bugs, Self-Protection and Management

(20-minute demonstration, repeated twice during the day, 11:05 a.m. & 2:05 p.m.)

What is a bed bug and how can people protect themselves from these insects when traveling? How does one detect a bed bug infestation in the home? This demonstration will answer these important questions and show how to be proactive, not reactive, to bed bugs. Also presented will be guidance on how to manage bed bugs if an infestation is confirmed.

2:45 p.m. **MAIN TENT Adjourn Talks and Demonstrations**

PESTICIDE CREDIT TOUR
(Meet at the Registration Desk, R)
12:15 p.m.-1:15 p.m.

12:15 p.m. **MEET AT REGISTRATION DESK (R) Dr. Robert E. Marra, Forest Pathologist, Department of Plant Pathology and Ecology**

A one-hour guided tour of selected 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.

Stops on tour:

- **Dr. Francis J. Ferrandino, Epidemiologist, Department of Plant Pathology and Ecology**
  Environmentally-Friendly Control of Powdery Mildew on Vegetable Plants (Plot 34)
- **Dr. Carole Cheah, Entomologist, Valley Laboratory**
  Biological Control of Hemlock Woolly Adelgid and Mile-a-Minute Weed in Connecticut (Plot 31)
- **Dr. James A. LaMondia, Plant Pathologist, Valley Laboratory**
  Oilseed Crops for Biological Control of Soilborne Pathogens (Plot 32)
- **Dr. Wade H. Elmer, Plant Pathologist, Department of Plant Pathology and Ecology**
  Use of Earthworms and Biochar to Suppress Verticillium Wilt of Eggplant (Plot 15)

2:45 p.m. – 4:00 p.m. **SIGN-OUT (for those requesting pesticide credits) (R)**

Attendees pick up Pesticide Credit forms at the registration table (R).

LOCKWOOD FARM WALKING TOUR
(Meet at the Registration Desk, R)
2:15 p.m.–3:15 p.m.

2:15 p.m. **MEET AT REGISTRATION DESK (R) Dr. Robert E. Marra, Forest Pathologist, Department of Plant Pathology and Ecology**

A one-hour guided tour of selected 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.

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

Stops on Tour:

- **Dr. Kimberly A. Stoner, Entomologist, Department of Entomology**
  Herbs and Cut Flowers as Potential Nectar and Pollen Sources for Bees (Plot 42)
- **Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture**
  Calabaza squash, Beach Plum, Paw-Paw, and Japanese Plum Trials (Plots 51-53)

- **Dr. Robert E. Marra, Forest Pathologist, Department of Plant Pathology and Ecology**
  Biological control for bacterial spot of peaches
- **Dr. Sandra Anagnostakis, Mycologist, Department of Plant Pathology and Ecology**
  Hybrid Elm Trees (Plot 54)

TOUR OF NATIVE WOODY SHRUBS (PLOT 40)

12:30 p.m.–1:00 p.m.

12:30 p.m.-1:00 p.m. MEET AT THE WOOD ARBOR OF THE NATIVE WOODY SHRUBS Dr. Jeffrey S. Ward, Station Forester, Department of Forestry and Horticulture
A ½-hour guided tour of our native shrub planting to be conducted by Dr. Jeffrey S. Ward, Station Forester and 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 (PLOT 41)

11:30 a.m. & 2:30 p.m. "Deadheading Perennials: The Why, When, and Where"
ON THE HOUR starting at 10:00 a.m.-3:00 p.m. "Butterfly Identification Walk"

11:30 a.m. & 2:30 p.m. MEET AT THE BIRD AND BUTTERFLY INFORMATION TABLE Ms. Jane Canepa-Morrison, Valley Laboratory
Ms. Jane Canepa-Morrison will demonstrate "Deadheading Perennials: The Why, When, and Where"

ON THE HOUR Starting at 10:00 a.m.-3:00 p.m. MEET AT THE BIRD AND BUTTERFLY INFORMATION TABLE Mr. Jeffrey Fengler, Department of Entomology
Mr. Jeffrey Fengler will lead a "Butterfly Identification Walk"

BARN EXHIBITS (BARN B)

Methods Used to Determine Trace Level Contamination in Foods, Products and the Environment
Department: Analytical Chemistry
Investigators: Dr. Brian D. Eitzer, Dr. Walter J. Krol, Dr. Christina S. Robb, and Dr. Jason C. White
Assisted by: Ms. Terri Arsenault, Mr. William A. Berger, Mr. Craig L. Musante, and Mr. John F. Ranciato
Abstract: The ability to measure small quantities of contaminants in a wide variety of foods, products and environmental samples is necessary to assure the health and safety of consumers. This exhibit will provide examples of the different methods used by the Department of Analytical Chemistry to monitor some of these contaminants in produce, fish, soils and consumer products.

Honey Bee Disease: Characterizing American Foulbrood and Nosemosis in Connecticut
Department: Biochemistry and Genetics
Investigators: Dr. Douglas W. Dingman
Assistants: Ms. Regan B. Huntley
Abstract: American foulbrood, caused by the bacterium *Paenibacillus larvae*, is widespread across the state. This age-old disease is being geo-referenced within the state based on various characteristics of the bacterium (e.g., phylogenetic grouping, resistance to the antibiotic Terramycin, and bacteriophage content). In colonies exhibiting winter-loss or massive bee die-off, molecular biological testing is being done to screen for the microsporidia *Nosema apis* and *Nosema ceranae*, causes of nosemosis.

Wild Bees on Connecticut Vegetable Farms and the Flowers They Use
Department: Entomology
Investigators: Dr. Kimberly A. Stoner

Abstract: There are 326 species of bees in Connecticut. We are studying the flowers growing on vegetable farms, including those grown as cut flowers, herbs, or cover crops, as resources for a diversity of bees. We are also studying the bees pollinating squash and pumpkins on ten farms around the state.

The Function of Charcoal in Soil

Department: Environmental Sciences
Investigators: Dr. Joseph J. Pignatello
Assisted by: Dr. Charisma Lattao

Abstract: Charcoal is a normal component of soil as a result of fire history, and some have advocated the use of charcoal-like material produced in modern-day kilns known as *biochar*. Biochar may provide a habitat for certain microorganisms, increase water-holding capacity, regulate nutrient bio-availability, and influence the mobility and bio-activity of chemicals such as pesticides, contaminants, and natural signaling chemicals between soil organisms. Such effects may be beneficial or not, depending on production conditions, soil type, climate and the crop grown.

Viticulture Research in Connecticut

Department: Forestry and Horticulture
Investigators: Dr. William R. Nail

Abstract: The climate of northeastern United States presents several challenges for growing high quality grapes. Several studies are being done at CAES and cooperating vineyards to help growers determine the best, environmentally sound, and profitable growing practices for Connecticut. Comprehensive cultivar trials at Lockwood Farm and the Valley Laboratory compare new cultivars with more established ones. Other studies involve the impact of various cultural practices on vineyard performance and fruit quality.

