104th Plant Science Day

Lockwood Farm, Hamden

Wednesday, August 6, 2014

The Connecticut Agricultural Experiment Station's **Plant Science Day** is an event held at Lockwood Farm on the first Wednesday of August every year, beginning in 1910. This one-day event features reports on research, field plots, barn exhibits, tours, and other opportunities for Connecticut residents and attendees to discuss many topics of plant science on an informal basis and interact with CAES scientists and staff. While the event only lasts one day, planning for Plant Science Day is a year-round activity spearheaded by the *Plant Science Day Committee*. This committee, chaired by Ms. Vickie M. Bomba-Lewandoski, is comprised of CAES staff who strive to make this event as meaningful and organized as possible. We acknowledge their hard work and thank them for allowing this historic event to happen each year.

Plant Science Day 2014 Planning Committee

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Jeffrey Ward
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Program booklet created, compiled and edited by Vickie M. Bomba-Lewandoski, with assistance from Samantha Eaton

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HISTORY OF LOCKWOOD FARM, HAMDEN

Lockwood Farm is a research facility of The Connecticut Agricultural Experiment Station. 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 have been 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 (the “Sleeping Giant”), which lies to the north. The mountain is composed of diabase, a dense igneous rock which has a fine crystalline texture, having been pushed up as magma close to the surface where it cooled quickly. The "trap rock" of this region is either diabase, or its compositional equivalent basalt which was extruded onto the surface in lava flows that form topographic "trappa" or "trappe" (steps or stairs) and it is 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 diabase boulder that was moved by flowing ice from its place of origin, and is therefore also known as a Glacial Erratic. The boulder probably fell onto the top of the glacier oozing its way down past the Sleeping Giant's head during the waning stage of the last continental glaciation. It was deposited here, near the toe of the waning glacier, onto "till," an unsorted mass of sandy or silty material mixed with rounded pebbles and boulders that had been pushed in front of, or under, the glacier, and deposited as the ice melted. Most of the boulders around the area, such as those in the nearby stone walls, are rounded and their surfaces have been ground smooth by abrasion beneath the glacier. The boulder 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, 74.36 inches, was recorded in 2011. 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, 10.0 inches, was recorded in 2011-2012.

The farm provides a field laboratory for 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 each year 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.

Holdridge Farm Nursery
Ledyard, Connecticut

Holdridge Farm Nursery, located in Ledyard, was started in 1912 by Judge Samuel Holdridge as a vegetable farm and as a mail order nursery for strawberry plants. His son, Paul Holdridge Sr., added bare-root fruit trees and eventually a full line of nursery stock. A small store was built at the home farm at Geer Hill in 1941. Paul Holdridge Jr. and Alden Holdridge, the third generation on the farm, each added their own initiatives. Paul Jr. expanded the retail sector and added hard goods. Alden took over management of the growing operations and shifted from field-grown to container-grown nursery production.

Currently, Holdridge Farm Nursery is the largest garden center and wholesale nursery in Southeastern Connecticut. It is run by Shari Hewes, daughter of Paul Jr. and fourth-generation of the Holdridge family on the farm. Holdridge Farm Nursery grows vegetable plants, annuals, perennials, nursery stock and contract nursery stock on 60 acres of which 16 acres are under irrigation for container production, and nearly 2 acres of greenhouses. The retail center in Ledyard Center is a landmark known for locally grown quality nursery stock and plants.

As Governor, I am pleased to join The Connecticut Agricultural Experiment Station and the Connecticut Agricultural Information Council in presenting this Century Farm Award to the Holdridge Farm Nursery, who is 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 a leader in the establishment of American agricultural experiment stations.

ANSWERS TO YOUR QUESTIONS (Plot 17)

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.

KIDS' KORNER (Plot 26)

Come to the Kids' Korner to pick up your child's passport and a goody bag. The passport is a special activity for young children to help them enjoy and explore Plant Science Day. There are six different stations located throughout Lockwood Farm that they can visit, where they can ask questions, learn about the topic featured at the station, and then receive a special stamp for their passport. Once the passport is complete, they can go to the Self-Guided Activity Plot (plot 25) to collect a CAES patch.

SELF-GUIDED ACTIVITY FOR ALL CHILDREN, INCLUDING GIRL SCOUTS (Plot 25)

Girl Scouts and older children should be directed to this plot. A self-guided worksheet is available for all children, and it is better suited for older children than the passport. The activity will guide them 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 complete steps towards their Naturalist Legacy badge. Once the activity is completed, all children can return to this plot to collect either a Girl Scout or CAES patch. Children with completed passports should return here to collect their badges as well.

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 at 3:30 p.m. at the registration desk (R).

Connecticut Pesticide Credits Offered: **ALL PESTICIDE LICENSE CATEGORIES including PRIVATE APPLICATORS (PA) / 3.75 Credit Hours.**

Keep current with The Connecticut Agricultural Experiment Station by using our SOCIAL MEDIA and E-ALERT resources.

SOCIAL MEDIA LINKS

Facebook (www.facebook.com/CT.CAES)

Twitter (www.twitter.com/CT_CAES)

YouTube (www.youtube.com/user/CTAGEXPSTATION)

(http://en.wikipedia.org/wiki/Connecticut_Agricultural_Experiment_Station)

To visit our webpage, go to www.ct.gov/CAES,
or just scan our QR code below with your smartphone.

E-ALERTS

The Connecticut Agricultural Experiment Station (CAES) E-ALERT service.
We are inviting you to subscribe to our free E-ALERT e-mail service to receive CAES news updates by e-mail. Go to our website, scroll to the bottom left hand corner of our page, and click Receive Updates by e-mail e-ALERTS to get started.
Once you have created your CT.gov profile you can now subscribe to our e-alerts.

NO PETS, PLEASE. SERVICE ANIMALS ONLY.

JUST A REMINDER THAT LOCKWOOD FARM IS A WORKING FARM WITH ACTIVE RESEARCH BEING CONDUCTED, SO PLEASE RESPECT THE SCIENTISTS' WORK.

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

104th PLANT SCIENCE DAY

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

AGENDA

Moderator – Dr. Sharon M. Douglas

10:00 a.m. – 10:15 a.m. **MAIN TENT**
MORNING GREETING AND OPENING REMARKS
Dr. Theodore G. Andreadis, Director
The Connecticut Agricultural Experiment Station

10:15 a.m. – 10:45 a.m. **MAIN TENT**
Dr. Jeffrey S. Ward, Station Forester and Chief Scientist, Department of Forestry and Horticulture
Managing the Roadside Forest: Balancing Aesthetics and Utility Reliability
The distinction of leading the nation in urban forest cover contributes as much to the Connecticut sense of place as our ubiquitous stone walls. However, as storms over the past several years have demonstrated, the trees framing our city streets and rural roads can lead to extended periods of power loss and road blockage during severe weather. Collaborative roadside forest management research is examining novel strategies to meet the challenge of balancing aesthetics and utility reliability.

10:15 a.m. – 10:35 a.m. **TECHNICAL DEMONSTRATION TENT**
Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture
Compost: How to Make and Use in Your Garden
(20 minute demonstration, repeated twice during the day, 10:15 a.m. & 2:45 p.m.)
Composting does not have to be complicated if you understand the principles behind the process. Using compost in your garden improves many soil characteristics which lead to greater vegetable yields.

10:45 a.m. – 11:20 a.m. **MAIN TENT**
THE SAMUEL W. JOHNSON MEMORIAL LECTURE
Dr. Mike Hoffmann
Director, Cornell University Agricultural Experiment Station
Associate Dean, College of Agriculture and Life Sciences
Professor, Department of Entomology
Cornell University, Ithaca, NY
Climate Change and Agriculture: No Longer Business as Usual
The climate is changing - summers are getting hotter, there is more extreme weather and precipitation patterns are shifting. The hottest decade ever recorded was 2001-2010 and the hottest year 2012 and this warming pattern is likely to continue into the future. These anticipated increases in temperature along with changes in precipitation patterns and greater variability in the weather have profound implications for agriculture – it will no longer be business as usual. Although there will be plenty of challenges there will also be some opportunities for agriculture, especially in the northeastern US where we will have adequate water and a longer growing season. These conditions offer the opportunity for expansion and diversification of what is grown in the region - we also have huge markets - 20% of the US population. To succeed under these changing conditions those who grow our food will need to have the necessary tools to both mitigate and adapt to climate change. This lecture will cover the basics of climate change, the anticipated changes expected in coming decades, and offer suggestions on how we should respond to the unprecedented challenge of climate change.

11:20 a.m. – 11:40 a.m. **TECHNICAL DEMONSTRATION TENT**
Dr. Todd L. Mervosh, Weed Scientist, Valley Laboratory
Common Garden Weeds
(20 minute demonstration, repeated twice during the day, 11:20 a.m. & 3:10 p.m.)

Some wild plants tend to thrive in the managed ecosystems of gardens. Because we didn't plant them and usually prefer they not spread in our gardens, we consider these plants to be weeds. This demonstration will feature examples of weedy species, with emphasis on identification, plant family, life cycle, and botanical traits.

11:20 a.m. –11:40 a.m. **MAIN TENT**
CENTURY FARM AWARD

11:40 a.m. –11:50 a.m. **MAIN TENT**
EXPERIMENT STATION ASSOCIATES
Mr. Will Rowlands*, President, Experiment Station Associates*

11:50 a.m. –12:10 p.m. **MAIN TENT**
THE HONORABLE GOVERNOR DANNEL P. MALLOY
President, Board of Control

1:30 p.m. – 2:00 p.m. **MAIN TENT**
Dr. Wade H. Elmer, Plant Pathologist, Department of Plant Pathology and Ecology
Nanoparticles in Agriculture
Nanoparticles are extremely small particles that are less than a millionth of a millimeter in diameter (or a hundred millionth of an inch). Although nanoparticles can occur naturally as dust and soot, they can also be manufactured from metals. When metallic oxides of copper (Cu), manganese (Mn), and zinc (Zn) are manufactured at the nanoscale, they have unique chemical and physical properties not observed in their equivalent bulk oxide counterparts. It is well known that Cu, Mn, and Zn are plant micronutrients, however, the effect and fate of nanoparticles manufactured from these compounds in plants has only begun to receive attention. Little is known about any role they may have in plant disease management. This presentation will explore the potential for using nanoparticles to suppress root diseases.

