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.
DR. THEODORE ANDREADIS was interviewed about West Nile virus, eastern equine encephalitis and the Mosquito and Arbovirus Surveillance program by Lauren Victory, Fox 61 News (June 3); attended an Invasive Plant Council meeting held at the University of Connecticut in Storrs (June 10); was interviewed about the first human case of eastern equine encephalitis in Connecticut by John Charlton, Fox 61 News (June 12); was interviewed about the outbreak of Chickungunya virus in the Caribbean and prospects for introduction into Connecticut by Amanda Raus, NBC 30 and John Charlton, Fox 61 News (June 17); was interviewed about the outbreak of Chickungunya virus in the Caribbean and prospects for introduction into Connecticut by Amanda Cuda, Connecticut Post (June 23); and presented welcoming remarks about the history and current research activities of the Station to a group of students and teachers from Southern and Central Connecticut State Universities (June 25).

DR. JASON C. WHITE attended the monthly Laboratory Preparedness Advisory Group Meeting at the CT Department of Public Health Laboratory in Rocky Hill CT (June 2); along with DR. CHRISTINA ROBB, DR. BRIAN EITZER and DR. WALTER KROL, met with representatives of Waters Corporation to discuss MALDI as a new analytical platform for the Department (June 9); participated in an FDA webinar on using the updated FERN website (June 10); 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 (June 12); along with DR. CHRISTINA ROBB, MS. TERRI ARSENAULT AND MS. KITTY PRAPAYOTIN-RIVEROS attended an APHL webinar entitled “Creating an ISO17025 Quality Manual” (June 12), 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 teleconference call with FDA assessors to discuss our year 2 third quarter ISO Accreditation Plan (June 13); gave a lecture entitled “Environmental Implications of Nanotechnology” to a University of New Haven graduate student class (60 attendees) (June 19); gave a tour of Department facilities and discussed programs with students and faculty from SCSU and CCSU (25 attendees) (June 25); and along with MR. CRAIG MUSANTE, DR. ALIA SERVIN, AND DR. ROBERTO DE LA TORRE-ROCHE, viewed a Spectroscopy webinar entitled “Characterizing and Monitoring Nanoparticles” (June 25).

DR. BRIAN EITZER gave a webinar on the analysis of aflatoxin M1 in milk using a Thermo Velos to the FERN cCAP Mycotoxin Working Group on June 5 (20 attendees); presented a proposal to the FERN cCAP groups to help lead a multi-laboratory validation of a FERN method for the analysis of toxins in food (15 attendees); and along with DR. JASON WHITE AND DR. DEWEI LI gave a presentation on the detection of aflatoxins in milk at the monthly Toxi-Rounds at the Department of Health Laboratory in Rocky Hill on (15 attendees) (June 26).

DR. CHRISTINA ROBB gave an overview of the Analytical Chemistry department to students and faculty from the Sound School (June 4).

MR. MICHAEL J. CAVADINI assisted with leading a station tour consisting of a group of SCSU students and two students from North Branford High School (June 25).

MR. JOSEPH HAWTHORNE, along with DR. JASON C. WHITE, AND MR. CRAIG MUSANTE, met with Ms. Nancy Koumbourlis of SCP Science on to discuss cost saving alternatives to laboratory consumables (June 24).
DR. KIRBY C. STAFFORD III attended the annual meeting of the Connecticut Academy of Science and Engineering in Cromwell (June 5); and attended a retirement lunch for Patricia Douglas, USDA-APHIS-PPQ State Plant Health Director, in Milford (20 attendees) (June 25).

MR. MARK H. CREIGHTON gave a radio interview about honeybees and pollination on WPLR’s “For the People” with John Voket (June 6); gave a presentation titled “The History of Beekeeping in Connecticut: Past and Present” at the Kellogg Environmental Center in Derby (40 attendees) (June 14); spoke about summer management of honeybees at Massaro Community Farm in Woodbridge (25 attendees) (June 21); and spoke about honeybees and beekeeping at Edward Smith Library in Northford (35 attendees) (June 26).

DR. CHRIS MAIER spoke about the distribution of the periodical cicada in Connecticut and distributed a manual on conifer-feeding caterpillars at a twilight meeting of the Connecticut Pomological Society at Belltown Hill Orchards in South Glastonbury (65 attendees) (June 10).