Assessing Internal Decay in Hardwood Trees Using Sonic and Electrical Impedance Tomography

Department: Plant Pathology and Ecology
Investigators: Dr. Robert E. Marra
Assistants: Mr. Joseph P. Barsky

Abstract: The internal condition of wood in standing living trees can be accurately and nondestructively assessed using new technologies that involve the transmission and detection of sound waves and electrical currents as they travel from multiple points around the circumference of the tree. The resulting cross-sectional image depicts relative densities and degrees of water saturation, which correlate to degrees of fungal colonization and incipient decay.

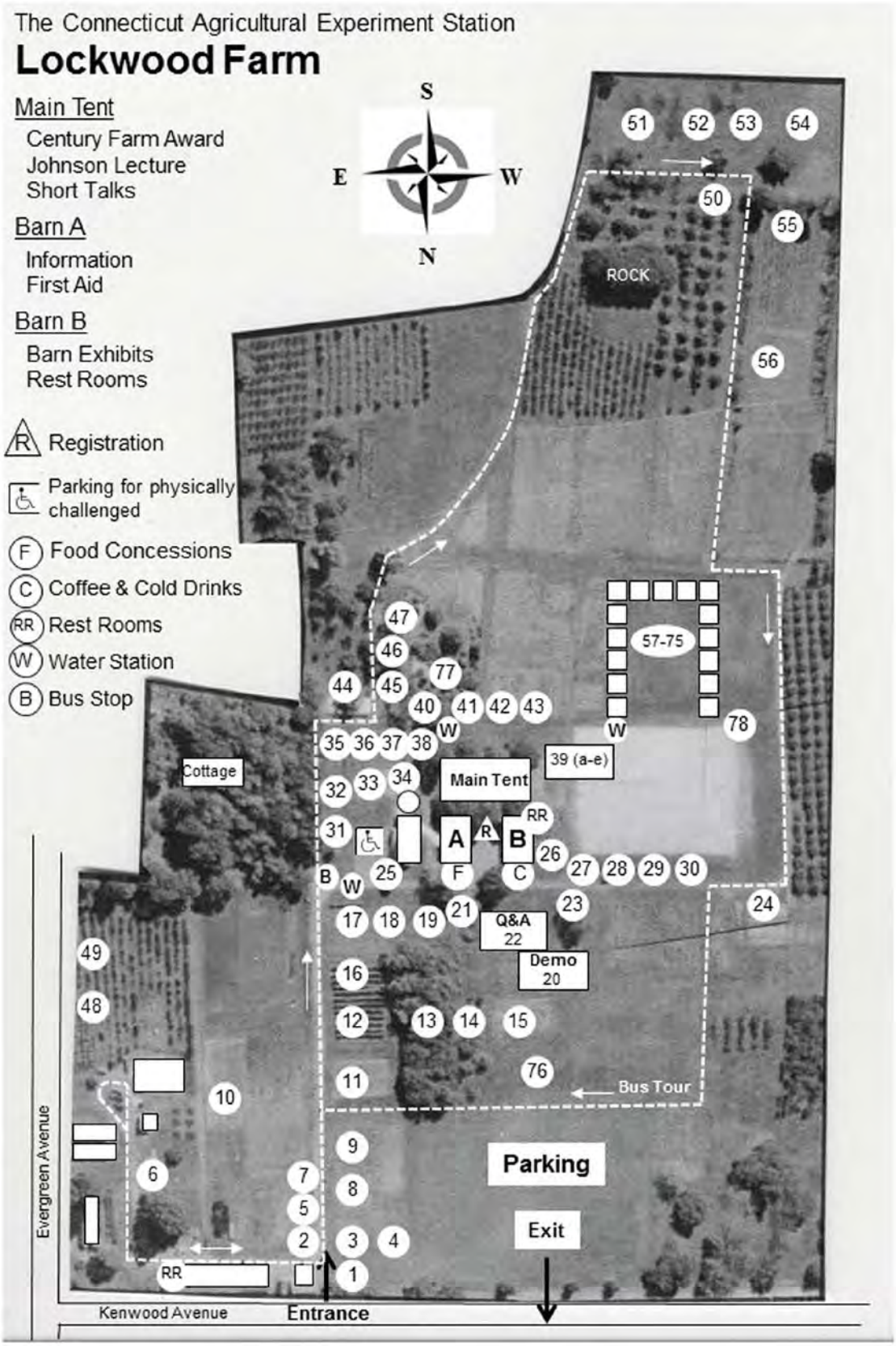
THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

The experiments exhibited here depict only a portion of the work performed by Experiment 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 WEB PAGE: WWW.CT.GOV/CAES

TO RECEIVE A COMPLETE LIST OF STATION SPEAKERS: inquire at the publications table in barn A, 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, e-mail Vickie.Bomba-Lewandoski@ct.gov, or on the web at http://www.ct.gov/caes/cwp/view.asp?a=2812&q=345128.

TO RECEIVE A COMPLETE LIST OF AVAILABLE EXPERIMENT STATION PUBLICATIONS: Inquire at the publications table in barn A, 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, e-mail Vickie.Bomba-Lewandoski@ct.gov, or on the web at http://www.ct.gov/caes/cwp/view.asp?a=2826&q=378184.


The Connecticut Agricultural Experiment Station
Lockwood Farm
Main Tent
Century Farm Award
Johnson Lecture
Short Talks
Barn A
Information
First Aid
Barn B
Barn Exhibits
Rest Rooms
R Registration
Parking for physically challenged
F Food Concessions
C Coffee & Cold Drinks
RR Rest Rooms
W Water Station
B Bus Stop
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E
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N
ROCK
Cottage
Main Tent
39 (a-e)
57-75
Q&A
22
Demo
20
Bus Tour
Parking
Exit
Entrance
Evergreen Avenue
Kenwood Avenue