2:00 p.m. –2:30 p.m. **MAIN TENT**
Dr. Kimberly A. Stoner, Entomologist, Department of Entomology
Honey Bees and Bumble Bees – Their Problems, and What You Can Do To Help
Beekeepers continue to lose 23-36% of their hives each winter across the US, as they have since 2006. The diversity of bumble bees is also declining here in Connecticut, across the US, and in many other countries around the world. The scientific consensus is that there are multiple causes for these losses, including parasitic mites on honey bees, several pathogens, loss of quality foraging habitat, and pesticide exposure. Planting diverse flowers for bees, blooming across the growing season, and protected from pesticides, provides an opportunity for everyone to help bees.

2:30 p.m. **MAIN TENT**
Adjourn Main Talks

2:45 p.m. – 3:05 p.m. **TECHNICAL DEMONSTRATION TENT**
Dr. Abigail A. Maynard, Horticulturist, Department of Forestry and Horticulture
Compost: How to Make and Use in Your Garden
(20 minute demonstration, repeated twice during the day, 10:15 a.m. & 2:45 p.m.)
Composting does not have to be complicated if you understand the principles behind the process. Using compost in your garden improves many soil characteristics which lead to greater vegetable yields.

3:10 p.m. –3:30 p.m. **TECHNICAL DEMONSTRATION TENT**
Dr. Todd L. Mervosh, Weed Scientist, Valley Laboratory
Common Garden Weeds
(20 minute demonstration, repeated twice during the day, 11:20 a.m. & 3:10 p.m.)
Some wild plants tend to thrive in the managed ecosystems of gardens. Because we didn't plant them and usually prefer they not spread in our gardens, we consider these plants to be weeds. This demonstration will feature examples of weedy species, with emphasis on identification, plant family, life cycle, and botanical traits.

3:30 p.m. **TECHNICAL DEMONSTRATION TENT**
Adjourn Technical Demonstrations

PESTICIDE CREDIT TOUR
(Meet at Barn A)
12:15 p.m.-1:15 p.m.

12:15 p.m. – 1:15 p.m. **MEET AT BARN A**

Dr. Robert E. Marra, Plant Pathologist, Department of Plant Pathology and Ecology

A one-hour guided tour of selected field plots will be conducted by Dr. Robert E. Marra. Participants will discuss experiments and topics with scientists at each station on the tour.

Stops on tour:

- **Dr. Alia Servin, Chemist, Department of Analytical Chemistry**

Engineered Nanoparticles, Biochar, Plants and Earthworms (Plot #33)

- **Dr. Claire Rutledge, Entomologist, Department of Entomology**

Biological Control of the Emerald Ash Borer in Connecticut (Plot #24)

- **Dr. James A. LaMondia, Plant Pathologist, Valley Laboratory**

Management of Boxwood Blight, A New Disease of the Buxaceae in Connecticut and the United States (Plot #38)

3:30 p.m. **SIGN-OUT (for those requesting pesticide credits) (R)**

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

TOUR OF NATIVE WOODY SHRUBS (PLOT 42)
1:00 p.m.-1:30 p.m.

1:00 p.m. – 1:30 p.m. **MEET AT THE WOOD ARBOR OF THE NATIVE WOODY SHRUBS (Plot 42)**

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 43)
ON THE HOUR, 11:00 a.m.-2:00 p.m. "Butterfly Identification Walk"

ON THE HOUR

11:00 a.m. – 2:00 p.m. **MEET AT THE BIRD AND BUTTERFLY INFORMATION TABLE (Plot 43)**

Mr. Jeffrey M. Fengler, Department of Entomology

Mr. Fengler will lead a "Butterfly Identification Walk"

PLEASE NOTE: We ask that children be supervised by an adult or employee while in the bird and butterfly garden.

BUS TOUR (B)
EVERY HALF HOUR, 10:00 a.m. to 3:30 p.m.

EVERY HALF HOUR
10:00 a.m. – 3:30 p.m.

This is a great way to see the farm. Join us on an air conditioned bus ride around the farm for approximately 30 minutes. You can be dropped off at any plot, and picked up the next time the bus comes around. Dr. Neil McHale and Dr. Richard Peterson will narrate the ride.

BARN EXHIBITS (BARN B)

Food Safety Surveillance and Research
Department: Analytical Chemistry
Investigators: Dr. Brian D. Eitzer, Dr. Walter J. Krol, Dr. Christina S. Robb, Dr. Roberto De La Torre Roche, Dr. Alia Servin and Dr. Jason C. White
Assisted by: Ms. Terri Arsenault, Mr. Craig Musante, Mr. John Ranciato, Ms. Kitty P. Riveros, Mr. Joseph Hawthorne and Mr. Michael Cavadini
Abstract: The Analytical Chemistry Department works with both state and federal partners to ensure that fresh/manufactured foods are free from adulteration and safe for Connecticut citizens. Food samples are routinely screened for pesticides, heavy metals, toxins, poisons and other agents of concern for chemical terrorism. Federal partners include the Food and Drug Administration (FDA), Environmental Protection Agency (EPA), Department of Agriculture (USDA), and the Federal Bureau of Investigation (FBI) Weapons of Mass Destruction Directorate (WMDD). State partners include the Department of Consumer Protection (DCP), Department of Public Health (DPH), Department of Energy and Environmental Protection (DEEP), the Department of Agriculture (DoAg) and the 14th Civil Support Team of the CT National Guard. In addition to active surveillance, staff conducts research on the development of new methods to more accurately and sensitively detect analytes of concern in food. Recent projects include the detection of pesticides in tea and fresh/dried herbs, arsenic in juice, mycotoxins in milk/formula, and synthetic pyrethroids in seafood.

Maternal Lineages of Honey Bees in Connecticut
Department: Biochemistry and Genetics
Investigator: Dr. Douglas W. Dingman
Assisted by: Ms. Regan Huntley and Mr. Bryan Lehner
Abstract: Mitochondrial DNA sequence analysis is an easy and effective way to identify and monitor maternal lineage within a population. Honey bees come from a limited number of maternal sources in the United States. In Connecticut, five lineages have been identified with most grouping within mitotype C (mid- to central-Mediterranean region of Europe). Association of lineage with physical properties of honey bees will allow genetic selection and propagation of bees having specific traits.

2013 Emergence of Periodical Cicadas
Department: Entomology
Investigator: Dr. Chris T. Maier
Assisted by: Ms. Morgan Lowry, Ms. Tracy Zarrillo, and a team of volunteers from the Department of Energy and Environmental Protection
Abstract: One of the most spectacular events in nature occurred in central Connecticut in the late spring of 2013—the mass emergence of 17-year periodical cicadas. Based on a thorough survey, these long-lived insects emerged in most of the forested areas where they were recorded in 1996. Surprisingly, a second species of periodical cicada was discovered in the state in 2013.

Oral bio-accessibility of polycyclic aromatic hydrocarbons (PAHs) in fuel soot assessed by a simulated gastrointestinal digestion model
Department: Environmental Science
Investigator: Dr. Joseph J. Pignatello
Assisted by: Banyan Zhang
Abstract: Polycyclic aromatic hydrocarbons (PAHs) is a well-known class of carcinogenic contaminants formed by incomplete combustion. An important source is soot from fossil fuels and vegetation fires. As most air-borne soot particles will deposit to the soil, PAHs can enter the human digestive tract through unintentional ingestion of soil (hand-to-mouth), especially by small children. The objective of this study was to determine the oral accessibility of PAHA contaminants in fuel soot under realistic conditions in an apparatus that mimics the human gastrointestinal tract.

The New Crops Program – Creating Opportunities for Connecticut's Farmers
Department: Forestry and Horticulture
Investigators: Dr. Abigail Maynard and Dr. David E. Hill
Abstract: Direct retail sales and small farm sizes require that the farmer grow diversified high value crops. Since 1983, the Connecticut Agricultural Experiment Station has been investigating specialty crops to provide new opportunities for Connecticut's farmers. Over 40 fruits and vegetables have been studied including globe artichoke, Belgian endive, radicchio, sweet potato, okra, and Chinese cabbage.

Environmental Impact on Winegrape Production in CT

Department: Plant Pathology and Ecology
Investigator: Dr. Francis J. Ferrandino
Assisted by: Ms. Joan Bravo

Abstract: Year to year variation of weather strongly affects winegrape production in CT. This depends on cultivar characteristics and vine training method. The most popular winegrapes in the world are vinifera native to the Mediterranean region. These plants are not well suited to the climate in CT and exhibit major winter damage and suffer from yield reducing pathogens, which flourish in our hot, wet summers. Two indigenous new world grape varieties, labrusca and riparian, are cold hardy and disease resistant, but produce wine that is inferior to the vinifera. Hybrid varieties produced by crossing vinifera with indigenous grapes combine the best of both. For the past two decades, hybrid winegrapes have been grown and evaluated at CAES. In this display, yield, both quantity and quality, and the impact of disease are summarized over the last five growing seasons for both vinifera and hybrid cultivars grown on CAES Research.

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.