DR. GALE E. RIDGE was interviewed about the Emerald ash borer, winter moth, ground nesting bees, and the brown marmorated stink bug by Harold Harlan from the Journal Courier (June 2); was interviewed about winter moth and Emerald ash borer by Judy Benson from The Day (June 2); identified the Granulate ambrosia beetle Xyloborus crassiusculus collected from Broken Arrow Nursery, Bethany/Hamden; this was a new state and county record (June 6); and in collaboration with Tim Callahan, director of the Norwalk Health Department 550, “Give Bed Bugs the Boot” public transportation posters were published and installed onto buses throughout Connecticut (June 9).

During the latter half of June, Dr. Ridge collaborated with Derrelyn Gorski, First Selectwoman of Bethany, with a mass mailing alert about the Emerald ash borer in tax bills sent out to town residents. Additionally, Dr. Ridge, in collaboration with the West Haven Tree Commission, sent out an alert to town residents about the Emerald ash borer, recently discovered in West Haven.

DR. CLAIRE E. RUTLEDGE gave a town informational session titled “Emerald Ash Borer in Watertown” in Watertown (10 attendees) (June 10); gave a talk on “Emerald Ash Borer in Connecticut” at the Goodwin Nature Center in Hampton (11 attendees) (June 20); presented a webinar titled “Biosurveillance: Using a Native Wasp to Find an Invasive Beetle” to the NY Invasive Species Speaker Series (37 attendees) (June 25).
DR. VICTORIA L. SMITH, with MS. TIA BLEVINS and MR. PETER TRENCHARD, participated in an Aerial Survey Aviation Safety workshop, sponsored by the US Forest Service, at Granite Air in West Lebanon, New Hampshire (20 participants) (June 2); participated in an evening meeting of the CT Pomological Society, held at Belltown Hill Orchards in South Glastonbury, with a brief presentation on ALB and EAB (65 participants) (June 10); and participated in a meeting of the Yale Biosafety Committee in New Haven (15 participants) (June 19).

DR. KIMBERLY A. STONER participated in an intensive Pollen Analysis Short Course taught by Dr. Jacquelyn Gill, Dr. Simon Goring, and Andrea Nurse held at the University of Maine in Orono, ME (June 1-7); and taught a session titled “Pest Management on Organic Farms” as part of the Institute for Learning in Retirement held at Massaro Farm in Woodbridge (6 attendees) (June 11).

DR. PHILIP ARMSTRONG was interviewed about mosquitoes and mosquito-borne diseases for the CT Radio Works Program (June 2 and June 5); was interviewed by the Danbury News Times about the introduction of the Asian Tiger Mosquito in Connecticut (June 10); and spoke to Southern Connecticut State University and Central Connecticut State University students about the statewide mosquito trapping and testing program (40 attendees) (June 25).

MR. GREGORY BUGBEE gave a talk entitled “The Battle for Candlewood Lake: Can the Invaders be Stopped?” at the annual meeting of the Northeast Lake Management Society at University of Connecticut, Storrs (approx. 75 attendees) (June 14); and, with MS. JORDAN GIBBONS, gave an Invasive Aquatic Plant Workshop in East Haddam to the Lake Hayward Association and other interested parties (35 attendees) (June 21).

DR. GOUDARZ MOLAEI hosted a group of students from the Sound School (Regional Vocational Aquaculture Program New Haven, CT; and presented three short talks on research projects currently underway (June 4).


MR. MICHAEL THOMAS assisted DEEP Wildlife Division staff in managing critical habitat for the state endangered Ghost Tiger Beetle, Ellipsoptera lepida, in Enfield (June 1); and attended the Dragonfly Society of the Americas annual meeting in Ladysmith, Wisconsin (June 11-14).

DR. PENG YI attended and presented a poster, “Interactions between Cerium Oxide Nanoparticles and Biochar Nanoparticles” at the Gordon Research Conference on Environmental Sciences: Water in Plymouth, New Hampshire (June 22-27).
DR. JEFFREY WARD visited with USDA Forest Service managers, scientists, and others to provide advice on oak management on the Green Mountain National Forest in Pownal, VT (18 attendees) (June 3); administered practical and oral examination to arborist candidates for the Connecticut Tree Protection Examining Board (June 11); provided information on controlling running bamboo to Jason Frazer, WFSB Channel 3 (June 12); spoke on "Dating vegetation at crime scenes" at the Clandestine Grave Workshop at the University of New Haven in West Haven (14 attendees) (June 17); and participated in Connecticut Chapter - Society of American Foresters summer meeting in Burlington (June 24).

