STATION NEWS

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

CAES

The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

The mission of The Connecticut Agricultural Experiment Station is to develop, advance, and disseminate scientific knowledge, improve agricultural productivity and environmental quality, protect plants, and enhance human health and well-being through research for the benefit of Connecticut residents and the nation. Seeking solutions across a variety of disciplines for the benefit of urban, suburban, and rural communities, Station scientists remain committed to "Putting Science to Work for Society", a motto as relevant today as it was at our founding in 1875.

VOLUME 4, ISSUE 9

SEPTEMBER 2014

Departmental News

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DEPARTMENTAL NEWS

ADMINISTRATION

DR. THEODORE ANDREADIS was interviewed about Chickungunya virus in the Americas and the threat of active transmission in the northeastern US by the mosquito, *Aedes albopictus* by Brendan Gibbons, The Scranton Times-Tribune (August 11); was interviewed about West Nile virus activity in Connecticut and the US this summer by Amanda Cuda, CT Post (August 13); and was interviewed about the detection of West Nile virus in mosquitoes in Stamford and Norwalk by Renee Chmiel-News 12 Connecticut (August 21).

ANALYTICAL CHEMISTRY

DR. JASON C. WHITE, along with **MS. KITTY PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, DR. BRIAN EITZER, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, MR. JOHN RANCIATO,** and **DR. WALTER KROL** participated in the monthly FDA FERN chemistry cooperative agreement program (cCAP) teleconference call (August 14), spoke by phone with Mr. Joseph J. James, who is President Agri-Tech Producers, about his company's phytoremediation applications and how they could work more closely with the International Phytotechnology Society (August 8), along with **MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI,** and **MR. JOHN RANCIATO,** participated in an FDA and AAFCO Animal Feeds Regulatory Program Standards teleconference call focused on Standard 10 (Laboratory Services) (August 19); participated in the Association of Public Health Laboratories (APHL) Data Acceptance Workgroup teleconference call (August 21); along with **MS. KITTY PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, DR. BRIAN EITZER, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, MR. JOHN RANCIATO,** and **DR. WALTER KROL,** participated in a FDA FERN-wide call and viewed a presentation by Dr. Doug Heitkemper of the FDA Forensic Chemistry Center (FCC) (August 21); along with **DR. WALTER KROL** participated in a teleconference call of the DEEP-led Lobster Pesticide Study 2014 Steering Committee (August 27); along with **MS. KITTY PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, DR. BRIAN EITZER, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, MR. JOHN RANCIATO,** and **DR. WALTER KROL** participated in the FDA ISO Accreditation teleconference Quarter 4 "Wrap-Up" call with Dr. Ruiqing Pamboukian and Dr. Anthony Adeuya of the FDA (August 28); and along with **DR. BLAIRE STEVEN** and **MS. TERRI ARSENAULT,** met with Mr. John Adams of Agilent concerning instrument platforms to detect methane and carbon dioxide (August 28).

DR. BRIAN EITZER was a participant in the FERN cCAP mycotoxin working group phone call on Aug 7, the LC-MS class group phone call (August 12), and the T022 validation group phone call (August 28) and was interviewed by Thomas and Matthew Locastro of the American Horticultural Society who are making a documentary video to help raise funds to study issues raised about the use of neonicotinoid pesticides by the ornamentals industry (August 29).

DR. CHRISTINA ROBB gave a tour of the department to a student from Sport and Medical Sciences Academy in Hartford (August 19) and participated in the FERN FDA T022 validation workgroup conference call (August 28).

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DR. ARNAB K. MUKHERJEE (pictured above) has joined the Department of Analytical Chemistry as a Post-Doctoral Research Associate. Dr. Mukherjee completed his Ph.D. within the Department of Chemistry at the University of Texas-El Paso, with a focus on nanoparticle interactions with plants. Dr. Mukherjee will be working in the FDA-funded Food Emergency Response Network (FERN) program and will be conducting research on the contamination of food with heavy metals and elemental nanoparticles. He will also assist in work related to the Department's pursuit of ISO Accreditation.