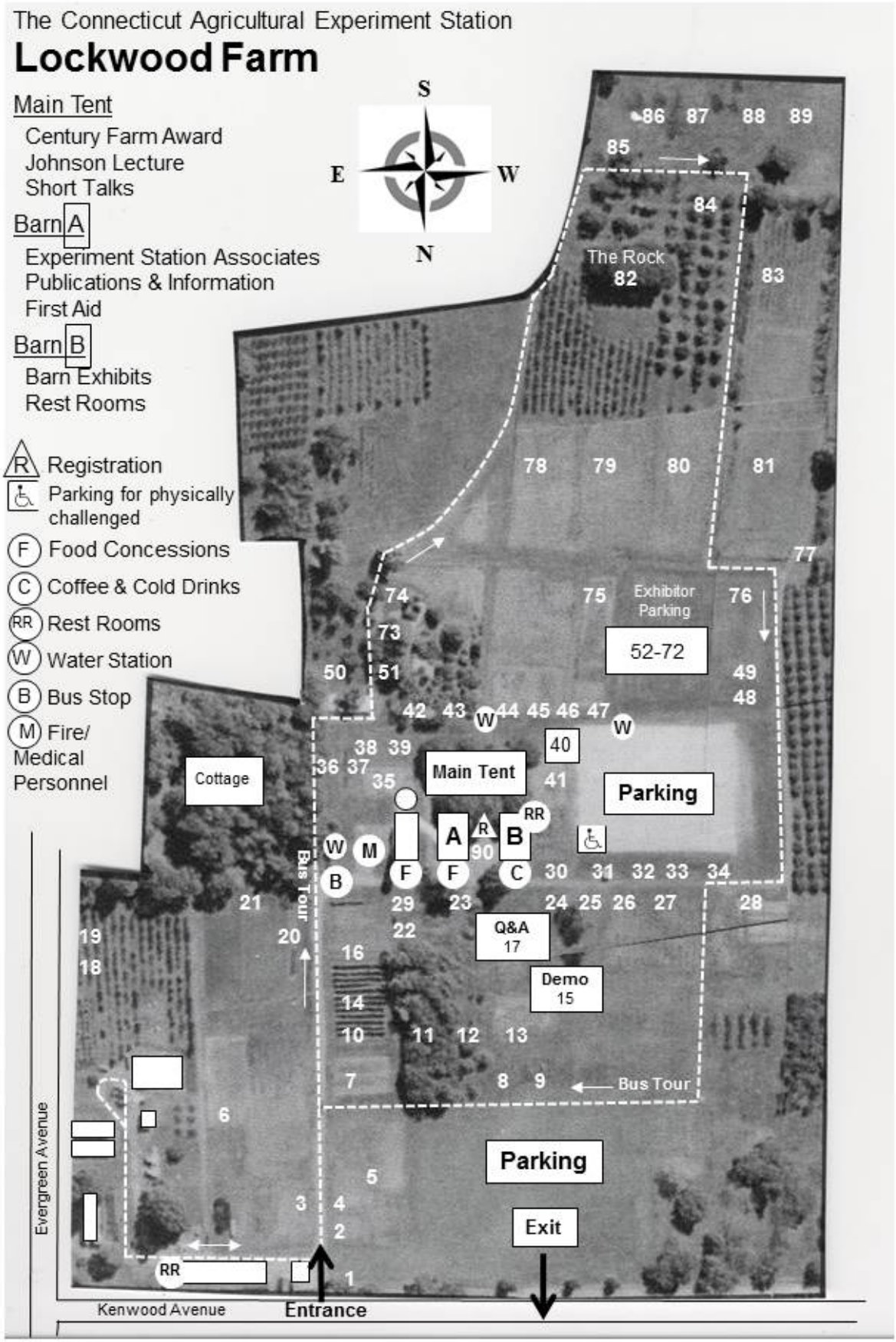
THE EXPERIMENT STATION WEB PAGE: WWW.CT.GOV/CAES

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/speakers

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/publications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Kenwood Avenue

FIELD PLOT LISTING

Outside Organizations (Plots 29, 30, 44, 52-72, 78) are invited to participate

The plots at Lockwood Farm are planted and maintained by The Connecticut Agricultural Experiment Station's scientists and technical staff along with the help of Farm Manager Mr. Richard Cecarelli and his Research Technicians Mr. Rollin Hannan and Mr. Michael McHill as well as seasonal resource assistants Mr. Michael Burkinshaw and Mr. Robert Cota.

1. CHINESE CHESTNUT TREES
2. SHEET COMPOSTING WITH OAK AND MAPLE LEAVES
3. POLLINATION OF SUMMER SQUASH
4. SWEET POTATO TRIALS
5. SWEET CORN TRIALS
6. USE OF EARTHWORMS AND BIOCHAR TO SUPPRESS FUSARIUM CROWN ROT OF ASPARAGUS
7. COMMERCIAL CHESTNUT CULTIVARS
8. PROTECT OUR TREES AND AGRICULTURAL RESOURCES: FOREST HEALTH AND THE COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS)
9. REMOTE WEATHER ACCESS STATION
10. TABLE GRAPE DEMONSTRATION PLOT
11. CONTROL OF BLIGHT ON AMERICAN CHESTNUTS
12. NEW HYBRID CHESTNUT ORCHARD
13. USE OF NANOPARTICLES OF COPPER, MANGANESE, OR ZINC TO SUPPRESS SOIL-BORNE DISEASES OF EGGPLANT
14. COMMERCIAL CHESTNUT SEEDLINGS
15. DEMONSTRATION TENT
16. COMPARISON OF GRAFT UNION HEIGHT ON CHARDONNAY GRAPEVINES
17. QUESTION AND ANSWER TENT
18. ENVIRONMENTALLY-FRIENDLY CONTROL OF POWDERY MILDEW ON LANDSCAPE PLANTS
19. POWDERY MILDEW ON CHARDONNAY WINE GRAPES
20. FIG PRODUCTION IN SELF-WATERING PLANTERS IN CONNECTICUT
21. GROWTH AND CONTROL OF NON-NATIVE BAMBOOS
22. SEEDLINGS OF OLD SURVIVING AMERICAN CHESTNUTS
23. WILD CHESTNUTS FROM TURKEY
24. BIOLOGICAL CONTROL OF THE EMERALD ASH BORER IN CONNECTICUT
25. SELF-GUIDED ACTIVITY FOR ALL CHILDREN, INCLUDING GIRL SCOUTS
26. KIDS' KORNER
27. CAN OAK TREES GIVE YOU LYME DISEASE?
28. COMPOSTING LEAVES USING THE STATIC PILE METHOD
29. VERIZON WIRELESS

30. FARMER'S COW
31. NANOMATERIALS IN AGRICULTURE: POTENTIAL TRANSFER OF NANOPARTICLES FROM ONE LEVEL OF THE FOOD CHAIN TO ANOTHER
32. HANDS-ON CHEMISTRY
33. ENGINEERED NANOPARTICLES, BIOCHAR, PLANTS, AND EARTHWORMS
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39. INTEGRATING FOREST AND ROADSIDE MANAGEMENT OBJECTIVES TO CREATE STORM RESILIENT FORESTS
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50. CHESTNUT SPECIES AND HYBRIDS
51. HEALTHY PLANTS – HEALTHY BUSINESS: SUPPORT OF THE GREEN INDUSTRY BY INSPECTION
52. LYMAN HALL HIGH SCHOOL AGRICULTURAL SCIENCE AND TECHNOLOGY PROGRAM
53. THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION: DIVISION OF FORESTRY
54. CONNECTICUT DEPARTMENT OF LABOR / CONN-OSHA
55. CONNECTICUT NORTHEAST ORGANIC FARMING ASSOCIATION
56. USDA NATIONAL AGRICULTURAL STATISTICS SERVICE, NEW ENGLAND
57. UCONN EXTENSION MASTER GARDENER PROGRAM
58. THE CONNECTICUT BOTANICAL SOCIETY
59. CONNECTICUT DEPARTMENT OF AGRICULTURE
60. UNITED STATES DEPARTMENT OF LABOR / OSHA
61. THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION: WILDLIFE DIVISION
62. CONNECTICUT PROFESSIONAL TIMBER PRODUCERS ASSOCIATION

63. CONNECTICUT ENVIRONMENTAL COUNCIL
64. USDA, ANIMAL AND PLANT HEALTH INSPECTION SERVICE, PLANT PROTECTION AND QUARANTINE
65. CONNECTICUT INVASIVE PLANT WORKING GROUP
66. FEDERATED GARDEN CLUBS OF CONNECTICUT, INC.
67. THE SLEEPING GIANT PARK ASSOCIATION
68. CONNECTICUT TREE PROTECTIVE ASSOCIATION
69. buyCTgrown
70. USDA, FARM SERVICE AGENCY
71. USDA, NATURAL RESOURCES CONSERVATION SERVICE
72. CONNECTICUT GREENHOUSE GROWERS ASSOCIATION
73. COMMON INDOOR MOLD
74. SUDDEN VEGETATION DIEBACK OF CONNECTICUT SALT MARSHES
75. MAIZE GENETICS – INVESTIGATING WHY CORN IS SO MORE EFFICIENT AT PHOTOSYNTHESIS
76. FOOD BANK
77. HOPS TRIALS
78. THE SOUND SCHOOL AGRICULTURE SCIENCE PROGRAM
79. FOOD BANK
80. POLLINATION OF PUMPKINS AND WINTER SQUASH
81. HYBRID AND VINIFERA WINEGRAPE CULTIVAR TRIAL
82. THE ROCK
83. PINOT GRIS CULTURAL TRIALS
84. ROCKY HILL AMERICAN CHESTNUT TREES
85. ASIAN CHESTNUT GALL WASP ON CHESTNUT
86. BEACH PLUM TRIALS
87. PAWPAW TRIALS
88. JAPANESE PLUM VARIETY TRIALS
89. HYBRID ELM TREES
90. EXPERIMENT STATION ASSOCIATES

FIELD PLOT ABSTRACTS

1. CHINESE CHESTNUT TREES

Sandra A. Anagnostakis Assisted by: Pamela Sletten

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

2. SHEET COMPOSTING WITH OAK AND MAPLE LEAVES

Abigail A. Maynard and David E. Hill

Many homeowners in Connecticut 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 1995-2013 and incorporated into the soil by rototilling. Yields from plots amended with oak leaves were compared to plots amended with maple leaves and the unamended controls. In 2013, eggplant was grown with all plots receiving the same amount (1300 lbs./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. The greatest eggplant yields were from plots amended with maple leaves (10.3 lbs./plant) followed by plots amended with oak leaves (8.6 lbs./plant) and the unamended control plots (7.5 lbs./plant). Lettuce yields from the plots amended with oak leaves were slightly greater (0.7 lbs./head) than yields from plots amended with maple leaves and the unamended control (0.6 lbs./head).

3. POLLINATION OF SUMMER SQUASH

Kimberly A. Stoner Assisted by: Tracy Zarrillo, Morgan Lowry, Amelia Tatarian, Benjamin Gluck and Alana Russell

Pumpkins, squashes, and most other cucurbits require insect pollination in order to set fruit. In Connecticut, nearly all the pollination of pumpkins and squash is carried out by three species of bees: honey bees (*Apis mellifera*), bumble bees (*Bombus impatiens*), and squash bees (*Peponapis pruinosa*). Male and female flowers are separate, although both are on the same plant. Each flower is open for only a single morning. In this plot of summer squash, we are developing methods for measuring the disappearance of pollen from male flowers and the deposition of pollen on female flowers, as well as bee activity, over the course of the morning. We are doing similar studies on pumpkins and winter squash on farms across the state (see plot 80).

4. SWEET POTATO TRIALS

Abigail A. Maynard and David E. 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 they 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. Two years ago, 'O'Henry' (3.9 lbs./plant) and 'Beauregard' (3.2 lbs./plant) had the greatest average yields.

