STATION NEWS

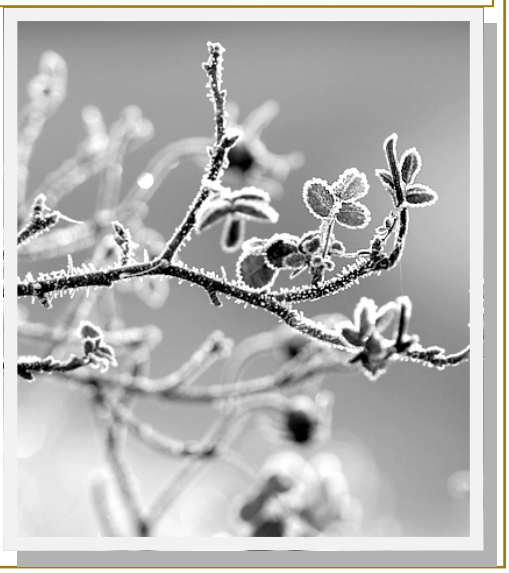
The Connecticut Agricultural Experiment Station

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 5, ISSUE 1

JANUARY 2015

Departmental News

DEPARTMENTAL NEWS

ADMINISTRATION

DR. THEODORE ANDREADIS presented an invited talk entitled, *Chikungunya virus in the Americas: are we risk?* at the 60th Annual Meeting of the Northeastern Mosquito Control Association held in Cambridge, MA (170 attendees)(December 9).

ANALYTICAL CHEMISTRY

DR. JASON C. WHITE attended the monthly Laboratory Preparedness Advisory Group Meeting at the CT Department of Public Health Laboratory in Rocky Hill CT (December 1); along with **DR. CHRISTINA ROBB, DR. BRIAN EITZER, DR. WALTER KROL, MS. KITTY PRAPAYOTIN-RIVEROS AND MS. TERRI ARSENAULT** participated in a phone call concerning the Year 3 Quarter 1 report on the FDA ISO 17025 accreditation grant (December 3); travelled to El Paso TX and participated as a Committee Member in the Ph.D. Dissertation defense of Dr. Sanghamitra Majumdar of the University of Texas-El Paso Department of Chemistry (December 4-5); gave a remote lecture entitled "Environmental Implications of Nanotechnology" to a Environmental Engineering graduate class at North Dakota State University (15 attendees) (December 9); along with **MS. KITTY PRAPAYOTIN-RIVEROS, MS. TERRI ARSENAULT, DR. BRIAN EITZER, MR. CRAIG MUSANTE, MR. MICHAEL CAVADINI, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, AND DR. WALTER** KROL participated in the monthly FDA FERN cCAP conference call (December 11); met with Dr. Erik Lehnhoff of Montana State University who is a candidate for a Weed Scientist position at the Valley Laboratory (December 12); met with Dr. John Wallace of Pennsylvania State University who is a candidate for a Weed Scientist position at the Valley Laboratory (December 19); participated in a conference call with colleagues from Louisiana State University and several Romanian institutions concerning a joint grant proposal being submitted to the EU Program entitled "Safe Implementation of Innovative Nanoscience and Nanotechnology (SIINN)"(December 19); and met with Ms. Gina Impronto, a graduate student at the University of New Haven, regarding a potential research internship (December 19).

DR. BRIAN EITZER participated in the FERN cCAP mycotoxin group conference call (December 4); the FERN cCAP conference call (December 11); the NACRW organizing committee conference call (December 11); and a participant in the Ornamental Horticulture Pollinator Workshop held in Baltimore MD (30 attendees) (December 15-16) .

DR. CHRISTINA ROBB attended a board meeting for the Eastern Analytical Symposium (EAS) in Somerset, NJ (December 5).

ENTOMOLOGY

Picture from "Gypsy Moth Survey Training" at Great Pond State Park, Simsbury, December 17, 2014.