ENTOMOLOGY

DR. KIRBY C. STAFFORD III was interviewed about the emerald ash borer in Connecticut by David Dawson, Journal Inquirer (August 1 and 4); was interviewed about "digger wasps" in Southington by Farrah Duffany, Record Journal (August 15); participated in a Tick IPM Working Group conference call (August 13); and answered inquiries by Evan White, Channel 3 News, about "digger wasps" in Southington (August 18).

MR. MARK H. CREIGHTON staffed a booth with a honeybee display and made pollinator buttons for the children in attendance at the National Honeybee Day event held at Massaro Community Farm in Woodbridge (100+ attendees) (August 16) and spoke about the role that honeybees play in pollination and displayed an observation hive for visitors at the Chester Fair (120 attendees at the talk) (August 23 and 24).

MS. KATHERINE D. DUGAS gave a talk about ALB and EAB at the Connecticut Natural History Museum at UConn in Storrs (August 2) and staffed a table with ALB and EAB displays and information at the Woodstock Fair (1,708 attendees visited the table) (August 29 – September 1).

DR. GALE E. RIDGE, with **DR. KIMBERLY A. STONER**, met with the Superintendent of Southington Schools, Mr. Connellan, and other leaders regarding a solitary ground-nesting bee aggregation in a playground at Strong Elementary School in Plantsville (August 25); was interviewed by Channel 3 about solitary ground-nesting bees (August 27). The insect inquiry office occasionally receives unusual specimens. On August 22, Dr. Ridge identified a live Southern Unstriped Scorpion, *Vaejovis carolinianus,* collected from a backyard in Hamden. The insect is currently being maintained on captured spiders, which it relishes. The sting of this scorpion species is not severe, though very uncomfortable for up to an hour after envenomation.

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Southern Unstriped Scorpion,

Vaejovis carolinianus

DR. CLAIRE E. RUTLEDGE met with Monika Chandler and Jonathan Osthus (Minnesota Department of Agriculture), Jennifer Schultz and Jeffrey Hahn (Department of Entomology, University of Minnesota), and Angela Gupta (Department of Forest Resources, University of Minnesota) at a ball field with a colony of *Cerceris fumipennis* in Oakdale, Minnesota, to demonstrate Wasp Watching techniques, and to discuss the nascent Minnesota Wasp Watching program (August 12).

DR. VICTORIA L. SMITH completed the course "Understanding Audit" conducted by USDA Professional Development Center, held at the USDA Eastern Field Office Headquarters in Raleigh, NC (10 participants) (August 26-27).

DR. KIMBERLY A. STONER led a garden and pest walk around the gardens at Common Ground School in New Haven (15 adults and 3 youths attended) (August 9); staffed a table and displayed materials on native bees and factsheets on protecting bees from pesticides and planting for native bees at the National Honeybee Day event held at Massaro Community Farm in Woodbridge (August 16) and discussed ground-nesting bees and visited the Strong Elementary School, where there was a large aggregation of ground-nesting bees last spring, along with **DR. GALE E. RIDGE**, Timothy Connellan (Southington Superintendent of Schools), Peter Romano, Jr. (Director of Operations), and Charles Beliveau (Supervisor of Buildings and Grounds) (August 25).

ENVIRONMENTAL SCIENCES

MR. GREGORY BUGBEE spoke on "Understanding Soils" at the annual meeting of the Connecticut Association of Landscape Architects at Naugatuck Valley Community College (August 7).

DR. JOSEPH PIGNATELLO gave two lectures, "Formation of Exceptionally Strong 'Low-Barrier' Hydrogen Bonds Between Weak Acid Adsorbates and Carboxyl/Hydroxyl Groups on Pyrogenic Carbonaceous Surfaces" and "Sorption Selectivity in Natural Organic Matter Studied with NMR Spin and Relaxation Probes;" co-authored five additional oral presentations and one additional poster; and co-chaired a symposium titled "Pyrogenic Carbonaceous Materials as Adsorbents of Inorganic and Organic Compounds: Fundamentals and Applications" at the 248th American Chemical Society National Meeting, Environmental Chemistry Division, in San Francisco, CA (August 10-14).

MR. MICHAEL THOMAS participated in an Executive Board Meeting of the Connecticut Entomological Society in Willimantic, CT (7 attendees) (August 21).