5. SWEET CORN TRIALS

Abigail A. Maynard and David E. Hill

Among all vegetables grown in Connecticut, sweet corn ranks first in acres grown and cash value, with over half of all vegetable farms including sweet corn as a crop. Supersweet corn trials were conducted from 1995 to 1998 at CAES. Of the 22 cultivars evaluated then, only 5 are still available. Trials including new cultivars developed in the last 15 years will provide important information to the over 300 Connecticut farms who grow sweet corn. This 3-year trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of five cultivars of sweet corn planted May 1 and June 1. Cool soil percent germination will be determined from the early (May 1) planting. Last year, 'Espresso' had the greatest germination (96%) at both sites for the May 1 planting. 'Espresso' (123 ears/20 ft. of row) also had the greatest yields when averaging both plantings at both sites, followed by 'Quickie' (106 ears/20 ft. of row) and 'Cuppa Joe' (104 ears/20 ft. of row).

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

Wade H. Elmer Assisted by: Peter 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, has also 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. The 2012-2014 harvest suggest augmenting field's plots with earthworms provided the greatest increase in yields when compared to untreated plots. Biochar has not increased yield but has improved root health by increasing beneficial mycorrhizal fungi.

7. COMMERCIAL CHESTNUT CULTIVARS

Sandra L. Anagnostakis Assisted by: Pamela Sletten

These grafted trees are commercial cultivars of orchard chestnut trees. The largest trees are cultivar 'Colossal' (Japanese X European) which is the most frequently planted commercial cultivar in the U.S., with large acreages in Michigan and on the west coast. 'Eaton', in front, is a Chinese X (Japanese X American) cultivar released by CAES. The other trees will be cultivar 'Bouche de Betizac', planted this year. We are evaluating the potential of these commercial chestnut cultivars for nut production here in Connecticut.

8. PROTECT OUR TREES AND AGRICULTURAL RESOURCES: FOREST HEALTH AND THE COOPERATIVE AGRICULTURAL PEST SURVEY (CAPS)

Katherine Dugas Assisted by: Nichole Gableman

The CAPS program is a joint USDA – State survey program funded by the USDA Animal and Plant Health Inspection Service, Plant Protection and Quarantine. Learn how to recognize two invasive forest pests and learn about other potential pests that CAES and the USDA are watching for. The emerald ash borer (EAB) was first detected in Prospect, CT in 2012 and federal and state quarantines as well as firewood regulations have been put in place to slow the spread of this exotic, invasive beetle. The Asian longhorned beetle (ALB) has not been detected in Connecticut, but is present in Worcester, MA. We are watching for both, and many more!

9. REMOTE ACCESS WEATHER STATION

Francis J. Ferrandino Assisted by: Joan Bravo

Remote-access weather stations are deployed at the three Connecticut Agricultural Experiment Station experimental farms located in Hamden CT, Windsor CT, and Griswold CT. One additional unit is located at Gouveia Vineyards in Wallingford CT, where a wine making trial for Saint Croix grapes is underway. Cumulative precipitation, growing degree days (GDD), frost events, and disease-risk assessments are recorded and/or calculated from the data collected.

10. TABLE GRAPE DEMONSTRATION PLOT

Francis J. Ferrandino Assisted by: Joan Bravo

Three 12-vine rows are 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.

11. CONTROL OF BLIGHT ON AMERICAN CHESTNUTS

Sandra L. Anagnostakis Assisted by: Pamela 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.

12. NEW HYBRID CHESTNUT ORCHARD

Sandra L. Anagnostakis Assisted by: Pamela 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.

13. USE OF NANOPARTICLES OF COPPER, MANGANESE, OR ZINC TO SUPPRESS SOIL-BORNE DISEASES OF EGGPLANTS

Wade H. Elmer, Alia Servin, and Jason C. White Assisted by: Peter Thiel

Metallic oxides of copper (Cu), manganese (Mn), and zinc (Zn) manufactured at the nanoscale (<0.000,001 mm) are called nanoparticles (NP) and have unique properties not observed in equivalent bulk materials. The effect and fate of NP in plants has only begun to receive attention, and their role in plant disease management is relatively unknown. Foliage of one month old transplants was treated with nanoparticles and planted in June. In 2013, plots with eggplants treated with NP of Cu had larger plants, and more yield than the plots with untreated plants or plants treated with equivalent level of bulked oxides. The experiment is being repeated in 2014.

14. COMMERCIAL CHESTNUT SEEDLINGS

Sandra L. Anagnostakis Assisted by: Pamela Sletten

These seedling chestnut trees are Dunstan hybrids, which are predominantly Chinese, and are sold by many large vendors. They were selected in northern Florida, and survive our winters well. Because they are seedlings, they will all be different, have different forms, and bear nuts of different size and quality.

15. TECHNICAL DEMONSTRATION TENT

See program pages 9-10 for a schedule of technical demonstrations.

16. COMPARISON OF GRAFT UNION HEIGHT ON CHARDONNAY GRAPEVINES

Francis J. Ferrandino Assisted by: Joan Bravo

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 2014. High grafted vines had significantly higher yields than low grafted vines in 2009-2012. However, yields were the same in 2013.

17. QUESTION AND ANSWER TENT

Yonghao Li, Rose Hiskes, Gale E. Ridge, Robert Durgy, and Diane Riddle

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.

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

Francis J. Ferrandino Assisted by: Joan Bravo

Connecticut homes are subject to powdery mildew. This disease is caused by a fungus that grows on the surface of plant tissue giving the foliage a white powdery appearance. The result is relatively unsightly and the fungus weakens infected plants by feeding on the sugar the plant produces and by blocking sunlight, which limits the ability of the plant to produce more sugar. This plot is planted to a number of common perennial landscape plants (lilac, deciduous azalea, bee balm, peony and phlox, rudbeckia commonly called "black-eyed susan"), 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.

19. POWDERY MILDEW ON CHARDONNAY WINE GRAPES

Francis J. Ferrandino Assisted by: Joan Bravo

Wine grapes and wineries are a relatively new industry in Connecticut. In the past 20 years, acreage planted to wine grapes has gone from 160 A to 620 A and the number of wineries has gone from 15 to 42, producing about 550,000 gallons of wine valued at between 12-14 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.

20. FIG PRODUCTION IN SELF-WATERING PLANTERS IN CONNECTICUT

Charles R. Vossbrinck Assisted by: Richard Ceccarelli

We are examining the potential for fig production in self-watering planters in Connecticut, with indoor storage in the winter. We are growing 6 different fig varieties both in the field and in a plastic greenhouse. Figs from these plants will be evaluated for weight, number and sugar content.

21. GROWTH AND CONTROL OF NON-NATIVE BAMBOOS (*Phyllostachys* spp.)

Jeffrey S. Ward Assisted by: Joseph P. Barsky

Running bamboos (*Phyllostachys* spp.) are 15-30 foot tall perennials with canes ranging in color from golden yellow to green to almost black. Properly planted with deep root barriers, they can form a gracefully elegant garden focal point or living hedge that is resistant to deer browse. However, without proper root barriers, they can become a nuisance to neighboring properties and form impenetrable thickets in natural areas. We began an experiment in 2012 on our three experimental farms to examine the rate of spread and effectiveness of control options for selected *Phyllostachys* cultivars in Connecticut.

22. SEEDLINGS OF OLD SURVIVING AMERICAN CHESTNUTS

Sandra L. Anagnostakis Assisted by: Pamela 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.

23. WILD CHESTNUTS FROM TURKEY

Sandra L. Anagnostakis Assisted by: Pamela 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.

24. BIOLOGICAL CONTROL OF THE EMERALD ASH BORER IN CONNECTICUT

Claire E. Rutledge Assisted by: Mioara Scott

Emerald Ash Borer (EAB) is an invasive pest that kills North American ash trees. Native to Far-Eastern Asia, it arrived in North America in the early 1990's and was discovered in Detroit, MI in 2002. Since then it has spread rapidly across North America, killing millions of ash trees. The beetle was discovered in Connecticut in 2012. In 2013, we began releasing small, parasitic wasps to help suppress populations of the beetle. The wasps are natural enemies of the beetle in its native habitat that have been imported, tested stringently for host specificity to ensure they do not attack native insects, and mass reared. This strategy, called classical biological control, has been successful in managing populations of many other invasive pests. In this exhibit you will see pictures and samples of the wasps, as well as beetle. We will also have information on where emerald ash borer is currently found in Connecticut, the status of quarantines and information on how to identify and save ash trees for homeowners.

25. SELF-GUIDED ACTIVITY FOR ALL CHILDREN, INCLUDING GIRL SCOUTS

Terri Arsenault

Children can come to this plot to complete an age appropriate, self-guided activity, to earn a patch of their choosing among the several options. Children are directed to a few of the many exhibits where age appropriate activities and speakers are available just for them. In addition, Girl Scouts will have the option to earn the Naturalist Legacy badge appropriate for their level of scouting. On October 1, 2007, Girl Scouts of Connecticut became the largest organization of women and girls in Connecticut, serving over 47,300 girls. The mission of Girl Scouts is to build girls of courage, confidence, and character, who make the world a better place through a diverse range of fun, and horizon-stretching experiences. We encourage everyone to use this opportunity to learn something new about the natural world, and use your new knowledge to make the world a better place.

26. KIDS' KORNER

Roberta Milano-Ottenbreit Assisted by: Kathryn Soleski, Lisa Kaczenski, and Tracy Zarrillo

Come to the Kids' Korner to pick up your child's passport and a goody bag. The passport is a special activity for young children to help them enjoy and explore Plant Science Day. There are six different stations located throughout Lockwood Farm that they can visit, where they can ask questions, learn about the topic featured at the station, and then receive a special stamp for their passport. Once the passport is complete, they can go to the Girl Scouts' plot (plot 25) to collect a CAES patch.

27. CAN OAK TREES GIVE YOU LYME DISEASE?

Scott C. Williams Assisted by: Michael Short and Megan Floyd

Every few years, oak trees across Connecticut produce massive numbers of acorns that fall to the forest floor in a strategy called "predator satiation." If oaks overwhelm Connecticut's acorn-eating wildlife species with abundant nuts, there will be many acorns remaining that do not get consumed and that have the potential to germinate. During such "mast years" as they are called, there may be an increase in small rodent and deer populations. Through improved health, these animals are able to produce and sustain more offspring. As a result of more deer and small rodents on the landscape, there is the potential for an increase in blacklegged or "deer" tick abundances as well. We have been sampling ticks and small mammals at six locations statewide since 2007. With assistance from biologists at the Connecticut Department of Energy and Environmental Protection's Wildlife Division, we have information on the relative abundance of acorns for the same interval. At this plot, you will learn about how Connecticut oak trees have the potential to increase your risk of Lyme disease and other tick-borne diseases.