DR. MARTIN P.N. GENT attended the NE-1335 Regional Research Committee meeting on ‘Resource Management in Commercial Greenhouse Production’ at Rutgers University on 3 and 4 June (June 3-4).

DR. ABIGAIL MAYNARD spoke on “Unusual Garden Vegetables” as part of the “Down the Garden Path” ILR (Institute of Learning in Retirement) series at the Massaro Community Farm in Woodbridge (7 attendees) (June 4).

DR. SCOTT WILLIAMS hosted a conference planning committee of the Connecticut Urban Forest Council at Lockwood Cottage (June 27).

MR. JOSEPH P. BARSKY participated in a “Forests are for the Birds” workshop at the Yale-Myer’s Research Forest in Ashford (35 attendees) (June 7); and attended the Connecticut Society of American Forester’s Field Meeting at Sessions Woods Wildlife Management Area in Burlington (June 24).

DR. SANDRA L. ANAGNOSTAKIS gave a talk titled “Gall Wasp on Species and Hybrid Chestnuts in Connecticut” at the Chestnut Growers of America meeting in Gibsonville, NC (50 attendees) (June 20-22); gave a talk titled “Timber Chestnuts for Connecticut” at Whitney Center in Hamden (20 adult attendees) (June 23).

DR. SHARON M. DOUGLAS organized, moderated, and participated in an evening seminar titled “Oak Wilt: History, Hosts, and Management” held by the CTPA Education Committee in Wallingford (45 attendees) (June 3); participated in the June meeting of the CTPA Board of Directors, which was held at the Farmington Club in Farmington (June 10); and participated in the June meeting of the CT Tree Protection Examining Board and helped administer the oral exam to candidates for the arborist license (June 11).

DR. WADE H. ELMER met with Dr. Roman Zajak at the University of New Haven to discuss marsh research and the graduate program of Ms. Magali Bazzano (June 2); presented a talk on “Sudden Vegetation Dieback” to visiting students from the Sound School (12 students and 1 adult attended) (June 4); spoke about “Sudden Vegetation Dieback” to visiting students and teachers from Southern CT State University and Central CT State University (27 attendees) (June 25).

DR. FRANCIS J. FERRANDINO attended a meeting of the Connecticut Wine Council as the representative of The Connecticut Agricultural Experiment Station (June 12).
DR. YONGHAO LI gave a talk titled “Disease Management in Organic Gardens” for the 2014 Study Group of the Institute for Learning in Retirement in Woodbridge (7 attendees) (June 18); gave a talk titled “Common Foliar Diseases of Christmas Trees and Their Management” at the CCTGA twilight meeting in Newtown (35 attendees) (June 19); and spoke about the role of the Plant Disease Information Office to visiting students and teachers from Southern CT State University and Central CT State University (40 attendees) (June 25).

DR. ROBERT E. MARRA spent most of June at Great Mountain Forest in Norfolk conducting the first phase of his NSF-funded project on internal decay in living trees. Dr. Marra, along with co-PI Dr. Nicholas Brazee and student intern Kelly Allen, both of UMass/Amherst, took multiple sonic and electrical resistance tomographic cross-sectional measurements on over 60 northern hardwoods (American beech, yellow birch, and sugar maple). The next phase of the project will involve felling the trees and cutting cross-sections (“cookies”) corresponding to the tomographic measurements; these will be used to assess the accuracy of tomography in depicting the extent of decay.

DR. JAMES LAMONDIA examined candidates for the Connecticut arborist license and participated in the quarterly meeting of the Connecticut Tree Protection Examining Board in New Haven (June 11); was interviewed about nematode diseases of fruit and vegetable crops and management options for growers by Dorothy Noble for Growing Magazine (June 13); and discussed CAES tobacco research and breeding with Brandon Settje and Nick Van Olden of Altadis and Charlie Rossignol and Fredy Santos of Imperial Tobacco (June 26).

DR. TODD L. MERVOSH participated in a symposium planning meeting for the Conn. Invasive Plant Working Group at the Valley Lab (June 3); and spoke about weed management at a twilight meeting of the Conn. Christmas Tree Growers Assoc. at a farm in Newtown (35 attendees) (June 19).