FIELD PLOT LISTING

Outside Organizations (57-75) invited to participate

1. Chinese Chestnut Trees
2. Specialty Pepper Trials
3. Sheet Composting with Oak and Maple Leaves
4. Sweet Potato Trials
5. Specialty Eggplant Trials
6. Butternuts and Heartnuts
7. Specialty Pumpkin Trials
8. Annual Culture of Globe Artichokes
9. Edamame Trials
10. Use of Earthworms and Biochar to Suppress Fusarium Crown Rot of Asparagus
11. Commercial Chestnut Cultivars
12. Table Grape Demonstration Plot
13. Control of Blight on American Chestnuts
14. New Hybrid Chestnut Orchard
15. Use of Earthworms and Biochar to Suppress Verticillium Wilt of Eggplant
16. Hybrid Winegrape Cultivar Trial
17. Comparison of Graft Union Height on Chardonnay Grapevines
18. Seedlings of Old Surviving American Chestnuts
19. Wild Chestnuts from Turkey
20. Technical Demonstration Tent
21. Mosquito Trapping and Testing Program for West Nile and Eastern Equine Encephalitis Viruses
22. Question and Answer Tent
23. Invasive Alien Insects in Connecticut
24. Composting Leaves Using the Static Pile Method
    25. Verizon Telephone Transmission Silo
    26. The Farmer's Cow
27. Kid's Korner Tent
    28. Girl Scouts of America
29. Deer Repellent Trial on Hostas in Connecticut
30. Invasive Aquatic Plant Program
31. Biological Control of Hemlock Woolly Adelgid and Mile-a-Minute Weed in Connecticut
32. Oilseed Crops for Biological Control of Soilborne Pathogens
33. Using Leaf Compost in Home Gardens
34. Environmentally-Friendly Control of Powdery Mildew on Vegetable Plants
35. Nanomaterial Contamination of Agricultural Crops
36. Systemic Insecticides to Manage Pests on Eastern Hemlocks
37. *Cerceris fumipennis*, the Beetle Hunting Wasp
38. Experiment Station Associates
39. TICK TENT
    a) Lyme Disease in Ticks from Connecticut Citizens
    b) Prevalence of Antibodies to the Deer Tick Virus in Deer
    c) The "Deer" Tick, *Ixodes scapularis*
    d) Natural and Biological Tick Control
    e) Protect our Trees: Stop the Asian Longhorned Beetle and Emerald Ash Borer
40. Native Woody Shrubs
41. Bird and Butterfly Garden

42. Herbs and Cut Flowers as Potential Nectar and Pollen Sources for Bees
43. Life in the Soil
44. Chestnut Species and Hybrids
45. Bees, Trees and Commodities: The Survey and Inspection Team
46. Eastern Bluebird, *Sialia Sialis*, Nest Box Trial
47. *Spadicoides subsphaerica*, a new species of fungus from CAES Lockwood Farm, Connecticut
48. Environmentally-Friendly Control of Powdery Mildew on Landscape Plants
49. Powdery Mildew on Chardonnay Wine Grapes
50. Rocky Hill American Chestnut Trees
51. Calabaza Squash Selection Trials
52. Beach Plum Trials
53. Japanese Plum Variety Trials
54. Hybrid Elm Trees
55. Pinot Gris Cultural Trials
56. Hybrid and Vinifera Winegrape Cultivar Trial
57. Connecticut Invasive Plant Working Group
58. Elm City Market
59. USDA, National Agricultural Statistics Service, New England Field Office
60. Connecticut Horticultural Society
61. American Farmland Trust/Working Lands Alliance
62. Connecticut Farm Bureau Association
63. Connecticut Professional Timber Producers Association
64. The Connecticut Department of Energy and Environmental Protection: Division of Forestry
65. Connecticut Department of Agriculture
66. Connecticut Green Industries Council
67. Connecticut Northeast Organic Farming Association
68. USDA, Animal and Plant Health Inspection Service, Plant Protection and Quarantine
69. buyCTgrown
70. USDA Natural Resources Conservation Service
71. Friends of Brooksvale, Inc.
72. United States Department of Labor / OSHA
73. Connecticut Farmland Trust
74. 14th Civil Support Team (WMD)
75. CT Agricultural Education Foundation
76. NOAA Weather Station
77. CT Nurserymen's Garden
78. Sound School Agricultural Science Program

FIELD PLOT ABSTRACTS

The plots at Lockwood Farm are planted and maintained by Experiment Station scientists with the extensive help of Farm Manager Richard Cecarelli and his assistants, Rollie Hannan, Michael McHill, Lauren Bespuda, Leon Chong, Deshawn McGregor, Sergei Poljak, and Audrey Campos.

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, CT 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, CT. 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. SPECIALTY PEPPER TRIALS

A. Maynard and D. Hill

Specialty peppers include both hot and sweet varieties of unusual shape, size, or color. Colored peppers have extra flavor, nutrition, and aesthetic appeal, and therefore command a higher market price. Most colored peppers are obtained by leaving the fruits on the bush until they reach mature color (e.g., red, yellow, orange). Others, such as banana pepper, are pale yellow even when immature. Green bell peppers are high in vitamin C (one medium green bell pepper contains 177 percent of the RDA for vitamin C). As they mature and sweeten (turn color), the vitamin A content rises 9-fold while the vitamin C content doubles. This trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of 10 colored sweet bell pepper cultivars.

3. SHEET COMPOSTING WITH OAK AND MAPLE LEAVES

A. Maynard and D. Hill

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 1995-2010 and incorporated into the soil by rototilling. Last year, lettuce, eggplant, and onions 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 2010, lettuce yields from plots amended with oak or maple leaves were slightly greater (1.2 lbs/head) compared to yields from the unamended control plots (1.0 lbs/head). The greatest eggplant yields were from the unamended control plots (11.6 lbs/plant) followed by plots amended with oak leaves (10.8 lbs/plant) and the unamended control plots (10.6 lbs/plant). The greatest onion yields were from the plots amended with oak leaves (9.0 lbs/10 ft row) followed by the control plots (8.7 lbs/10 ft row) and plots amended with maple leaves (6.2 lbs/10 ft row).

4. SWEET POTATO TRIALS

A. Maynard and D. Hill

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 at several cultivars that have short maturities (90 days). The cultivars will be evaluated on yield and quality. This experiment is also repeated at our Valley Laboratory in Windsor. Last year, Covington and Beauregard averaged the greatest yields (3.3 lbs/plant) with both O'Henry and Jewels averaging 3.0 lbs/plant.

5. SPECIALTY EGGPLANT TRIALS

A. Maynard and D. Hill

Eggplants are a botanically diverse group that can be divided into two groups based on fruit shape and color. The first group and more traditional type are the teardrop-shaped, large-fruited eggplant. The second group is collectively referred to as the "specialty" eggplants. Fruit shapes of specialty eggplants vary, but are often long and smooth, ball- or bell-shaped. Fruit

colors widely range from white, to green, to purplish black, to purple. Japanese and Chinese eggplants tend to be long and thin, looking like purple fingers. White, green, and striated versions of these cultivars are also available. Thai eggplants, on the other hand, are more spherical, and also display a range of colors. Thai eggplant can also be very small, with one version looking remarkably like a chicken egg. Asian eggplants are used extensively in Oriental cuisine, but can also be used in Western dishes. They are sweet and tender, in contrast to traditional eggplant which has a slightly bitter flavor. This trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of 10 specialty eggplant cultivars. Last year, Hansel (18 lbs/plant) had the greatest yields followed by Fairy Tale, Ichiban, and Little Purple Tiger (12 lbs/plant).

6. 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 in Chester, CT. These small trees came from Tennessee, and will be checked for species as well as for disease resistance.

7. SPECIALTY PUMPKIN TRIALS

A. Maynard and D. Hill

The typical predominant market for pumpkins is for jack-o'-lantern types (12 lbs to 20 lbs). However, small pumpkins are often needed for operations specializing in school tours where each child receives a pumpkin to take home. Smooth pumpkins are preferred for painting or coloring. Specialty pumpkins come in a wide range of colors and color combinations including white, pale green, tan, burnt orange, and yellow. Shape also varies from the ideal round, to squatty with a flattened or concave top, to oval, to tall and elongated. This trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of 10 specialty pumpkin cultivars. Last year, Moonshine (12.2 fruit/plant), Gooligan (8.7 fruit/plant), Hooligan (8.0 fruit/plant), Apprentis (7.3 fruit/plant), and Lil Pump-K-Mon (6.8 fruit/plant) had the greatest yields.