28. COMPOSTING LEAVES USING THE STATIC PILE METHOD

Abigail Maynard and David E. Hill

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

29. VERIZON TELEPHONE TRANSMISSION SILO

Learn about the cellular transmission tower.

30. FARMERS' COW

Kathy Smith

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.

31. NANOMATERIALS IN AGRICULTURE: POTENTIAL TRANSFER OF NANOPARTICLES FROM ONE LEVEL OF THE FOOD CHAIN TO ANOTHER

Roberto De la Torre-Roche Assisted by: Joseph Hawthorne, Alia Servin, Craig Musante, Katherine Alfiere, and Jason C. White

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 1300-NM containing products are commercially available in areas such as electronics, health-care, cosmetics, pharmaceuticals, agriculture, and food processing/packaging. One area of research being funded by a USDA Food Safety grant is seeking to characterize the potential transfer of engineered nanomaterials within food chains. In our studies, the NM are added to soil and crops are then planted. After one month, some of the plant tissues are analyzed for NM content and some leaves are used as food for herbivores such as crickets. After the crickets have eaten the leaves, some are analyzed for NM content and others are used as food for wolf spiders or mantids. Preliminary data suggests the NM transfer differently within food chains from their non-nano counterparts and that species differences may be important to overall levels of transfer.

32. HANDS-ON CHEMISTRY

Christina S. Robb Assisted by: Kitty Prapayotin-Riveros, Walter J. Krol, Terri Arsenault, Michael Cavadini, and Jason C. White

This display will include a number of "hands-on" experiments that will allow you to get up close and personal with chemistry in action. You will not only get to conduct fun experiments with our chemists, but CAES staff members will also explain the mechanisms and principles behind the chemistry.

33. ENGINEERED NANOPARTICLES, BIOCHAR, PLANTS, AND EARTHWORMS

Alia Servin Assisted by: Roberto De La Torre-Roche, Joseph Hawthorne, Craig Musante, Katherine Alfiere, and Jason C. White

The increased manufacturing and use of engineered nanomaterials (NMs) has resulted in potentially excessive yet poorly characterized environmental exposure. In agriculture, exposure may occur directly through the application of nano-enabled agrichemicals or indirectly through the wide scale amendment of soils with NM-contaminated biosolids. NMs that have been released into these environments will interact with soil and other natural materials. Biochar is being proposed as an amendment to soils to improve soil fertility and enhance crop production. The interactions of biochar with NMs and the subsequent effect on crops and earthworms is unknown. Studies have recently been initiated in which several different biochars were added separately to two agricultural soils at three rates of 0, 0.5 and 5%. Dispersed cerium oxide or silver nanoparticle solutions were added to yield NM concentrations of 0, 500, 1000 or 2000 mg/kg. Plants were planted in the soil and earthworm species were added to the soils. Plants and earthworms were removed after 28 days of exposure to test for the NM. The fate of NM in the organisms, as well as several parameters of toxicity, is currently being determined.

34. INVASIVE AQUATIC PLANT PROGRAM

Gregory Bugbee Assisted by: Sara Benson, Jesse Schock and Samantha Wysocki

Connecticut lakes and ponds are becoming increasingly degraded by the spread of non-native invasive plants. Plants such as Eurasian milfoil, variable milfoil, and fanwort are of great concern because they disrupt native ecosystems, interfere with recreational uses and reduce property values. Researchers in the Department of Environmental Sciences are documenting our State's invasive aquatic plant problem. From 2004 - 2013, we surveyed and mapped the invasive and native plants in over 200 Connecticut lakes and ponds. We documented over 100 plant species, 14 of which are invasive. Approximately two-thirds of the water bodies contained one or more invasive species. In 2010, we began resurveying lakes that were originally done over five years ago and are beginning to quantify long-term changes. We have found, and continue to search for, novel control measures including; reduced risk herbicide applications, biological agents, and winter drawdown. We have also developed models to predict at-risk lakes based on their water chemistry. Requests for Station assistance in managing unwanted aquatic vegetation are common and we often visit water bodies to help solve imminent problems. At this plot you will see our aquatic plant surveillance boats, state of the art global positing systems and the underwater video equipment we use to conduct our surveys. In addition, there will be live specimens of invasive plants on display to test your identification skills. A researcher will be available to discuss our program and answer questions about lakes and ponds.

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

Francis J. Ferrandino Assisted by: Joan Bravo

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 is planted to a number of common vegetables (tomato, pepper, eggplant, pumpkin, 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.

36. ADVANCES IN TRAPPING SPOTTED WING DROSOPHILA

Richard S. Cowles Assisted by: Steven Alm, Gabrielle D'Amico, Olivia Barsoian, Heather Faubert, Emily Hampton, Carissa Koski, and Elizabeth Young

Spotted wing drosophila (SWD) pose a serious threat to commercial and home-grown fruits and tomatoes. The female has a serrated ovipositor that allows her to lay eggs into fruits before they are ripe, leading to the presence of larvae in the harvested fruit. To manage SWD, fruit growers may spray insecticides every five to seven days once fruit has started to ripen. This can lead to concerns about insecticide residues on fresh fruit, and some of the insecticides are ecologically disruptive. Highly attractive traps could provide an alternative method to manage these flies, either by direct capture and drowning, or through exposure to an insecticide applied to the outside of the trap. Field trials conducted in Rhode Island in 2013 demonstrated that placement of many traps in a blueberry field might have reduced the amount of damage to fruit in the field overall, but that the fruit in the shrub containing the trap had about 5% greater infestation than its neighboring bush without a trap. A field test of traps in Windsor, CT, during October 2013 may help to explain these results. Only about 10 – 30% of the flies visiting a trap entered and drowned in the liquid bait. Flies attracted to the trap and not drowning would be free to lay eggs in fruit adjacent to the trap. Application of an insecticide to the outside of an attractant trap may be one way to increase the effectiveness of traps for eliminating SWD adults from fruit plantings, and is being field tested in 2014.

37. USING LEAF COMPOST IN HOME GARDENS

Abigail A. Maynard and David E. 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, 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.

38. MANAGEMENT OF BOXWOOD BLIGHT, A NEW DISEASE OF THE BUXACEAE IN CONNECTICUT AND THE UNITED STATES

James. A. LaMondia Assisted by: Michelle Salvas and Nathaniel Child

Boxwood blight is a new, introduced disease in Connecticut. The disease is caused by the pathogenic fungus *Cylindrocladium pseudonaviculatum.* The impact of the disease has been staggering; boxwood plant losses have been estimated at $3 million in Connecticut in the first year after discovery. We conducted *in vitro* experiments to identify fungicides with activity against growth and conidial germination. These fungicides are being applied alone and in combination at different time intervals to boxwood plants in pots in the greenhouse and at the CAES Valley Laboratory container nursery area to evaluate disease control. These data are being used to develop effective fungicide management programs with different and complementary combinations of active ingredients to prevent and manage disease while following recommendations to reduce the development of fungicide resistance.

39. INTEGRATING FOREST AND ROADSIDE MANAGEMENT OBJECTIVES TO CREATE STORM RESILIENT FORESTS

Jeffrey S. Ward Assisted by: Joseph P. Barsky

Residents throughout the region have been affected by recent storms that negatively impacted both utility and transportation infrastructures through prolonged outages and impassable roads. Hanging, fallen, and/or broken trees have contributed to many outages. We have begun a collaborative project of managing roadside forests to increase utility reliability while maintaining their aesthetic appeal by integrating silvicultural and arboricultural practices. Collaborators on this project include: Audubon Connecticut, University of Connecticut, Connecticut Light and Power, Connecticut Department of Energy and Environmental Protection, and several forest landowners.

40. THE PUBLIC HEALTH AND ENTOMOLOGY TENT

a. THE "DEER" TICK *IXODES SCAPULARIS*

Kirby C. Stafford and Laura Hayes *Assisted by:* Heidi Stuber

The blacklegged tick or "deer" tick *Ixodes scapularis* transmits the agents of Lyme disease, babesiosis, and human granulocytic anaplasmosis in Connecticut. Observe live and preserved ticks under the microscope. The latest information on natural and biological control are available.

b. INTEGRATED TICK MANAGEMENT

Kirby C. Stafford, Scott C. Williams, Goudarz Molaei, Laura Hayes *Assisted by:* Heidi Stuber, Megan Floyd, Stephanie Shea, and Heather Whiles.

An integrated tick management project in Redding, CT, funded by the Centers for Disease Control and Prevention (CDC) is now in its second year. Results of the first and second year of this project focused on examining how a combination of biopesticides (entomopathogenic fungus *Metarhizium anisopliae*), fipronil-based rodent bait boxes, and deer population management can reduce the risk of Lyme disease in select neighborhoods are provided. An additional project in its first year in Redding that examines how a vaccine to protect reservoir hosts from contracting the Lyme bacterium, and in effect, limit disease transmission, is also presented.

c. LYME DISEASE IN TICKS FROM CONNECTICUT CITIZENS

John Anderson Assisted by: Elizabeth Alves and Nathan Kloczko

In 2013, 2594 black-legged (deer) ticks (*Ixodes scapularis*) were received, as well as 257 American dog ticks (*Dermacentor variabilis*) and 76 lone star ticks (*Amblyomma americanum*). Of the tested black-legged ticks, 32% (514 of 1628) were infected with the Lyme disease organism, *Borrelia burgdorferi*. All ticks submitted by municipal health departments are identified to species and degree of engorgement, but only engorged deer ticks are tested for the presence of the Lyme disease bacterium. Studies by other researchers have shown that ticks that have not become engorged with blood do not transmit the disease organism.

d. MOSQUITO SURVEILLANCE FOR WEST NILE AND EASTERN EQUINE ENCEPHALITIS VIRUSES
Philip M. Armstrong and Theodore G. Andreadis, Assisted by: John J. Shepard, Michael Thomas, and Michael Misencik
West Nile and eastern equine encephalitis (EEE) viruses are often associated with neurological illness in humans and equines in the northeastern US. In response to these threats of mosquito-borne disease, the Connecticut Agricultural Experiment Station established a surveillance program in 1997 that monitors virus prevalence by trapping and testing mosquitoes collected throughout the state. Mosquitoes are collected at 91 trapping stations from June-October, sorted into groups by species, and then tested for viral infection by cell culture and molecular assays. This information is used to monitor virus increase in mosquito populations, identify mosquito species involved in virus transmission, assess environmental risk of human infection, and guide mosquito control and other disease prevention efforts as needed. To date, the program has collected and tested more than 2.5 million mosquitoes representing 52 different species. A total of 1,493 West Nile virus isolations have been recovered from 21 different mosquito species and a total of 399 isolations of EEE virus isolations have come from 19 species of mosquitoes. West Nile virus has been detected every year since it was first found in Connecticut in 1999, with virus numbers peaking from July-September. This virus has been most frequently detected in densely-populated areas of lower Fairfield and New Haven Counties, and Harford metropolitan area. Seasonal transmission of EEE virus occurs sporadically and the focal areas are located near forested swamps in southeastern Connecticut. Further information on weekly test results and annual summaries for previous years can be found on the CAES web site, (www.ct.gov/caes).