VALLEY LABORATORY

DEPARTMENTAL RESEARCH UPDATES


ABSTRACT: During 2000-2013, a total of 114 WNV-associated illnesses were reported. Of these, 107 (94%) infections were acquired in-state. The number of annually acquired infections ranged from zero in 2004 and 2009, to 21 in 2012 (median = 6.5). Case-patients ranged in age from 6-89 years (median = 58.5 years); 62 (54%) were male. Of the 114 case-patients, 73 (64%) had meningitis or encephalitis, 37 (32%) had WNV fever, 3 had muscle weakness of one or more extremities, and 1 was characterized by non-specific flu-like symptoms; 75 (66%) were hospitalized. There were 3 deaths associated with meningitis or encephalitis in patients >80 years of age; 2 were female. Among the 107 case-patients with in-state acquired infections, 60 (56%) were from Fairfield County, 23 (21%) from New Haven County, 17 (16%) from Hartford County, 4 (4%) from Middlesex County, 2 (2%) from New London County, and 1 (1%) from Tolland County; no cases were reported from Litchfield or Windham counties. Geographic case-patient distribution reflected land use characteristics with increased risk for human infections in areas designated as developed/urban. Cumulatively, onset of illness peaked during the second week of August through the third week of September.

ABSTRACT: Reactions of dissolved organic matter (DOM) with photochemically generated reactive halogen species (RHS) may represent an important natural source of organohalogen within surface seawaters. However, investigation of such processes has been limited by difficulties in quantifying low dissolved organohalogen concentrations in the presence of background inorganic halides. In this work, sequential solid phase extraction (SPE) and silver-form cation exchange filtration were utilized to desalt and pre-concentrate seawater DOM prior to nonspecific organohalogen analysis by ICP-MS. Using this approach, native organobromine and organoiiodine contents were found to range from $3.2 \sim 6.4 \times 10^{-4}$ mol Br/mol C and $1.1 \sim 3.8 \times 10^{-4}$ mol I/mol C (or $19 \sim 160$ nmol Br L$^{-1}$ and $6 \sim 36$ nmol I L$^{-1}$) within a wide variety of natural seawater samples, compared with $0.6 \sim 1.2 \times 10^{-4}$ mol Br/mol C and $0.6 \sim 1.1 \times 10^{-5}$ mol I/mol C in terrestrial natural organic matter (NOM) isolates. Together with a chemical probe method specific for RHS, the SPE+ICP-MS approach was also employed to demonstrate formation of nanomolar levels of organobromine and organoiiodine during simulated and natural solar irradiation of DOM in artificial and natural seawaters. In a typical experiment, the organobromine content of $2.1 \times 10^{-4}$ mol C L$^{-1}$ (2.5 mg C L$^{-1}$) of Suwannee River NOM in artificial seawater increased by 69% (from $5.9 \sim 10^{-5}$ to $1.0 \times 10^{-4}$ mol Br/mol C) during exposure to 24 h of simulated sunlight. Increasing I$^{-}$ concentrations (up to $2.0 \times 10^{-7}$ mol L$^{-1}$) promoted increases of up to 460% in organoiiodine content (from $8.5 \sim 10^{-6}$ to $4.8 \sim 10^{-5}$ mol I/mol C) at the expense of organobromine formation under the same conditions. The results reported herein suggest that sunlight-driven reactions of RHS with DOM may play a significant role in marine bromine and iodine cycling.


ABSTRACT: Plant parasitic nematodes are pathogenic roundworms that live in water films in soil and plant tissues. They are obligate parasites of plants and move very little on their own. Damage caused by plant parasitic nematodes is often confused with nutrient deficiency or poor root function and is often misdiagnosed, but losses can be very substantial and while difficult to determine, have been estimated be as high as 12% or $8$ billion per year for food and fiber crops in the United States. Because they are essentially aquatic organisms, they can be washed from soil by erosion, rain or irrigation and become suspended in irrigation water sources. The nematodes can then be disseminated by water and irrigation and contaminate new sites, including fields, greenhouses, and nursery production areas. Techniques to manage nematodes in irrigation water include: sedimentation, filtering, and attempts to reduce nematode viability or infectivity by high temperature, ultra-violet radiation, oxidation or combinations of water treatments with sanitation to reduce inoculum sources.

Dr. Abigail Maynard
USDA Specialty Crop Block Grant ($23,441) to study the marketing and production of ethnic vegetables in Connecticut in collaboration with Benjamin Campbell (UConn).