8. ANNUAL CULTURE OF GLOBE ARTICHOKES

A. Maynard and D. Hill

Connecticut lies at the center of one of the largest artichoke-eating populations in the United States. Fully 40% of California's crop is sold through regional markets from New York to Boston. Annual production of Green Globe is triggered by use of vernalization (cool, moist treatment). Green Globe requires 500-600 cumulative hours of below 50F temperatures to induce budding compared to Imperial Star which needs only 250 hours of cool temperatures. This year, we also have some plants from last year which survived the winter.

9. EDAMAME TRIALS

A. Maynard and D. Hill

Specialty varieties of soybeans, known as edamame, are harvested in the green stage. The word "edamame" means "beans on branches" and it grows in clusters on bushy branches. Edamame is consumed as a snack, a vegetable dish, used in soups or processed into sweets. As a snack, the pods are lightly boiled in salted water, and then the seeds are squeezed directly from the pods into the mouth with the fingers. Outside East Asia, edamame is most often found in Japanese restaurants and some Chinese restaurants, but it has also found popularity elsewhere as a healthy food item. We are conducting cultivar trials here and at our Valley Laboratory in Windsor. Varieties will be evaluated on yield and quality. Last year, Sunrise (0.7 lbs/plant), Midori Giant (0.6 lbs/plant), and Mojo Green (0.6 lbs/plant) were the highest yielding cultivars.

10. USE OF EARTHWORMS AND BIOCHAR TO SUPPRESS FUSARIUM CROWN ROT OF ASPARAGUS

W. Elmer *Assisted by* P. Thiel

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 than the pots not amended with earthworms. Biochar, a fine ground charcoal product that has a high absorptive capacity, also has been shown to suppress the asparagus disease in the greenhouse. These plots were designed to study the role of earthworms and biochar alone and in combination to determine their effect on asparagus under field conditions.

11. COMMERCIAL CHESTNUT CULTIVARS

S. Anagnostakis *Assisted by* P. Sletten

These grafted trees are commercial cultivars of orchard chestnut trees. Included is 'Colossal' (Japanese X European), which is the most frequently planted commercial cultivar in the U.S., with large acreages on the West Coast. Cultivar 'Bouche de Betizac' (also Japanese X European) is a more consistent nut producer. Cultivar 'Eaton' is a Chinese X (Japanese X American) released by CAES. We are evaluating the potential of these commercial cultivars of chestnut trees for Connecticut.

12. TABLE GRAPE DEMONSTRATION PLOT

W. Nail *Assisted by* A. Campos

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 bore their first (small) crop in 2008, with full crops since. Each row is trained to a different training system: Vertical Shoot Positioning, Hudson River Umbrella, and Smart-Dyson.

13. 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.

14. NEW HYBRID CHESTNUT ORCHARD

S. Anagnostakis *Assisted by* P. Sletten

These 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.

15. USE OF EARTHWORMS AND BIOCHAR TO SUPPRESS VERTICILLIUM WILT OF EGGPLANT

W. Elmer *Assisted by* P. Thiel

Eggplants are susceptible to a destructive soil-borne fungus called *Verticillium dahliae* that causes stunting and wilt. Past field studies have shown that augmenting field plots with adult earthworms can suppress Verticillium wilt and increase growth. Biochar, a fine ground charcoal product that has a high absorptive capacity, also has been shown to suppress soil-borne diseases. These plots are designed to study whether the combination of earthworms and biochar can provide more disease control than either treatment alone.

16. HYBRID WINEGRAPE CULTIVAR TRIAL

W. Nail *Assisted by* A. Campos

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.

17. COMPARISON OF GRAFT UNION HEIGHT ON CHARDONNAY GRAPEVINES

W. Nail *Assisted by* A. Campos

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 95 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. Dataloggers are placed at each graft union height. Comparisons for yield, fruit quality, and winter damage began in 2009 and will continue through 2012. High-grafted vines had significantly higher yields than low grafted vines in 2009.

18. SEEDLINGS OF OLD SURVIVING AMERICAN CHESTNUTS

S. Anagnostakis *Assisted by* P. Sletten

In the southern U.S., large surviving American chestnut trees have been found scattered through the range. When we checked the blight fungi in the cankers on these old trees, we found several new kinds of hypovirulence viruses. We believe that these trees have a little more resistance than surrounding trees, which all died of blight, and that allowed viruses from other fungi in the area to infect the blight fungus. The American Chestnut Cooperators Foundation www.ppws.vt.edu/griffin/accf.html has been collecting cuttings from these survivors and grafting them together in orchards where they can cross with each other. This will allow any resistance genes present in individuals to be joined together in the resulting seedlings. The ACCF sent us this collection of seedlings that we have interplanted with seedlings from crosses of American trees here at Lockwood Farm. We will compare their winter hardiness and blight resistance with that of the European chestnut trees from Turkey and the old American chestnut trees north of them.

19. WILD CHESTNUTS FROM TURKEY

S. Anagnostakis *Assisted by* P. Sletten

These seedling trees are from six wild populations along the Black Sea in Turkey. Those from the eastern border are near the population in the Caucasus Mountains where European chestnuts (*Castanea sativa*) survived the ice ages, and are genetically quite diverse. Those from the western border are much less diverse. We are growing these here to compare their winter hardiness and resistance to chestnut blight disease with that of American chestnut trees and with the seedlings from "old survivors" planted next to them.

20. TECHNICAL DEMONSTRATION TENT

See the Program page 7-9 for a schedule of Technical Demonstrations.

21. 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, A. Brush, E. Calandrella, J. Dickman, S. Fayer, G. Frank, J. Joy, P. Kusmierski, T. Hannon, M. Olsen, C. Ngo and S. Vitelli

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 scientists at the Center for Vector Biology & Zoonotic Diseases, 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 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 2 million mosquitoes. A total of 1,002 isolations of WNV have been made from 21 different species of mosquitoes, and a total of 328 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.

22. QUESTION AND ANSWER TENT

Y. Li, R. Hiskes, M. Inman, T. Mervosh, 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.

23. INVASIVE ALIEN INSECTS IN CONNECTICUT

C. Maier *Assisted by* T. Zarrillo, M. Lowry, E. Bulger, and K. O'Donnell

Invasive alien insects have a significant impact upon the economy and the biodiversity of Connecticut. Annually, state and federal agencies conduct surveys to detect new foreign insects and to determine the distributional range of established ones.

Early detection, in particular, greatly decreases the cost of coping with alien invaders. The cost of non-native insects can be reduced even further by conducting research on their behavior and ecology to develop effective strategies to eradicate them or to slow their spread. Our distributional studies during the past year have focused on the brown marmorated stink bug, the lily leaf beetle, and the viburnum leaf beetle.