41. FIDDLEHEAD TRIALS
Abigail A. Maynard and David E. Hill
Fiddleheads are the furled fronds of a young fern, harvested in spring for use as a vegetable. Ultimately, each fiddlehead would unroll into a mature frond. The most popular fiddlehead is that of the ostrich fern (*Metteuccia struthiopteris*), often called the fiddlehead fern. The ferns are available commercially either canned of frozen, but since the early 1980's, farmers' markets and supermarket chains have sold fresh ferns in season. The flavor is similar to asparagus with a pleasantly crunchy, tender-firm texture. In this experiment, data will be collected on the growth and vigor of these newly planted ferns grown under different cultural conditions. Once the plants are well established, experiments will be conducted to determine the number of fiddleheads that can be harvested from each clump to optimize both the yield of fiddleheads and growth and health of the fern plant.

42. NATIVE WOODY SHRUBS
Jeffrey S. Ward Assisted by: Joseph P. 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 in the plot. 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.

43. BIRD AND BUTTERFLY GARDEN
Jane Canepa-Morrison and Jeffrey Fengler
The Bird and Butterfly Garden is a partnership of the CAES 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? Experiment Station staff members 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.

44. FOOD BANK
Audrey Campos
The mission of Connecticut Food Bank is to provide nutritious food to people in need**.** Connecticut Food Bank distributes food and other resources to nearly 700 local food pantries, soup kitchens and shelters in six of Connecticut's eight counties: Fairfield, Litchfield, Middlesex, New Haven, New London and Windham. Through this network, Connecticut Food Bank distributes approximately 40 tons of food each business day, with one-third of it being fresh produce. For more information, contact Audrey Campos, Procurement Coordinator, 203-469-5000, or visit www.ctfoodbank.org.

45. DATING HERBACEOUS ROOTS

Jeffrey S. Ward

While it is commonly known that growth rings can be used to determine tree ages, recent European research has found that roots of many herbaceous garden plants and wildflowers also have annual growth rings. Determining the age of herbaceous plants could be useful for aging crime scenes such as clandestine graves, determining the rate of spread of invasive species, and studying natural succession. In 2012, we began an experiment to determine which species commonly found in North American gardens and forests have root systems with annual growth rings.

46. BIOLOGICAL CONTROL OF HEMLOCK WOOLLY ADELGID AND MILE-A-MINUTE WEED IN CONNECTICUT

Carole Cheah Assisted by: Liz Young

Hemlock Woolly Adelgid (HWA) has been a serious forest, nursery and landscape exotic pest since its first detection in Connecticut in 1985. 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 between 1995 and 2007. Since 2005, there has been widespread recovery of forest hemlocks. But the recent warm winters of 2012 and 2013 have revived resurgent pest threats for our eastern hemlocks, mainly HWA and the elongate hemlock scale, (EHS). Results from a winter 2014 survey for HWA and EHS mortality are presented. Similarly, mile-a-minute weed (MAM), an exotic invasive species, initially reported in Connecticut in 2000 and has now spread to 39 towns. In 2009, a tiny weevil, *Rhinoncomimus latipes*, imported from China, was first released in Connecticut as part of the federal biological control program for MAM. To date, over 33,000 weevils have been released, from 2009-2013, in the most heavily infested 17 towns to control MAM. Updates on the current pest status of these invasive species with information on the biological control programs are presented.

47. SPECIALTY PEPPER TRIALS

Abigail A. Maynard and David E. 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 become red, yellow, or orange by leaving the fruits on the bush until they reach mature color. Others, such as banana peppers, 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 3-year trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of 10 colored sweet bell pepper cultivars. Last year, 'Baron' (red) and 'Early Sunsation' (yellow) had the greatest yields (7.7 and 7.6 lbs./plant, respectively) followed by 'Lilac' (6.4 lbs./plant) and 'Chocolate Beauty' (6.2 lbs./plant).

48. KABOCHA SQUASH TRIALS

Abigail A. Maynard and David E. Hill

Kabocha is a generic term for squash in Japan, but in North America, kabocha is a specific type of winter squash. It has a hard, dull, bumpy dark green shell marked with pale, celery green striations. Round with a flattened top, it ranges from one to eight pounds, but generally averages two to three pounds. It has a brilliant yellow-orange flesh with a naturally sweet flavor and texture similar to pumpkin and sweet potato. When kabocha is harvested, it is immature with dry, bland-tasting, pale yellow flesh. In order to enhance sweetness and maturity with a bright orange color, it must be ripened to full maturity. It reaches the peak of ripeness about 6-12 weeks after it is harvested. Two cultivars of kabocha were included in our winter squash trials in 1997-1998 but there are now over 20 cultivars on the market, including both regular and new smaller (1 lb.) personal-sized types. This 3-year trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of eleven cultivars of kabocha squash. Included in the trials are 8 short-vined and 3 long-vined cultivars, as well as 3 personal-sized cultivars. In addition, half the plants were direct-seeded, and yields of these will be compared to yields from plants transplanted from the greenhouse.

49. SPECIALTY MELON TRIALS

Abigail A. Maynard and David E. Hill

Specialty melons may be defined as members of the cucurbit family whose fruit may be large, have unique flavors, and command a high price in the marketplace. In commercial trade, specialty melons are often referred to as "mixed melons" and include canary, Crenshaw, casaba, Christmas, and Persian melons. This 3-year trial, which is also repeated at the Valley Laboratory in Windsor, is evaluating the yield and quality of eleven cultivars of specialty melons. Included in the trials are three galia cultivars, two canary cultivars, two Crenshaw cultivars, and one charentais cultivar. Three honeydew cultivars are also included because they also demand higher prices in the marketplace compared to cantaloupe. Last year, 'Early Dew' (honeydew) (6.3 lbs./plant), 'Arava' (galia) (10.2 lbs./plant), 'Tweety' (canary) (4.8 lbs./plant), 'Early Hybrid' (crenshaw) (10.7 lbs./plant), and 'Savor' (charentais) (3.6 lbs./plant) had the greatest yields

50. CHESTNUT SPECIES AND HYBRIDS

Sandra A. Anagnostakis Assisted by: Pamela Sletten

These trees are 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, Asian chestnut gall wasp resistance, form, and nut production. Hypovirulent strains of the blight fungus help protect the trees from lethal cankers (see CONTROL OF BLIGHT ON AMERICAN CHESTNUTS, plot 11). Plants of all seven species of chestnut are growing here. One seedling from the Caucasus Mountains of Russia (a true European chestnut), planted in 1994, has not survived well through our Connecticut winters. Commercial European chestnut trees from Northern 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.

51. HEALTHY PLANTS-HEALTHY BUSINESS: SUPPORT OF THE GREEN INDUSTRY BY INSPECTION

Victoria Lynn Smith, Assisted by: Tia Blevins, Mark Creighton, Jeffrey Fengler, Stephen Sandrey, and Peter Trenchard

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 2013, the Office of the State Entomologist completed registration and inspections for 305 nursery growers and dealers of plants and plant products. Over 330 certificates of export were issued for plant commodities moving out of state or out of country. Over 730 beekeepers registered 5,400 hives, and nearly 400 of these were inspected for diseases of honeybees. In addition, surveys were conducted for a variety of exotic pests and diseases, and 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.

52. LYMAN HALL HIGH SCHOOL AGRICULTURAL SCIENCE AND TECHNOLOGY PROGRAM

Emily Picard

The Agricultural Science and Technology Program at Lyman Hall High School is a hands-on program that supplements a regular high school academic curriculum for students interested in agriculture or agriculturally related fields. Specialty areas include: Agricultural Mechanics, Aquaculture, Food Science, Large Animal Technology, Plant Science, Small Animal Technology and Wildlife Biology. Students learn through classroom and laboratory instruction while developing skills to apply this knowledge in real world settings. Agricultural Science provides career readiness as well as prepares students for post-secondary education. The three components to the Agricultural Science program include Instruction, Supervised Agricultural Experience (SAE) and the National FFA Organization. These components work together to provide optimal opportunities for all students and develop a well-rounded individual. Stop by our table to talk with some current students and teachers! www.LHAgEd.org.

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

Chris Donnelly

The CT Department of Energy and Environmental Protection Division of Forestry performs a range of services for the citizens of Connecticut. Our state is about 60 percent forested, making it both one of the most forested and densely populated states in the country. Among its responsibilities, DEEP Forestry manages nearly 162,000 acres of state-owned forestlands, for the health 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. Recent storms and the outbreak of the emerald ash borer have pointed out, again, how important our trees and forests are. 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 standards regarding the work performed on forestlands throughout the state. Questions regarding forests, trees, and forest and tree professionals are all fair game for this group.

54. CONNECTICUT DEPARTMENT OF LABOR / CONN-OSHA

Catherine Zinsser

Our mission at the Connecticut Department of Labor, OSHA Division, is to assist employers, in both public and private sectors, in developing and maintaining workplaces free from recognized hazards. This is accomplished through our no-cost on-site consultation program. The state offers the expertise of highly qualified occupational safety and health professionals to employers who request help in establishing and maintaining a safe and healthful workplace.

55. CONNECTICUT NORTHEAST ORGANIC FARMING ASSOCIATION

Deb 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 ctnofa.org, facebook.com/ctnofa, organiclandcare.net or call 203-308-2584.