DR. PENG YI presented a poster entitled "Interactions between Cerium Oxide Nanoparticles and Biochar Nanoparticles" at the 248th American Chemical Society National Meeting, Environmental Chemistry Division, in San Francisco, CA (August 10-14).

DR. FENG XIAO presented a lecture, "Interactions of Biochars of Varied Meso- and Microporosities with Charged and Neutral Heterocyclic Aromatic Compounds Including a Triazine Herbicide," and co-chaired a symposium titled Pyrogenic Carbonaceous Materials as Adsorbents of Inorganic and Organic Compounds: Fundamentals and Applications, at the 248th American Chemical Society National Meeting, Environmental Chemistry Division, in San Francisco, CA (August 10-14).

DR. SIVAKUMAR VASIREDDY has recently joined Dr. Pignatello's research group in the Department of Environmental Sciences as a Postdoctoral Research Scientist. He is working on a project funded by USDA to design efficient and inexpensive catalysts for complete oxidation of methyl bromide, a highly toxic and ozone depleting chemical use in fumigation chambers. His work also involves developing a solid scrubber for the brominated byproducts.

Dr. Vasireddy received his MSc in Chemistry from Andhra University, India in 1999 and his PhD in Chemistry from Indian Institute of Chemical Technology, Hyderabad, India in 2007. He did postdoctoral research with Prof. D. B. Tkatchenko, Universite de Bourgogne, France and with Prof. James J Spivey, Louisiana State University, USA. Prior to joining CAES, Dr. Vasireddy was a research chemical engineer at Jantra-SF LLC, Salt Lake City, UT, where he developed nanostructured zeolite catalysts for the production of diesel/jetfuel from syngas.

Dr. Vasireddy's research career has involved in studying the metal catalysts and reactors for sustainable production of liquid fuels from alternative carbonaceous materials such as coal, biomass and natural gas and developing materials for air/water pollution treatment. His current research interests include heterogeneous catalysis, abatement of air/water pollution, mesoporous materials, Fischer-Tropsch synthesis, chemical fixation of CO_2 and methane activation.

FORESTRY AND HORTICULTURE

DR. MARTIN P.N. GENT attended the International Horticultural Congress 2014 in Brisbane Australia from 17 to 22 August, and presented a talk on 'Effect of Temperature on Composition of Hydroponic Lettuce' (August 18) (50 people), and with Dr. Wade Elmer, and Kranti Macherla and Richard McAvoy of the University of Connecticut presented an poster on 'Effects of salinity and irrigation management on poinsettia' (August 21) (10 people).

DR. ABIGAIL MAYNARD spoke to growers about the New Crops Program at the Farmers' Market in New Haven (August 20), Durham (August 21), Bethel (August 23), North Haven (August 24), West Haven (August 28), and Hamden (August 29).

GRISWOLD RESEARCH CENTER

MR. ROBERT DURGY hosted a tour group of the Middlesex and New London Master Gardeners class of 2014. The group toured the research field plots, receiving a description of the work and results. The group also received instruction on field identification of common vegetable diseases and insects. (24 attended) (August 5).

PLANT PATHOLOGY AND ECOLOGY

DR. SANDRA L. ANAGNOSTAKIS attended the Board Meeting and gave a talk on CAES work with crosses designed to improve levels of nutrients in orchard chestnut fruits at the Annual Meeting of the Northern Nut Growers Association in Corvallis, OR (August 9-13); checked the chestnut arboretum and forest planting of chestnuts at the Greentree Foundation in Manhasset, Long Island (August 18); and gave a tour of Lockwood Farm and discussed chestnuts with Dr. Bruce Levine from Maryland (August 31).

DR. SHARON M. DOUGLAS presented an invited talk titled "Boxwood Blight and the Dawn of a Research Collaboration" in the Symposium "Boxwood Blight: Collaborative Connections to Study an Emerging Disease" and participated in the forum "Boxwood Blight Challenges" at the Annual Meeting of the American Phytopathological Society in Minneapolis, MN (August 9-13); participated in the monthly meeting of the CTPA Board of Directors in Wallingford (August 19); and organized and moderated at the CTPA Workshop titled "Single Rope Positioning: Techniques and Considerations" held at CTPA Headquarters in Wallingford (32 attendees) (August 28).