DR. KIRBY C. STAFFORD III participated in the public hearing to expand the emerald ash borer quarantine statewide, held at the Middlesex Cooperative Extension Offices in Haddam (20 participants) (December 4); participated in a tick IPM working group conference call (December 10); and was interviewed about ticks and current tick control products by Dave Mance for Northern Woodlands magazine (December 16).

MS. KATHERINE D. DUGAS attended the public hearing to expand the emerald ash borer quarantine statewide, held at the Middlesex Cooperative Extension Offices in Haddam (20 participants) (December 4).

DR. CHRIS T. MAIER discussed the brown marmorated stink bug with growers at the annual meeting of the Connecticut Pomological Society in Glastonbury (70 attendees) (December 2).

DR. GALE E. RIDGE presented a talk about bed bugs, economic history, and how international trade assisted the insect in its return, in Burlington, VT (65 attendees) (December 3); and participated in an EPA-sponsored webinar titled "Controlling Bed Bugs in School Environments" (600 participants nationally) (December 16).

DR. VICTORIA L. SMITH participated in the public hearing to expand the emerald ash borer quarantine statewide, held at the Middlesex Cooperative Extension Offices in Haddam (20 participants) (December 4).

DR. KIMBERLY A. STONER spoke on "Habitat for Bees" at the Flanders Nature Center in Woodbury (15 attendees) (December 4); participated in a meeting of the Steering Committee for the New England Vegetable and Fruit Conference at the Hillsborough Extension Center in Goffstown, NH (December 12); spoke on "Honey Bees, Bumble Bees, and Other Bees, Both Managed and Wild: Differences in Conservation Status, Feeding and Nesting Behavior Among these Groups" and co-facilitated a discussion, "Developing the Database: Pollinator Attractiveness and Management of Pests Resources" as part of an Ornamental Horticulture Pollinator Workshop organized by the Northeast IR-4 program in Baltimore, MD (41 attendees) (December 15-16).

ENVIRONMENTAL SCIENCES

DR. JOSEPH PIGNATELLO met with Yale CEE seminar speaker, Prof. Phillip Jessop, Dept. of Chemistry, Queen's University, Ontario to discuss mutual research interests (December 3).

DR. PHILIP ARMSTRONG gave a talk titled "Eastern Equine Encephalitis Virus Reemergence in Connecticut" at the Annual Conference for the Northeastern Mosquito Control Association held in Cambridge, MA (December 9); and, along with **Mr. John Shepard** and **Mr. Michael Thomas**, hosted a group of students from the Plainfield High School as part of the Yale-Peabody Fellows SEPA NIH educational program on mosquito biology (December 16).

DR. GOUDARZ MOLAEI gave an invited talk entitled: "Dynamics of Vector-Host Interaction and Emergence of Eastern Equine Encephalitis in Northeastern USA", and was a co-author of a another presentation at the 60th Annual Meeting of the Northeastern Mosquito Control Association, Cambridge, MA (December 9).

MR. JOHN SHEPARD gave a talk entitled "Arbovirus Activity in Connecticut, 2014" at the 60th Annual Meeting of the Northeastern Mosquito Control Association in Cambridge, MA (approximately 170 attendees) (December 8-10); was elected to a three year term as Treasurer of the Northeastern Mosquito Control Association; and, together with **Mr. Michael Thomas**, conducted a hands-on workshop on mosquito biology to a group of 19 students and 1 teacher from Plainfield High School as part of the Yale-Peabody Fellows SEPA NIH program on mosquito biology (December 16).

FORESTRY AND HORTICULTURE

DR. JEFFREY WARD met with Lisa Brodlie, VP Land Management Aspetuck Land Trust, to discuss invasive control on their preserves (December 1); demonstrated bamboo control research plots on a Connecticut Invasive Plant Council field tour (5 attendees) (December 4); participated in a Connecticut Invasive Plant Council meeting in Hartford (December 9); administered practical and oral examination to arborist candidates for the Connecticut Tree Protection Examining Board (December 10); and participated in CT DEEP, Forestry Division meeting at Winding Trails in Farmington (December 17).