24. COMPOSTING LEAVES USING THE STATIC PILE METHOD

A. Maynard and D. Hill

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°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.

25. VERIZON TELEPHONE TRANSMISSION SILO

Learn about the cellular transmission tower.

26. 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. 51 percent of Connecticut farmland is in dairy or dairy support. In 2003, there were 191 dairy farms remaining in Connecticut. 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.

27. KID'S KORNER TENT

R. Milano-Ottenbreit

28. GIRL SCOUTS OF AMERICA

T. Arsenault

Girl Scouts of the USA is the world's preeminent organization dedicated solely to girls—all girls—where, in an accepting and nurturing environment, girls build character and skills for success in the real world. Established on March 12, 1912 by Juliette Gordon Low, Girl Scouts has been helping girls in Connecticut build courage, confidence, and character while developing uncommon leadership skills that serve the common good. Scouting provides a myriad of enriching experiences, such as extraordinary field trips, sports skill-building clinics, community service projects, cultural exchanges, and environmental stewardships. Currently, there are 2.3 million members of Girl Scouts nationwide, including about 44,000 girls here in Connecticut. For more information contact our local Girl Scout council at http://www.gsofct.org.

29. DEER REPELLENT TRIAL ON HOSTAS IN CONNECTICUT

S. Williams *Assisted by* M. Short, L. White and L. Ariori

Come see, learn about, and experience different deer repellent formulations used for repelling deer from eating ornamental plants. Several of the formulations are commercially available; others can be made from ingredients from your kitchen. We are in the process of testing the effectiveness of these repellents at two different locations in Connecticut. Final results will be available at the end of the growing season so stay tuned.

30. INVASIVE AQUATIC PLANT PROGRAM

G. Bugbee and M. June-Wells *Assisted by* M. Cavadini, J. Fanzutti, J. Gibbons and B. Hart

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 in native plants, fish and other beneficial organisms. Researchers in the Department of Environmental Sciences are documenting our state's invasive aquatic plant problem and studying management options. We are continuing a statewide inventory of freshwater aquatic vegetation. From 2004-2010, the invasive and native plants in 170 lakes and ponds were surveyed and mapped. We documented over 100 plant species with 13 of them being invasive. Approximately two-thirds of the water bodies contained one or more invasive species. In 2010, we resurveyed several lakes we originally surveyed in 2004 and observed dramatic increases in the area of invasive species. Requests for Station assistance in managing unwanted aquatic vegetation are common. 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 boat and underwater video equipment. Samples of the most common invasive aquatic plants will be on display and an identification guide will be available. A researcher will be available to discuss our program to answer questions about lakes and ponds.

31. BIOLOGICAL CONTROL OF HEMLOCK WOOLLY ADELGID AND MILE-A-MINUTE WEED IN CT

C. Cheah

Hemlock woolly adelgid (HWA) has been a serious forest, nursery and landscape exotic pest since its first detection in Connecticut in 1985. In response to the HWA threat to eastern hemlocks, the Station, with the support of the USDA Forest Service discovered, reared and released the tiny Japanese ladybeetle, *Sasajiscymnus tsugae*, for biological control of HWA. To date, > 176,000 *S. tsugae* have been released in 26 sites statewide in Connecticut, the majority occurring between 1995 and 2001. Since 2005, there has been widespread recovery of forest hemlocks. Mile-a-minute weed (MAM) was initially reported in Connecticut in 1997 and is currently found in 18 towns. In 2009, a tiny weevil, *Rhinoncomimus latipes*, was released in Connecticut as a part of the federal biological control program for MAM. To date, 13,000 weevils have been released, during 2009 and 2010, in 8 towns to control MAM. Updates on the current pest status of these two invasive species with information on the biological control programs are presented.

32. OILSEED CROPS FOR BIOLOGICAL CONTROL OF SOILBORNE PATHOGENS

J. LaMondia *Assisted by* M. Salvas

Biofumigation results from the incorporation and decomposition of plant residues which release chemicals that kill pests or pathogens in soils. Brassica crops contain chemicals called glucosinolates that can decompose to a number of different metabolites that can be effective against pathogens. We have found that different Brassica seed meals (the seed remaining after oil extraction) with different glucosinolate content can help control pathogens such as plant parasitic nematodes and fungi. In addition to biofumigation, Brassica crops can be used to produce oil for biodiesel and seed meals for organic fertilizers.

33. USING LEAF COMPOST IN HOME GARDENS

A. Maynard and D. Hill

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, the 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.

34. ENVIRONMENTALLY-FRIENDLY CONTROL OF POWDERY MILDEW ON VEGETABLE PLANTS

F. Ferrandino *Assisted by* V. Christian

Many vegetable plants commonly used in Connecticut gardens 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 contains a number of common vegetables (tomato, pepper, eggplant, squash, and muskmelon), 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.

35. NANOMATERIAL CONTAMINATION OF AGRICULTURAL CROPS

J. White *Assisted by* C. Musante and J. Hawthorne

Nanomaterials (NM) have at least one dimension less than 100 nanometers (one billionth of a meter), and this small size results in unique properties not observed with equivalent bulk particles. For example, at that size range, materials that are normally good insulators actually become conductive (silicon) and other elements that are generally stable actually become chemically reactive (gold). Current nanomaterial use is ubiquitous; over 1000-NM containing products are commercially available in areas such as electronics, health-care, cosmetics, pharmaceuticals, and food processing. We specifically note the recent and increasing use of nanomaterials in agriculture, including pesticides and fertilizers directly applied to food crops. We have begun a research project that will characterize the impact of NMs on common agricultural crops, eventually focusing on potential risk posed to humans from exposure to these materials. Our data suggest that exposure to nanoparticle silver, copper, and multiwalled carbon nanotubes negatively impacts agricultural plants and that this effect is greater than observed with equivalent bulk materials.

36. SYSTEMIC INSECTICIDES TO MANAGE PESTS ON EASTERN HEMLOCKS

R. Cowles

Control of hemlock woolly adelgids and elongate hemlock scales is often difficult because the foliage is very dense, such as in a hedge, or the trees are difficult to spray, such as with tall trees or where spray drift would be a problem. These insects can be effectively managed with soil or trunk spray applications of the systemic insecticides imidacloprid or dinotefuran. Imidacloprid has the advantages of being relatively inexpensive and extremely long lasting (5 – 7 years of protection from adelgids are commonly observed), but it is transported slowly in trees and provides no benefits for managing armored scales. Dinotefuran is very rapidly absorbed and transported in trees and kills armored scales, but is not expected to provide more than about 2 years of direct benefit. This display provides suggestions on how these products may most efficiently be used to keep our hemlock trees healthy.