DR. WADE H. ELMER reported to the Widely Prevalent Fungi Group and attended the Senior Editor meetings for *Phytopathology* at the Annual Meeting of the American Phytopathological Society in Minneapolis, MN (August 9-13); at the meeting, he was told that the book he co-edited, *Mineral Nutrition and Plant Disease,* published by the American Phytopathological Society in 2007, has just sold over 3,400 copies and generated over $260,000.00 for the American Phytopathological Society. It has been a best-seller for seven years. Dr. Elmer was an invited speaker at the International Plant Nutrition Institute Symposium in Villavicencio, Colombia, where he presented a seminar titled "Crop Nutrition and Plant Disease: Role of Macro and Micro Nutrients" to oil palm growers. He also spent time visiting oil palm growers and learning about the disease problems (August 26-29).

Dr. Wade Elmer, standing in an oil palm plantation in Villavicencio, Colombia. The oil palm on the left is healthy oil palm and the one on the right is suffering from "Pudricion del Cogollo," which translates as "Bud Rot," caused by *Phytophthora palmivora*.

DR. YONGHAO LI gave a talk titled "Common Needlecasts of Christmas Trees and Their Control" at the CT Christmas Tree Growers Association twilight meeting in Middletown (35 attendees) (August 20).

VALLEY LABORATORY

DR. RICHARD COWLES presented "Insect pest management and the fir genetic improvement project," to the CT Christmas Tree Growers' Association, at the Valley Laboratory, Windsor, (40 participants) (July 22); displayed a poster "Advances in trapping spotted wing drosophila" at Plant Science Day, Hamden, (August 6); presented "Unconventional chemistries for targeting spotted wing drosophila," at the Northeast Regional IR-4 meeting, Albany, NY, (20 attendees) (August 20); and he spoke about "Insect and mite pests," to the CT Christmas Tree Growers' Association, Middletown, (40 attendees) (August 20).

DR. JAMES LAMONDIA spoke about research on management of boxwood blight with fungicides on the Pesticide Re-Certification Credit Tour on Plant Science Day (55 people) (August 6); led a tour of the Valley Laboratory and Research Farm and discussed plant pathology research with Dr. John Cranmer and Kevin Deehan of Valent (August 7); attended the annual meeting of the American Phytopathological Society in Minneapolis MN to present an invited paper 'Kryptonite for boxwood blight: Management with fungicides and sanitizers' as part of a symposium "Boxwood Blight: Confronting an emerging disease through collaborative connection' (August 9 – 14); and provided boxwood blight management information to Bartlett Tree Research Laboratories for a presentation to the North Carolina green industry at the NC arboretum (August 21).

DR. TODD L. MERVOSH was interviewed by Matt Dwyer of WTIC-AM 1080 News about biological control of mile-a-minute weed (August 1); participated in a symposium planning meeting for the Conn. Invasive Plant Working Group at the Valley Laboratory (August 5); presented the demonstration "Common garden weeds" twice at Plant Science Day (more than 200 attendees) (August 6); and participated in the northeast regional planning meeting for the IR-4 Program for specialty crops in Albany, NY (August 20-21).

DEPARTMENTAL RESEARCH UPDATES AUGUST 2014

ANALYTICAL CHEMISTRY

Zhao, J.; Wang, Z.; **White, J.C.**; Xing, B. 2014. Graphene in the aquatic environment: adsorption, dispersion, toxicity and transformation. *Environ. Sci. Technol.* 48:9995−10009.