56. USDA NATIONAL AGRICULTURAL STATISTICS SERVICE, NEW ENGLAND

Gary 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 12 Regional Field Offices 34 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.nass.usda.gov/ while the homepages for New England and each of the six states are at http://www.nass.usda.gov/Statistics_by_State/New_England (CT, NH, ME, MA, RI, VT).

57. UCONN EXTENSION MASTER GARDENER PROGRAM

Jude Hsiang

The UConn Extension Master Gardener Program is an Educational Outreach Program of the University of Connecticut Extension System. Following their special training course, Master Gardeners commit time as volunteers to provide horticultural-related information to the community. Master Gardeners in New Haven County collaborate with parks departments, land trusts, community groups, and educational institutions at all levels to increase environmental awareness through hands-on programs. The University of Connecticut is an Equal Opportunity Employer and Program Provider.

58. THE CONNECTICUT BOTANICAL SOCIETY

Truda Steinnagel

We are a group of amateur and professional botanists who share an interest in the plants and habitats of Connecticut and the surrounding region since it was founded in 1903. Our goals are to increase knowledge of the state's flora, to accumulate a permanent botanical record, and to promote conservation and public awareness of the state's rich natural heritage. Our social media connections are: www.ct-botanical-society.org/index.html, www.facebook.com/pages/CT-Botanical-Society/486881834720804, and www.facebook.com/CTNotableTrees.

59. CONNECTICUT DEPARTMENT OF AGRICULTURE

Ronald Olsen

A photo exhibit will highlight Connecticut agriculture. Brochures and pamphlets will be available, along with information on Public Act 490 and farming, and agriculture and taxes. www.ct.gov/doag.

60. UNITED STATES DEPARTMENT OF LABOR / OSHA

Leona 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 offices are located in Hartford and Bridgeport, CT. To contact your local office call: Hartford 860-240-315 or Bridgeport 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.

61. THE CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION: WILDLIFE DIVISION

Laura Rogers-Castro

The CT DEEP Wildlife Division is responsible for managing the state’s wildlife through a program of regulation, research, management, and public education. The Outreach Program within the Division will be displaying hands-on materials for visitors to view during Plant Science Day to learn more about Connecticut’s common wildlife.

62. CONNECTICUT PROFESSIONAL TIMBER PRODUCERS ASSOCIATION

Joan Nichols

The Connecticut Professional Timber Producers Association, Inc. (TIMPRO) was formed in 2007. The mission of TIMPRO 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.

63. CONNECTICUT ENVIRONMENTAL COUNCIL

Erica Fearn

Connecticut Environmental council unites individuals, businesses and industry associations that engage in the responsible use of pesticides and fertilizers to beautify, protect and provide healthy spaces and places. CTEC works to improve the quality of life for Connecticut families through leadership, stewardship, sustainability and compliance. CTEC is dedicated to clarifying facts and myths on fertilizer, pesticide and water use in our state. Active in government regulation, CTEC works with policy makers and regulators to be able to provide the best service and products to Connecticut residents. CTEC offers professional development and education opportunities to member businesses. **Making Connecticut's spaces and places beautiful, safe and pest-free.**

64. USDA, ANIMAL AND PLANT HEALTH INSPECTION SERVICE, PLANT PROTECTION AND QUARANTINE

Kate Aitkenhead

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.

65. CONNECTICUT INVASIVE PLANT WORKING GROUP

Donna Ellis and Logan Senack

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 industry, and the general public to identify and manage invasive species pro-actively and effectively. The CIPWG website, www.cipwg.uconn.edu provides timely information on non-native invasive plants and their alternatives, 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 and subscribe to the list serve, please contact Donna Ellis at 860-486-6448; email donna.ellis@uconn.edu.

66. FEDERATED GARDEN CLUBS OF CONNECTICUT, INC.

Leslie Martino

The Federated Garden Clubs of Connecticut, Inc. is an educational, charitable non-profit organization made up of 7,053 individual members, 151 clubs and 15 affiliate organizations. It is one of thirteen charter members of the National Council of State Garden Clubs, Inc., now known as National Garden Clubs, Inc. Our mission is to coordinate, stimulate and encourage higher standards in all aspects of Garden Club work and to protect and conserve natural resources, preserve our heritage and promote civic beauty. Our focus under our current President, Jacqueline Connell is to raise consciousness of our members about the plight of pollinators of all types and what we as gardeners can do to help them. We want to encourage members to plant natives to attract pollinators and design landscapes to nurture them. In summary we say, "Bee Kind to Pollinators, Plant Natives and Create Backyard Habitats."We offer educational programs to our members and the community, at large, through our national curriculum through our Flower Show School, Landscape Design Study School, Garden Study School and Environmental Study School. Additionally we have resources to address Garden Therapy, Historical and Memorial and Public Gardens, Horticulture, Legislative/Government Action, Public Relations, Scholarships and Youth Activities. The Federation sponsors The Connecticut State Flower Show held annually in Hartford. Visit our website at www.ctgardenclubs.org/.

67. THE SLEEPING GIANT PARK ASSOCIATION

Chuck Schall

The Sleeping Giant Park Association (SGPA) was formed in 1924 to acquire land on and around the series of ridges in Mount Carmel, Connecticut known as the Sleeping Giant for use as a state park. SGPA is an all-volunteer organization whose mission is to protect and enlarge Sleeping Giant State Park. SGPA maintains over thirty miles of trails in the park, sponsors over 15 guided hikes each year, acquires land to add to the park, publishes the *Giant News*, a newsletter about the Giant, prints and distributes trail maps and maintains a self-guided nature trail with a printed guide. Links to these and other activities as well as more information about the Giant and SGPA can be found on our webpage, www.sgpa.org.The entrance to Sleeping Giant State Park is opposite Quinnipiac University on Mount Carmel Avenue about 1/2 mile east of Whitney Avenue (Rte. 10) in northern Hamden, Connecticut.

68. CONNECTICUT TREE PROTECTIVE ASSOCIATION

Rita Smith

The Connecticut Tree Protective Association, Inc. (CTPA) is an educational non-profit established for the following purposes: a) to promote the protection and care of trees in Connecticut by encouraging the practice of proper and efficient methods by tree workers; b) to advocate beneficial arboreal legislation and adequate tree planting and care appropriations by the state, cities, towns and boroughs of Connecticut; c) to bring about closer cooperation among all parties interested in the protection of trees; d) to sponsor meetings devoted to the presentation and exchange of scientific data and general information helpful to tree preservation practices; e) to foster research in the field of arboriculture; f) to encourage a greater interest in the planting of trees; g) to promote good fellowship and ethical practices in the arboricultural profession. Currently there are over 800 members in the CTPA. (See www.CTPA.org)

69. buyCTgrown

Ashley Kremser

buyCTgrown is a place to discover CT Grown goods and experience Connecticut agriculture. It's a great local resource for finding CT Grown food, farm-to-fork restaurants, food trails, farm tours, and statewide events relating to food and gardening culture. The CT 10% campaign, run in partnership with UConn Extension, asks you to spend 10% of your existing food and gardening dollars on locally grown goods (including your meals purchased at farm-to-fork restaurants). The campaign's website, www.buyCTgrown.com, includes a searchable database where you can find everything from apples to wool, all produced within CT! Do you buy local?

70. USDA, FARM SERVICE AGENCY

Debbie Castle and Ann Marie McCard

The Farm Service Agency equitably serves all farmers, ranchers, and agricultural partners through the delivery of effective, efficient agricultural programs for all Americans. We are a customer-driven agency with a diverse and multi-talented work force, dedicated to achieving an economically and environmentally sound future for American Agriculture. The goal of our agency is to create a market-oriented, economically and environmentally sound American agriculture by delivering an abundant, safe, and affordable food and fiber supply while sustaining quality agricultural communities. The foundation of FSA's mission and vision rests upon the USDA's long-standing core values of strong ethics, customer service, team work, inclusive decision-making, and fiscal responsibility. For more information visit us at http://www.fsa.usda.gov.

71. USDA, NATURAL RESOURCES CONSERVATION SERVICE

Lisa Krall

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.

72. CONNECTICUT GREENHOUSE GROWERS ASSOCIATION

Susan Pronovost

The Connecticut Greenhouse Growers Association was founded January 1991 as a nonprofit organization devoted to promoting the state's greenhouse industries and assisting growers. CGGA is active in sponsoring educational programs, promoting the value of Connecticut-grown plants to the general public, representing growers' interests before state and federal agencies, and encouraging scientific research benefitting the industry. Perhaps the Association's biggest contribution is bringing together greenhouse growers to interact, network and share ideas in informal settings. Visit our website www.FlowersPantsInCT.com.

73. COMMON INDOOR MOLDS

De-Wei Li

Indoor molds may develop as a result of water damage or extended high humidity in indoor environments. Over six hundred mold species have been described from indoor environments North America. The presence of these fungi may impact air quality and human health as a result of spore presence or volatile chemical presence in air. The correct identification of indoor fungi is an important step towards the evaluation of risk associated with mold presence and the remediation of damage.

74. SUDDEN VEGETATION DIEBACK OF CONNECTICUT SALT MARSHES

Wade H. Elmer and Magali Bazzano Assisted by: Peter Thiel

Salt marshes are the most productive ecosystems in Connecticut. Around 2000, large irregular, barren areas appeared along the intertidal creeks from New Haven to New London. This phenomenon was called Sudden Vegetation Dieback (SVD) and affected mostly smooth cord grass (*Spartina alterniflora*). A key feature of SVD is that the plants do not grow back the next year. We are studying the role of silicon nutrition on *S. alterniflora* physiology and how that affects susceptibility to pathogenic fungi and to herbivory by marsh crabs.

75. MAIZE GENETICS – INVESTIGATING WHY CORN IS SO MORE EFFICIENT AT PHOTOSYNTHESIS

Richard Peterson and Neil Schultes

This small corn plot is part of a larger project to determine why corn is so more efficient at utilizing light energy (photosynthesis) than most other plants. Photosynthesis uses captured light energy from the sun to convert or "fix" carbon dioxide (CO2) into sugar. Corn accomplishes this very efficiently – in a process called C4 photosynthesis. It relies on a special biochemistry found in only a handful of plants. Although scientists have long known the major "players" in C4 photosynthesis (i.e. the enzymes responsible), how this complex process is regulated remains a mystery. Recent physiological investigations suggest that a protein complex called NAD(P)H Dehydrogenase unexpectedly may be key to this process. To test this possibility we seek maize plants that have mutations in genes that encode essential proteins in NAD(P)H Dehydrogenase. Such lines will be subjected to sophisticated measurements in the laboratory. Here we are propagating maize lines carrying mutations in NAD(P)H Dehydrogenase genes.