37. *CERCERIS FUMIPENNIS*, THE BEETLE HUNTING WASP

C. Rutledge *assisted by* M. Scott

A major challenge to the effective management of wood-boring insects has been the difficulty of detecting them. In particular, the Emerald Ash Borer (EAB), an invasive beetle in the family Buprestidae that attacks and kills native, healthy ash trees is often in an area 4-6 years before it is discovered. It was discovered in Detroit in 2002, and probably came over from its native Asia in solid-wood packing material at the port. It is rapidly spreading across the country and has been discovered in 13 states and 2 Canadian provinces. Other non-native beetles in the family Buprestidae are also considered high-risk for accidental introduction. Recently a novel approach to surveying for EAB and its relatives has been developed. The native, solitary wasp, *C. fumipennis*, feeds its offspring adult buprestid beetles. If EAB is in the area, it will be among the prey taken by the wasps. By watching which beetles are brought back to the nest, we can determine whether or not EAB, or any other invasive buprestid, is in the area.

38. EXPERIMENT STATION ASSOCIATES

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

39. TICK TENT

a) LYME DISEASE IN TICKS FROM CONNECTICUT CITIZENS

J. Anderson *Assisted by* E. Alves and B. Hamid

In 2010, 2,302 black-legged (deer) ticks (*Ixodes scapularis*) were received, as well as 148 American dog ticks (*Dermacentor variabilis*) and 54 lone star ticks (*Amblyomma americanum*). Of the tested black-legged ticks, 32% (399 of 1,246) were infected with the Lyme disease organism, *Borrelia burgdorferi*. The average time between receipt of a tick and reporting on the tick to the senders was 8.73 days.

All ticks submitted by municipal health departments are identified to species and degree of engorgement, but only deer ticks that have fed on blood are tested for the presence of the Lyme disease bacterium. Studies by other researchers have shown that ticks without blood in their midgut do not transmit the Lyme disease-causing organisms.

b) PREVALENCE OF ANTIBODIES TO THE DEER TICK VIRUS IN DEER

L. Magnarelli *Assisted by* T. Blevins, R. Nofchissey, E. Deardorff, M. Anishchenko, A. Brault and G. Ebel

White-tailed deer sera, collected in Connecticut between 1979 and 2009, were screened for neutralizing antibodies against a tick-transmitted virus called the "deer tick virus". This pathogen (transmitted by *Ixodes scapularis* ticks) is closely related to Powassan virus and can cause disease in humans. Prevalence of antibodies in deer increased over the 30-year period, and there was evidence of viral infections in all 8 counties. Based on these results, this tick-borne virus represents an emerging threat to human health and adds to the problems caused by infectious agents that cause Lyme disease, human granulocytic anaplasmosis, and human babesiosis.

c) THE "DEER" TICK, *IXODES SCAPULARIS*

K. Stafford *Assisted by* A. Bharadwaj, H. Stuber and M. Haas

The blacklegged tick or "deer" tick, *Ixodes scapularis*, transmits the agents of Lyme disease, human babesiosis, and human granulocytic anaplasmosis in Connecticut. Observe live and preserved ticks under the microscope. Copies of the Tick Management Handbook are available.

d) NATURAL AND BIOLOGICAL TICK CONTROL

A. Bharadwaj and K. Stafford *Assisted by* H. Stuber and M. Haas

We continued field experiments with garlic at home sites this summer to further determine the efficacy of this natural compound for tick control. Some botanical-based products can provide relatively good reductions in tick activity, but may require more frequent applications than synthetic chemical pesticides.

e) PROTECT OUR TREES: STOP THE ASIAN LONGHORNED BEETLE AND EMERALD ASH BORER

R. Hiskes *Assisted by* K. Dugas

Connecticut's forests and urban trees are under threat from two exotic beetles: the Asian Longhorned Beetle (ALB) and the Emerald Ash Borer (EAB). These beetles have wood-boring larvae that kill deciduous trees by their feeding. In 2008, the ALB was detected within 30 miles of CT's border in Worcester, MA. Last year ALB was found in Boston. EAB was found last summer on the west bank of the Hudson in Saugerties, NY; this means EAB is about 25 miles from Connecticut's western border. Learn how to recognize these two invasive species, the host trees they affect, the damage they cause, and how to report potential findings to the CAES.

40. NATIVE WOODY SHRUBS

J. Ward *Assisted by* J. Barsky

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 flowers 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.

41. BIRD AND BUTTERFLY GARDEN

J. Canepa-Morrison *Assisted by* J. Fengler

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 Experiment Station can provide you support by answering your questions and suggesting ways for you to enjoy a butterfly garden small or large on your patio or in your yard.

42. HERBS AND CUT FLOWERS AS POTENTIAL NECTAR AND POLLEN SOURCES FOR BEES

K. Stoner *Assisted by* T. Zarrillo, M. Lowry, E. Bulger and K. Madrid Obando

In recent years, severe losses of honey bees and the decline in species diversity of bumble bees have raised concerns about the future of bees and the pollination services they provide. There are many possible factors that may be involved in

pollinator decline. One is a lack of diversity of flowering plants on farms throughout the season as sources of nectar and pollen for bees. We are looking at flowering plants like cut flowers and herbs, which could serve multiple purposes on farms. Farmers could grow the plants for their benefits to pollinators and also market the flowers and herbs. In this plot, we are growing popular herbs and cut flowers and measuring the abundance and diversity of bees on each species. This research is funded by a Conservation Innovation Grant from the Connecticut office of the Natural Resources Conservation Service.

43. LIFE IN THE SOIL

C. Vossbrinck

The soil ecosystem is filled with a large number of different types of animals, fungi, protozoa and bacteria. The animals include the relatively large earthworms, as well as insects and insect larvae, spiders, mites, tiny nematodes, waterbears and the numerous parasites that feed upon them. Life in the soil is different indeed. The soil crumb space is used as an important place to hide from predators. In addition, the soil also contains fungi that are adapted to catch and feed upon the tiny nematodes. The fungi and bacteria are also responsible for breaking down leaf litter. A single footprint in the forest or on the grass may cover several tiny spiders, 25 insects, 100 mites, 1,000 nematodes, millions of fungi and hundreds of billions of bacteria. All of these creatures have amazing adaptations to life in the changing conditions of the soil; they can withstand the dryness and come to life, grow and multiply and move about when it rains. In addition, they each have their own parasites which live in and on them and their diseases have diseases. It's truly an amazing world.

44. CHESTNUT SPECIES AND HYBRIDS

S. Anagnostakis *Assisted by* P. Sletten

These trees are a part of the large collection of species and hybrids of chestnut maintained by The 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 13). 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.

45. BEES, TREES AND COMMODITIES: THE SURVEY AND INSPECTION TEAM

V. Smith *Assisted by* 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 8,500 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, and diseases such as anthracnose and Septoria leaf spot. Examples of insect pests and plant diseases are exhibited. Insect survey maps are shown. Connecticut has over 500 beekeepers tending over 3,600 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.