Abstract: Graphene-family nanomaterials (GFNs) including pristine graphene, reduced graphene oxide (rGO) and graphene oxide (GO) offer great application potential, leading to the possibility of their release into aquatic environments. Upon exposure, graphene/rGO and GO exhibit different adsorption properties towards environmental adsorbates, and the molecular interactions at the GFN-water interface are discussed detailedly. After solute adsorption, the dispersion/aggregation behaviors of GFNs can be altered by solution chemistry, as well as by the presence of colloidal particles and biocolloids. GO has different dispersion performance from pristine graphene and rGO, which is further demonstrated from surface properties. Upon exposure in aquatic environments, GFNs have adverse impacts on aquatic organisms (e.g., bacteria, algae, plants, invertebrates and fish). The mechanisms of GFNs toxicity at the cellular level are reviewed and the remaining unclear points on toxic mechanisms such as membrane damage are discussed. Moreover, we highlight the transformation routes of GO to rGO. The degradation of GFNs upon exposure to UV irradiation and/or biota are also reviewed. In view of the unanswered questions, further research needed to address mainly includes comprehensive characterization of GFNs, new approaches for explaining aggregation of GFNs, environmental behaviors of metastable GO, and relationship between dispersion of GFNs and the related adsorption properties.

ENTOMOLOGY

Paul M. Severns, **Laura K. Estep,** Kathryn E. Sackett, and Christopher C. Mundt. Degree of host susceptibility in the initial disease outbreak influences subsequent epidemic spread. *Journal of Applied Ecology*. Accepted. DOI: 10.1111/1365-2664.12326

Abstract: Disease epidemics typically begin as an outbreak of a relatively small, spatially explicit population of infected individuals (focus), in which disease prevalence increases and rapidly spreads into the uninfected, at-risk population. Studies of epidemic spread typically address factors influencing disease spread through the at-risk population, but the initial outbreak may strongly influence spread of the subsequent epidemic. We initiated wheat stripe rust Puccinia striiformis f. sp. tritici epidemics to assess the influence of the focus on final disease prevalence when the degree of disease susceptibility differed between the at-risk and focus populations. When the focus/at-risk plantings consisted of partially genetic resistant and susceptible cultivars, final disease prevalence was statistically indistinguishable from epidemics produced by the focus cultivar in monoculture. In these experimental epidemics, disease prevalence was not influenced by the transition into an at-risk population that differed in disease susceptibility. Instead, the focus appeared to exert a dominant influence on the subsequent epidemic. Final disease prevalence was not consistently attributable to either the focus or the at-risk population when focus/at-risk populations were planted in a factorial set-up with a mixture (~28% susceptible and 72% resistant) and susceptible individuals. In these experimental epidemics, spatial heterogeneity in disease susceptibility within the at-risk population appeared to counter the dominant influence of the focus. Cessation of spore production from the focus (through fungicide/glyphosate application) after 1.3 generations of stripe rust spread did not reduce final disease prevalence, indicating that the focus influence on disease spread is established early in the epidemic. Synthesis and applications. Our experiments indicated that outbreak conditions can be highly influential on epidemic spread, even when disease resistance in the at-risk population is greater than that of the focus. Disease control treatments administered shortly after the initial outbreak within the focus may either prevent an epidemic from occurring or reduce its severity.

ENVIRONMENTAL SCIENCES

Christina S. Robb, Brian D. Eitzer, Jordan A. Gibbons, Mark June-Wells, and **Gregory J. Bugbee**. 2014. Persistence and movement of diquat and the effectiveness of limnobarriers after

curlyleaf pondweed treatment in Crystal Lake, Connecticut; *Journal of Aquatic Plant Management*. 52: 39–46.

Abstract: Diquat (6,7-dihydrodipyrido[1,2-a:2,1-c] pyrazinediium ion) concentrations in Crystal Lake, Middletown, CT, USA were monitored after diquat was applied in late April to the southern half of the lake to control curlyleaf pondweed (Potamogeton crispus L.). Limnobarriers were installed around a small island and a stretch of shoreline to protect Vasey's pondweed (Potamogeton vaseyi J. W. Robbins), which is an aquatic plant listed as ''threatened'' in Connecticut. Surface and bottom water were analyzed for diquat from treated and untreated lake sites, inside and outside limno-barrier sites, and downstream until 24 d after treatment (DAT). Mean diquat concentrations in the treated surface lake sites peaked at 327 µg L 0.2 DAT (5 h) and were no longer detectable 13 DAT. At 5 DAT, the treated and untreated lake surface sites had similar mean diquat concentrations of 32 and 38 µg L, respectively. Diquat concentrations in the treated lake surface sites gradually declined until they were no longer detectable 13 DAT. Vertical movement of diquat into the bottom water in the treated lake sites was limited, with a peak concentration of 7 µg L 1 at 7 DAT. Diquat in the lake's outlet stream followed a pattern similar to the untreated surface water, but the concentration peaked at only 26 µg L at 3 DAT. Inside the limnobarriers, diquat concentrations were significantly reduced but not eliminated. Diquat concentrations peaked inside the island and shore limnobarriers 2 DAT at 75 and 39 µg L respectively, and became nondetectable 13 DAT. Diquat movement into the limnobarriers could have been facilitated by imperfect seals where sections connect. The Vasey's pondweed inside the limnobarriers did not appear impacted.