EXECUTIVE SUMMARY: This project will identify the demand and size of markets in CT, provide much needed research into opportunities (production and marketing) and barriers to increasing CT production of ethno-cultural vegetables and novel fruit. Through an integrative approach, this project will value the market of ethno-cultural vegetables/novel fruit, while providing key yield and production information to CT specialty crop producers. Further, this project will engage new and disadvantaged farmers, including ethnic and urban producers, in order to facilitate increased production throughout the state and in urban areas.
SPECIAL FEATURE
2014 CAES SEASONAL RESOURCE ASSISTANTS

Administration
Samantha Eaton
Clark University

Stanley Olsson
Western New England University

Valley Laboratory
Pictured, left to right

Ayse Case, Central Connecticut State University
Ryan Larrier, University of Hartford
Emmett Varricchio, Central Connecticut State University
Kelly Fancher, University of Hartford
Jason Flynn, teacher and coach at East Windsor High School
Isaac Mensah, Central Connecticut State University

Not pictured:
Steven Varricchio, University of Connecticut
Elizabeth Young, St. Joseph College
Environmental Sciences

Pictured, left to right

Front: Jesse Schock, Southern Connecticut State University
   Andrea Ellison, McGill University
   Sara Benson, University of North Carolina Wilmington
   Samantha Wysocki, Westfield State University
   Jamie Cantoni, Central Connecticut State University
   Monica Mierzejewski, University of New Haven
   Kara Schere, Penn State
   Savyn Kunajukr, University of Connecticut,
   Tanya Petruff, Southern Connecticut State University

Middle: Katherine Nazario, University of Connecticut

Back: Nathan Kloczko, Yale School of Public Health
   Nicole Herman, Yale School of Public Health
   Gunnar Hansen, Iowa College
   Michael Olson, Tulane University

Not Pictured: Demerise Johnston, University of Rhode Island
   Leighton Duncan, Southern Connecticut State University
   David Joyce-Grikis, University of Connecticut
   Kaila Wilkinson, University of New Haven

Forestry and Horticulture

Not pictured

Megan Floyd, University of Connecticut
   Jacob Bongiovanni, University of Hartford
   Erin Donahue, University of Massachusetts
   Dylan Leslie, Central Connecticut State University
   Amanada Massa, Southern Connecticut State University
Not pictured

**Analytical Chemistry**

Katherine Alfiere
Quinnipiac University

**Lockwood Farm**

Mike Burkinshaw
University of Connecticut

Francine Chaves
University of Connecticut

Rob Cota
to be decided

**Griswold Research Laboratory**

Katina Doff
Western New England University

Josiah Smith
Manchester Community College

**Biochemistry & Genetics**

Bryan Lehner
Eastern Connecticut State University

**Plant Pathology and Ecology**

Heather Reed
University of Connecticut

Adam Argraves
Southern Connecticut State University

**Entomology**

Not pictured

Benjamin Gluck
University of Connecticut

Alana Russell
University of Connecticut

Amelia Tatari
Wesleyan University

Gabriella Arnold
University of Connecticut

Heather Whiles
Post University

Mioara Scott
University of Agricultural Science & Veterinary Medicine of Cluj-Napoca, Romania

Monica Mierzejewski
University of New Haven

Nichole Gabelman
University of Connecticut

Stephanie Shea
University of Connecticut
Andreadis, Theodore G., Philip M. Armstrong, John F. Anderson, and Andrew J. Main. Spatial-temporal analysis of Cache Valley virus (Bunyaviridae: Orthobunyavirus) infection in anopheline and culicine mosquitoes in the northeastern United States. *Vector-Borne and Zoonotic Diseases*


Stafford, Kirby C., III. American Dog Tick, *Dermacentor variabilis*. *CAES Fact Sheet*

Stafford, Kirby C., III. Tick Associated Diseases. *CAES Fact Sheet*

Stafford, Kirby C., III. Managing Exposure to Ticks on Your Property. *CAES Fact Sheet*


Wang, Y., K. D. Hyde, E. H. C. McKenzie, Y.-L. Jiang, De-Wei Li. “Overview of *Stachybotrys* (Memnoniella) and current species status. *Fungal Diversity*

Ward, Jeffrey S. “Running Bamboo in Connecticut”. *CAES Fact Sheet*

Zhang, W, S. D. Ebbs, Craig Musante, Jason C. White, C. Gao, X. Ma. Impact of particle size and chemical form of Cerium on uptake and accumulation by radish. *Journal of Agricultural and Food Chemistry*
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