46. EASTERN BLUEBIRD, *SIALIA SIALIS*, NEST BOX TRIAL

L. Kaczenski

A Bluebird trail consists of a minimum of six nesting boxes spaced a hundred yards or more apart. Here at Lockwood Farm, we have twenty nesting boxes located throughout the farm. I also have a second trail at Gouveia Vineyards in Wallingford with ten nesting boxes; this will be the third year at the Gouveia Vineyards and the sixth year at Lockwood. 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. Both trails are registered with Cornell's NestWatch program; the data collected during the weekly monitoring (inhabitants, clutch size, predation, successful fledging, etc.) is submitted, at the end of each nesting season, to the Cornell Laboratory of Ornithology helping scientists' with their research of the Eastern Bluebird.

47. *SPADICOIDES SUBSPHAERICA*, A NEW SPECIES OF FUNGUS FROM CAES LOCKWOOD FARM, CT

D. Li

Spadicoides subsphaerica, a new fungal species, is described and illustrated from a specimen collected from Lockwood Farm, Hamden, CT.

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

F. Ferrandino *Assisted by* V. Christian

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 contains a number of common perennial landscape plants (lilac, deciduous azalea, bee balm, peony and phlox) as well as common annual flowers (zinnia and rudbeckia, commonly called "black-eyed susans") 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.

49. POWDERY MILDEW ON CHARDONNAY WINE GRAPES

F. Ferrandino *Assisted by* V. Christian

Wine grapes and wineries are a relatively new industry in Connecticut. In the past 11 years, acreage planted to wine grapes has gone from 160 A to 440 A and the number of wineries has gone from 15 to 34, producing about 300,000 gallons of wine valued at between 8-10 million dollars per year. In our climate, powdery mildew has the greatest impact on wine-grape yield of all pathogens and pests. This plot is planted with Chardonnay vines which are prized for the quality of the wine they produce but are very susceptible to powdery mildew. Over the next few years, the relation between the onset of powdery mildew and climate will be closely followed in order to attune disease-risk models to our local weather conditions.

50. 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 13) to keep them alive.

51. CALABAZA SQUASH SELECTION TRIALS

A. Maynard and D. Hill

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 115 farmers' markets. We are developing a cultivar that produces fruit on shorter vines by saving seeds from plants that have produced fruit within 2 feet of the plant. These seeds are planted 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 forms on longer vines do not always reach maturity before frost. In 2009, 82% of the plants produced fruit within 2 feet of the plant. Selections will continue for several more years.

52. BEACH PLUM TRIALS

A. Maynard and D. Hill

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.

53. JAPANESE PLUM VARIETY TRIALS

A. Maynard and D. Hill

As wholesale marketing of major tree fruits becomes unprofitable, many Connecticut growers are turning to retail sales of their fruit. For 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. Many trees, with the exception of the cultivar Obilnaja, have been damaged by black knot disease.

54. HYBRID ELM TREES

S. Anagnostakis *Assisted by* P. Sletten

The late Eugene Smalley spent his whole career at the University of Wisconsin breeding elm trees for resistance to Dutch Elm Disease and for the tall, vase-shaped form of American elm trees (*Ulmus americana*). The problem with this kind of breeding is that American elms have four sets of chromosomes, and all the other species of elm have two sets. They bloom at different times, but stored pollen can be used to make crosses. In 1992, Dr. Smalley sent us trees of Chinese elm (*Ulmus parvifolia*) and some of his successful crosses. Mortality has been high, but some of the trees still survive. A few of them look like good replacements for American elms as street trees.

55. PINOT GRIS CULTURAL TRIALS

W. Nail *Assisted by* A. Campos

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.

56. HYBRID AND VINIFERA WINEGRAPE CULTIVAR TRIAL

W. Nail *Assisted by* A. Campos

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 third largest NE-1020 planting in the eastern states. Another, smaller, cultivar evaluation plot has been established at the Windsor station.

57. 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 other 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, alternative replacements for invasives, and a calendar of events. For additional information, or to become a member of CIPWG, please contact Donna Ellis 860-486-6448; email donna.ellis@uconn.edu.

58. ELM CITY MARKET

A. Christensen-Regni

Many New Haveners have to travel outside the city to purchase groceries; many other local residents, lacking the means to travel outside the city, must go without key staples and affordable fresh healthy food. New Haven is a food town to the core. Yet the city that invented the hamburger, perfected the pizza, and boasts the densest downtown in Connecticut currently has no full-service grocery store. In late 2009 a group of property owners and concerned citizens came together to fix this problem. We have been working tirelessly to develop an independent, member-owned grocery store that will serve the unique needs of New Haven. As a hybrid co-op that provides local, natural, organic, and conventional products and groceries, Elm City Market will reflect the needs of the community in a way that no national chain could in order to provide the sustenance that New Haven needs now. Website: www.elmcitymarket.coop

59. USDA, NATIONAL AGRICULTURAL STATISTICS SERVICE, NEW ENGLAND FIELD OFFICE

G. Keough

Agricultural statistics are important because they provide 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 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).

60. CONNECTICUT HORTICULTURAL SOCIETY

C. Testa

The Connecticut Horticultural Society, founded in 1887, is an educational organization dedicated to encouraging and improving the practice of gardening and the dissemination of horticultural information to its members and the public. The society, through its many and varied programs seeks to encourage the enjoyment, appreciation and understanding of plants, the environment, and the art and science of gardening. Monthly meetings are held in West Hartford, while workshops are held around the state. Today you'll learn about CHS programs for the upcoming year, speak with members of the Society and participate in their free raffle for a compost bin (value $125).

61. AMERICAN FARMLAND TRUST/WORKING LANDS ALLIANCE

B. Bowell

American Farmland Trust is the nation's leading conservation organization dedicated to saving America's farm and ranch land, promoting environmentally sound farming practices and supporting a sustainable future for farms. As the vital link among farmers, conservationists and policy-makers, we're focused on ensuring the availability of the land that provides fresh food, a healthy environment and lasting rural landscapes. Since our founding in 1980 by a group of farmers and citizens concerned about the rapid loss of farmland to development, we've helped to save more than three million acres of farmland and led the way for the adoption of conservation practices on millions more. A project of American Farmland Trust, the Working Lands Alliance is a coalition of caring individuals and more than 200 organizations and businesses working together to raise awareness of the need and importance of saving Connecticut's valuable and vanishing farmland. WLA's members reflect the diversity of people who share a concern about farmland preservation in Connecticut - farmers, municipal officials, environmentalists, anti-hunger advocates, and historic preservationists.

62. CONNECTICUT FARM BUREAU ASSOCIATION

C. Melmer

Connecticut Farm Bureau Association (CFBA) is a non-profit membership organization dedicated to farming and the future of Connecticut farms. CFBA serves its members by advocating for agriculture, and educating the public and elected officials on issues that keep farm families productive: economic viability, land use, labor, taxation and the protection of farmland. Connecticut Farm Bureau's work of proactively representing the interest of farmers is vital to providing safe, locally grown, farm-fresh products and a high quality of life for all Connecticut residents. www.cfba.org

63. CONNECTICUT PROFESSIONAL TIMBER PRODUCERS ASSOCIATION

J. Nichols

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.

64. THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION: DIVISION OF FORESTRY

C. Donnelly
The CT Department of Energy and Environmental Protection Division of Forestry perform a range of services for the citizens of Connecticut. Our state is about 60 percent forested, making it both one of the mostly forested and densely populated states in the country. Among its responsibilities, DEEP Forestry manages nearly 162,000 acres of state-owned forestlands. This is done for the health and diversity of the forest and for the benefit of those who live in state. We also work with private forestland owners and municipalities, providing assistance with proper forest management, forest health, wildland fire control, the certification of forestry professionals and general technical support. Of the 1.86 million total acres of forest in Connecticut, private landowners own 1.54 million acres. At Plant Science Day, the DEEP 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 on the 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.

65. CONNECTICUT DEPARTMENT OF AGRICULTURE
R. Olsen
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.

66. CONNECTICUT GREEN INDUSTRIES COUNCIL
B. Heffernan, Executive Director
The Connecticut Green Industries represent the Connecticut Greenhouse Growers Association (CGGA), the Connecticut Nursery and Landscape Association (CNLA), and the Connecticut Florists Association (CFA). CGGA is the trade association for Connecticut's great Greenhouse Industry, representing nearly 200 growers of potted plants. CNLA is Connecticut's Trade Association for Growers of Trees, Shrubs, Perennial-Annual Flowers, and Nurseries, Garden Centers, Landscapers and Landscape designers. CFA is the state's association for retail and wholesale florists, and those companies that grow fresh cut flowers. All green industry groups can be accessed on the Internet at www.FlowersPlantsInCT.com.

67. CONNECTICUT NORTHEAST ORGANIC FARMING ASSOCIATION
D. Legge
CT NOFA is the Connecticut Chapter of the Northeast Organic Farming Association. CT NOFA is an independent non-profit organization dedicated to strengthening the practices of ecologically sound farming and gardening, and to the development of local sustainable agriculture. Our efforts give consumers increased access to safe and healthy food. CT NOFA is a growing community of farmers, gardeners, land care professionals, businesses and consumers that encourages a healthy relationship to the natural world. For more information, visit us at www.ctnofa.org or www.facebook.com/ctnofa.

68. 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.

69. buyCTgrown
A. Kremser
buyCTgrown is a statewide buy local campaign that connects consumers looking for fresh healthy foods and farm related products in Connecticut with a searchable database of farms, CSA farmers markets and restaurants that use locally grown foods and much more. Website: www.buyCTgrown.com

70. USDA NATURAL RESOURCES CONSERVATION SERVICE
C. Donzella
The Natural Resources Conservation Service (NRCS) is an agency of the United States Department of Agriculture with offices at six locations in Connecticut. For over 75 years, we have worked cooperatively with landowners, conservation districts, federal, state, and local governments, and citizens from urban and rural communities to restore, enhance, and protect natural resources. NRCS conservation specialists promote land stewardship by providing technical and financial assistance

to agricultural and forest landowners and producers to address water quality and quantity; restore and protect habitat; improve air quality and energy conservation, and protect farmland from development. NRCS also provides soils and other natural resource information and analysis to help land owners and managers make informed decisions. For more information visit us at: http://www.ct.nrcs.usda.gov

71. FRIENDS OF BROOKSVALE, INC.
K. Walker
Friends of Brooksvale Park, Inc. is a not for profit organization providing environmental education, preserving and enhancing the integrity of the park's natural and cultural resources, and serving as an advocate for the park to the benefit and enjoyment of the citizens in the greater Hamden area. Website: www.brooksvale.org

72. 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.

73. CONNECTICUT FARMLAND TRUST
D. Adiletta
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. To date CFT has protected 26 active farms, totaling nearly 2,100 acres. For more information about CFT visit www.ctfarmland.org or 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@ctfarm.org.

74. 14th CIVIL SUPPORT TEAM (WMD)
CPT E. Cordon
The WMD Civil Support Teams were established to deploy rapidly to assist a local incident commander in determining the nature and extent of an attack or incident; provide expert technical advice on WMD response operations; and help identify and support the arrival of follow-on state and federal military response assets. They are joint units and, as such, can consist of both Army National Guard and Air National Guard personnel, with some of these units commanded by Air National Guard lieutenant colonels. The mission of Weapons of Mass Destruction Civil Support Teams (WMD-CST) is to support local and state authorities at domestic WMD/NBC incident sites by identifying agents and substances, assessing current and projected consequences, advising on response measures, and assisting with requests for additional military support. The WMD civil support teams are able to deploy rapidly, assist local first-responders in determining the nature of an attack, provide medical and technical advice, and pave the way for the identification and arrival of follow-on state and federal military response assets. They provide initial advice on what the agent may be, assist first responders in that detection assessment process, and are the first military responders on the ground, so that if additional federal resources are called into the situation, they can serve as an advance party that can liaise with the Joint Task Force Civil Support.

75. CT AGRICULTURAL EDUCATION FOUNDATION
Eleanore Provencal
The Mission of the Connecticut Agricultural Education Foundation is to seek and administer funds for the benefit of programs that promote Connecticut agriculture through education. Distressingly, agricultural illiteracy is a reality in Connecticut. Too many people just don't know where their food and plants come from or how they are produced. Too many people don't have the basic agricultural knowledge needed to make wise and thoughtful choices about the issues facing farms today. The consequences of this lack of awareness can be disastrous for all of us connected to the agricultural community.

76. NOAA 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).

77. CONNECTICUT NURSERYMEN'S GARDEN

The Connecticut Nurserymen's 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 Nurserymen's 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.

78. SOUND SCHOOL AGRICULTURAL SCIENCE PROGRAM

C. Mavrelion and 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.

Index of Scientists' & Staff Names and their Field Plot Numbers

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History of The Connecticut Agricultural Experiment Station

The Connecticut Agricultural Experiment Station (CAES) is one of a national network of state agricultural experiment stations. Experiment Station scientists collaborate with researchers in other states and the federal government to solve local, regional, and national problems. CAES has existed for 135 years.

The CAES is the first agricultural experiment station in the United States. It was founded by the efforts of Samuel W. Johnson, a professor of agricultural chemistry at Yale University. Johnson had seen an agricultural experiment station when he did postgraduate 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 as 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 Experiment Station moved to its present location on Huntington Street (previously named as Suburban Street) in New Haven. Besides Lockwood Farm, its outdoor laboratory in Hamden, the Experiment 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 CAES. 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 Experiment 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 and product safety monitoring programs.

Some current research includes:

- Release of a lady beetle to control the hemlock woolly adelgid, which can kill 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 soil and 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 developing the best growing practices for existing crops in Connecticut.
- Studies of invasive aquatic plants and methods of control.
- Deciphering the cause of Sudden Vegetation Dieback in Connecticut salt marshes.

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.

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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 06511-2016, (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 EXPERIMENT STATION'S WEB PAGE: WWW.CT.GOV/CAES