DR. ADRIANA ARANGO presented "Adaptation strategies of urban trees under abiotic and biotic stresses" at the CT DEEP, Forestry Division meeting at Winding Trails in Farmington (December 17).

DR. ABIGAIL MAYNARD displayed information on the New Crops Program at the annual meeting of the Connecticut Pomological Society in Glastonbury (December 2).

MR. J.P. BARSKY participated in the quarterly meeting of the Connecticut State Consulting Committee for Agriculture Science and Technology Education at Westhill High School in Stamford (December 3); and assisted in a site evaluation of LaSallette Park in Bloomfield with the Connecticut Environmental Review Team (December 10).

PLANT PATHOLOGY AND ECOLOGY

DR. SHARON M. DOUGLAS attended the annual meeting of the Connecticut Pomological Society in Glastonbury and discussed current tree fruit diseases with grower attendees (105 attendees) (December 2); participated in the monthly meeting of the CTPA Board of Directors, which included planning for the annual meeting in January 2015, held at Aqua Turf in Plantsville (14 attendees) (December 9); and participated in the December meeting of the Connecticut Tree Protection Examining Board and helped administer the oral exam to candidates for the arborist license (December 10).

DR. WADE H. ELMER visited Greenwich High School to speak to Andrew Bramante's student Eloise Petersen, a junior working on biochar and plant viruses (December 23).

DR. FRANCIS J. FERRANDINO attended a meeting of the Connecticut Wine Council held at the CT Department of Agriculture building in Hartford (December 11).

DR. YONGHAO LI gave a talk titled "Diseases of greenhouse vegetables" at the UConn extension program "Growing Container-Grown Greenhouse Vegetables" in Torrington (61 attendees) (December 16).

DR. LINDSAY R. TRIPLETT attended the annual meeting of the Connecticut Pomological Society in Glastonbury (December 2); was approved by the Colorado State University's Department of Bioagricultural Sciences and Pest Management as a Faculty Affiliate, or adjunct professor; gave an invited talk titled "Bacterial leaf streak of rice: Unusual strategies for pathogenesis and defense" at the Yale Botany Seminar Series (25 attendees) (December 8); and was appointed as an Associate Editor for the journal *Phytopathology* for the year 2015.

DR. QUAN ZENG attended the annual meeting of the Connecticut Pomological Society in Glastonbury (December 2). He discussed orchard sampling for fire blight during the upcoming season with fruit growers and extension personnel and prepared and distributed a CAES fact sheet regarding fire blight winter and early season management.

VALLEY LABORATORY

DR. RICHARD COWLES participated in an IR-4 program biopesticides conference call emphasizing products for targeting spotted wing drosophila (15 participants) (December 8); and presented "Systemic insecticides: assessing risk to pollinators in ornamental horticulture," to the Pollinator Workshop, hosted by the IR-4 Program in Baltimore, MD (20 participants) (December 15).

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 (December 10).

DR. DEWEI LI hosted two visiting mycologists, Dr. Bao-Kai Cui and Dr. Li-Wei Zhou, of the Beijing Forestry University and the Applied Ecology Institute, Chinese Academy of Sciences, respectively (December 4); and participated in an advisory board meeting of the project "Recovery from catastrophic weather: Hurricane Sandy mold exposure and health-related training" at UCONN Health Center (December 19).

DEPARTMENTAL RESEARCH UPDATES DECEMBER 2015

Egan, Cameron, **De-Wei Li**, John Klironomos. 2014. Detection of arbuscular mycorrhizal fungal spores in the air across different biomes and ecoregions. *Fungal Ecology* DOI: 10.1016/j.funeco.2014.06.004.