76. FOOD BANK

77. HOPS TRIALS

Abigail A. Maynard and David E. Hill

There is a potential new market for local hop production in Connecticut to support the rapidly expanding local craft brewing industry. Hops are successfully grown in some Northeast states, but no data currently exists for Connecticut. Normally, hops are grown utilizing a high (20 ft) trellis system but that is a determent for many growers because it requires more specialized equipment. In this trial, which is repeated at the Valley Laboratory in Windsor, we are evaluating five disease-resistant hops cultivars when grown with the traditional high trellis system versus a low trellis system (10 ft). At Windsor, low trellis systems will utilize existing tobacco shade tent structures. Plant vigor, cone yields, and disease and insect pest problems of the different cultivars grown utilizing the two trellis systems will be evaluated over the 3 years of this project.

78. THE SOUND SCHOOL AGRICULTURE SCIENCE PROGRAM

Chas Mavrelion and Students from the Sound School

This program is a unique opportunity for students from New Haven who are interested in studying/pursuing a career in Agricultural Science. The Sound School 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, 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.

79. FOOD BANK

80. POLLINATION OF PUMPKINS AND WINTER SQUASH

Kimberly A. Stoner Assisted by: Tracy Zarrillo, Morgan Lowry, Amelia Tatarian, Benjamin Gluck and Alana Russell.

Pumpkins, squashes, and most other cucurbits require insect pollination in order to set fruit. In Connecticut, nearly all the pollination of pumpkins and squash is carried out by three species of bees: honey bees (*Apis mellifera*), bumble bees (*Bombus impatiens*), and squash bees (*Peponapis pruinosa*). We are working with farmers across the state counting numbers of bees on pumpkin and winter squash flowers and measuring pollen deposition on the stigmas of female flowers. We are also measuring pesticides in pollen, nectar, and bees. In this plot, and in similar plots in Windsor and Griswold, we are comparing natural pollination and supplemental hand pollination to see if natural pollination is adequate or if additional pollination will increase fruit set or fruit size. This project has been carried out for two years and will be continuing one more year.

81. HYBRID AND VINIFERA WINEGRAPE CULTIVAR TRIAL

Francis J. Ferrandino *Assisted by:* Joan Bravo

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.

82. THE ROCK

This rock is (technically) a Glacial Boulder composed of DIABASE. It was moved by flowing ice from its place of origin, and is therefore also known as a Glacial Erratic. The boulder probably fell onto the top of the glacier oozing its way down past the Sleeping Giant's head during the waning stage of the last continental glaciation. It was deposited here, near the toe of the waning glacier, onto "till," an unsorted mass of sandy or silty material mixed with rounded pebbles and boulders that had been pushed in front of, or under, the glacier, and deposited as the ice melted. Most of the boulders around the area, such as those in the nearby stone walls, are rounded and their surfaces have been ground smooth by abrasion beneath the glacier. Diabase has a fine crystalline texture, having been pushed up as magma close to the surface where it cooled quickly. The "trap rock" of this region is either diabase, or its compositional equivalent basalt which was extruded onto the surface in lava flows that form topographic "trappa" or "trappe" (steps or stairs).

83. PINOT GRIS CULTURAL TRIALS

Francis J. Ferrandino Assisted by: Joan Bravo

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. This summer the half acre plot is being used to measure detailed wind statistics in the vineyard.

84. ROCKY HILL AMERICAN CHESTNUT TREES

Sandra A. Anagnostakis Assisted by: Pamela 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 11) to keep them alive.

85. ASIAN CHESTNUT GALL WASP ON CHESTNUT

Sandra A. Anagnostakis Assisted by: Pamela Sletten

Many of the chestnut trees in this plot are heavily infested with Asian chestnut gall wasp (*Dryocosmus kuriphilus*). The insect was first detected in CT in 2011, but has done serious damage to commercial orchards in the mid-west and in Italy. We have been making crosses of susceptible trees with Ozark chinquapins which seem to have good resistance to this insect. There are two Ozark chinquapins at the back of the Species and Hybrids plot.

86. BEACH PLUM TRIALS

Abigail A. Maynard and David E. 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 in Windsor. 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.

87. PAWPAW TRIALS

Abigail A. Maynard and David E. Hill

Pawpaws are shrubby trees that are native to the temperate woodlands of the eastern United States. Native Americans are credited with spreading pawpaws across the eastern U.S. to eastern Kansas and Texas, and from the Great Lakes almost to the Gulf. The trees are woodland understory plants that need shade to protect the seedlings but once established prefer full sun. They produce maroon, upside-down flowers which are self-incompatible, requiring cross pollination from another unrelated pawpaw tree. They are not pollinated by bees but by flies and beetles. The pawpaw is the largest edible fruit native to America. Individual fruits weigh 5 to 16 ounces and are 3 to 6 inches in length. The tasty fruit has a smooth, custard texture. In this trial, 4 cultivars of pawpaws were planted in 2002.

88. JAPANESE PLUM VARIETY TRIALS

Abigail A. Maynard and David E. Hill

As wholesale marketing of major tree fruits becomes unprofitable, many Connecticut growers are turning to retail sales of their fruit. For a retail operation to be successful there must be a diversity of products. Thus, many growers are interested in adding minor

specialty fruits to their operations. Consequently, we have expanded our New Crops Program to include fruits. This trial, also repeated at the Valley Laboratory in Windsor, includes 12 cultivar/rootstock combinations of Japanese plum. Many trees were severely damaged by black knot disease and were removed from the orchard. However, the cultivar 'Obilinaja' (planted in the first row) has been free of the disease.

89. HYBRID ELM TREES

Sandra A. Anagnostakis Assisted by: Pamela 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.

90. EXPERIMENT STATION ASSOCIATES

Will Rowlands

Information is available on this organization formed to help promote scientific advances at The Connecticut Agricultural Experiment Station. Visit their webpage at: http://www.ct.gov/caes/ESA.

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

Note: If more than 6 plots are listed, the bolded plot listing is where the staff member plans to be located for the day

NAME	FIELD PLOT NUMBERS
Alves, E.	40c, Main Tent
Ammirata, M.	Kid's Passport Station
Anagnostakis, S.	1, 7, **11, 12,** 14, **22, 23**, 50, 84, 85, 89
Anderson, J.	40c
Andreadis, T.	40c, Main Tent
Armstrong, P.	40d
Arsenault, T.	25, 32, Barn B
Barsky, J.	21, 39, 42
Blevins, T.	51, Outside Exhibitors (Plots 52-72)
Bomba-Lewandoski, V.	Barn A
Bransfield, A.	
Bravo, J.	9, 10, 16, 18, 19, 35, 81, 83, Barn B
Bugbee, G.	34
Canepa-Morrison, J.	43
Carney, S.	Registration
Cecarelli, R.	20, Farm Crew
Cheah, C.	46
Child, N.	38
Cowles, R.	36
Creighton, M.	51
De La Torre Roche, R.	31, 33, Barn B
Dingman, D.	Barn B, Demonstration Tent
Douglas, S.	Main Tent
Durgy, R.	17, Farm Crew
Dugas, K.	8
Eitzer, B.	Barn B
Elmer, W.	6, 13, 74, Main Tent
Fengler, J.	43, 51
Ferrandino, F.	9, 10, 16, 18, 19, 35, 81, 83, **Barn B**
Hannan, Jr., R.	Farm Crew
Hart, B.	Maintenance
Hayes, L. E.	40a, 40b
Hill, D.	2, 4, 5, 28, 37, 41, 47, **48, 49**, 77, 86, 87, 88
Hiskes, R.	17
Huntley, R.	Barn B

Hawthorne, J.	31, 33, Barn B
Ives-Parisi, J.	Registration
Kaczenski, L.	26
Krol, W.	32, Barn B
LaFrazier, R.	Maintenance
LaMondia, J.	38
Last, M.	Main Tent
Li, D.	7
Li, Y.	17
Lowry, M.	3, 80, Barn B
Maier, C.	Barn B
Marra, R.	Pesticide Credit Tour
Maynard, A.	2, 4, 5, 28, 37, 41, 47, **48, 49**, 77, 86, 87, 88, **Barn B, Demonstration Tent**
McHale, N.	Bus Tour
McHill, M.	Farm Crew
Mervosh, T.	26
Milano-Ottenbreit, R.	26
Misencik, M.	40d
Molaei, G.	40b
Musante, C.	31, 33, Barn B, Entrance Gate
Nicholson, B.	Maintenance
Peterson, R.	75, Bus Tour
Pignatello, J.	Barn B
Prapayotin-Riveros, K.	32, Barn B
Preste, J.	Farm Crew
Ranciato, J.	Barn B, Entrance Gate
Riddle, D.	17
Ridge, G.	17
Robb, C.	32, Barn B
Rutledge, C.	24
Salvas, M.	38
Sandrey, S.	51
Schultes, N.	75, Barn B
Scott, M.	Maintenance
Servin, A.	13, 31, 33, Barn B
Shepard, J.	40d
Short, M.	27
Sletten, P.	1, 7, 11, 12, 14, 22, 23, **50**, 84, 85, 89
Smith, V.	51
Soleski, K.	26
Stafford, K.	40a, 40b
Stoner, K.	3, 80, Main Tent

Stuber, H.	40a, 40b
Thiel, P.	6, 13, 74
Thomas, M.	40d
Trenchard, P.	51
Vasil, M.	
Vasireddy, S.	Barn A
Vossbrinck, C.	20
Ward, J.	21, 39, 42, 45, Main Tent
White, J.	13, 31, 32, 33, Barn B
Williams, S.	27, 40b
Xiao, F.	Beverages
Yi, P.	Barn A
Zarrillo, T.	3, 26, 80

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 138 years.

The CAES is the first state 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 his 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. Research continues on crops for biodiesel fuel production and for nematode control. 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 and control of exotic plant species.
- 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.
- Surveys for the emerald ash borer and the release of parasitoids to help control this invasive insect.
- Studies of native pollinators and floral resources for wild bees.

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.

7/10/14

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PLANT SCIENCE DAY is held annually the first Wednesday in August at Lockwood Farm, 890 Evergreen Avenue, Mt. Carmel, Hamden.

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

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