GRANTS RECEIVED AUGUST 2014

DR. BRIAN EITZER entered into a cooperative agreement with Dr. Steven Cook of the USDA bee research lab to provide assistance to his research on the effects of pesticides to bees. Dr. Eitzer's role in this research will be to determine the concentration of pesticides in samples taken during Dr. Cook's experiments. The agreement will provide up to $35,000 to cover the cost of these determinations.

DR. JASON C. WHITE, DR. ALIA SERVIN, DR. ROBERTO DE LA TORRE-ROCHE, DR. WADE ELMER AND DR. HELMI HAMDI (University of Carthage, Tunisia) have received a $20,000 Phase I grant from the Virtual Fertilizer Research Center (VFRC). The funds are to be used to prepare a report and peer reviewed review article on the use of nanoscale amendments to suppress plant disease and increase crop yield. If successfully complete, the investigators will be invited to submit a $150,000 proposal to conduct research on some of the areas identified in the Phase I proposal as critical knowledge gaps.

DR. JOSEPH J. PIGNATELLO was awarded $24,161 for a project titled "Biochar Amendment: A Sustainable Remediation Strategy for Shallow Soil Contamination by Heavy Hydrocarbons" from Chevron Technology Ventures and the University of California for the period 4-22-2014 to 2-15-2015.

MR. GREGORY BUGBEE was awarded $1600 from Fence Rock Lake Association, Guilford for research on control of Brazilian waterweed.

MR. GREGORY BUGBEE was awarded $1900 from a private donor supporting the Boys and Girls Club of Meriden for assistance in controlling nuisance vegetation in Beaver Pond to allow water related activities by inner city youths involved in summer camps.

DR. CAROLE CHEAH received grants for $22,792 from USDA APHIS for biological control for mile-a-minute-weed and for $35,865 from USDA APHIS for technology and development of biological control of elongate hemlock scale (August 27).

DR.DeWEI LI received $1,500 from the project "Recovery from catastrophic weather: Hurricane Sandy mold exposure and health-related training" of UCONN Health Center - supported by the Centers for Disease Control and Prevention's National Institute for Occupational Safety and Health (NIOSH) (1U01OH010627-01).

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JOURNAL ARTICLES APPROVED AUGUST 2014

Cowles, Richard S., C. Rodriguez-Saona, R. Holdcraft, G. M. Loeb, J. E. Elsensohn, and S. P. Hesler. Sucrose improves insecticide activity against *Drosophila suzukii* (Diptera: Drosophilidae). *Journal of Economic Entomology*

Kung, W. Y., K. Hoover, **Richard Cowles**, and R. Talbot Trotter, III. Long-Term Effects of Imidacloprid on Canopy Arthropod Biodiversity on Eastern Hemlock in New England. *Northeastern Naturalist*

Ridge, Gale E. Carpenter Ants. *CAES Fact Sheet*

Williams, Scott C. and M. A Gregonis. Survival and movement of rehabilitated white-tailed deer fawns in Connecticut. *Wildlife Society Bulletin*

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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Entrance to The Connecticut Agricultural Experiment Station in New Haven on Huntington Street

Main Laboratories, New Haven

Lockwood Farm, Hamden

Griswold Research Center, Griswold

Valley Laboratory, Windsor

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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Station News was prepared and edited by Dr. Theodore G. Andreadis, Dr. Jason C. White, Ms. Tia Blevins, Mrs. Lisa Kaczenski Corsaro, Mrs. Roberta Ottenbreit, and Mrs. Vickie Bomba-Lewandoski.