Abstract: Aerial dispersal of fungal spores is common, but the role of wind and air movement in dispersal of spores of arbuscular mycorrhizal (AM) fungi is largely unknown. Several studies have examined the possibility of AM fungal spores being moved by wind vectors without observing spores taken from the air environment. For the first time this study observed the presence of AM fungal spores in the air. The frequency of AM fungal spores in the air was determined in six North American biomes composed of 18 ecoregions. Multiple samples were taken from both the air and the soil at each location. AM fungal spores were found in high abundance in the soil (hundreds of spores per gram of soil), however, they were rarely found in the air (most samples contained no AM fungal spores). Furthermore, only the *Glomus* morphotype was found in the air, whereas spores in the soil were taxomomically more diverse (*Glomus*, *Acaulospora*, *Gigaspora*, *Scutellospora* morphotypes were observed). The proportion of *Glomus* spores in the air relative to *Glomus* spores in the soil was highest in more arid systems, indicating that AM fungi may be more likely to be dispersed in the air in such systems. Nonetheless, the results indicate that the air is not likely a dominant mode of dispersal for AM fungi.

Zhang, XiaoHua, GuiHua Zhao, **De-Wei Li**, S. Li and Qing Hong. 2014. Identification and evaluation of strain B37 of *Bacillus subtilis* antagonistic to sapstain fungi on poplar wood. *The Scientific World Journal* 2014: 1-10. http://dx.doi.org/10.1155/2014/149342

Abstract: Devaluation of poplar products by sapstain accounts for huge and unpredictable losses each year in China. We had isolated four poplar sapstain fungi, Ceratocystis adiposa Hz91, Lasiodiplodia theobromae YM0737, L. theobromae Fx46, and Fusarium sp. YM05, from five poplar varieties and 13 antagonistic bacteria from nine diverse varieties. After being experimented with agar plates, wood chips, and enzyme activities, strain B37 was identified as the best poplar sapstain biocontrol bacterium. The strain B37 was identified as Bacillus subtilis using sequences of the 16S rRNA gene, physiological biochemical, and morphological characteristics.

John F. Anderson, Andy J. Main, **Philip M. Armstrong, Theodore G. Andreadis**, and **Francis J. Ferrandino**. 2014. Arboviruses in North Dakota, 2003-2006. *American Journal of Tropical Medicine and Hygiene*. 12/2014; DOI: 10.4269/ajtmh.14-0291.

Abstract: To investigate arbovirus transmission in North Dakota, we collected and screened mosquitoes for viral infection by Vero cell culture assay. Seven viruses were isolated from 13 mosquito species. Spatial and temporal distributions of the important vectors of West Nile virus (WNV), Cache Valley virus, Jamestown Canyon virus (JCV), and trivittatus virus are reported. Snowshoe hare virus, Potosi virus, and western equine encephalomyelitis virus were also isolated. The risks of *Culex tarsalis* and *Aedes vexans* transmitting WNV to humans were 61.4% and 34.0% in 2003-2006, respectively, but in 2003 when the largest epidemic was reported, risks for *Ae. vexans* and *Cx. tarsalis* in Cass County were 73.6% and 23.9%, respectively. Risk of humans acquiring an infectious bite was greatest from about the second week of July through most of August. West Nile virus sequences were of the WN02 genotype. Most JCV strains belonged to a single clade of genetically related strains. Cache Valley virus and JCV were prevalent during August and early September and during July and August, respectively.

JOURNAL ARTICLES APPROVED DECEMBER 2014

Bharadwaj, Anuja, **Laura E. Hayes,** and **Kirby C. Stafford III.** Effectiveness of garlic for the control of blacklegged tick, *Ixodes scapularis* (Acari: Ixodidae) populations on residential properties in western Connecticut. *Journal of Medical Entomology*

Guo, H., Z. Zhang, B. Xing, **Arnab Mukherjee, Craig Musante, Jason White,** and L. Me. Analysis of silver nanoparticles in antimicrobial products using surface-enhanced Raman spectroscopy (SERS). *ACS Nano*

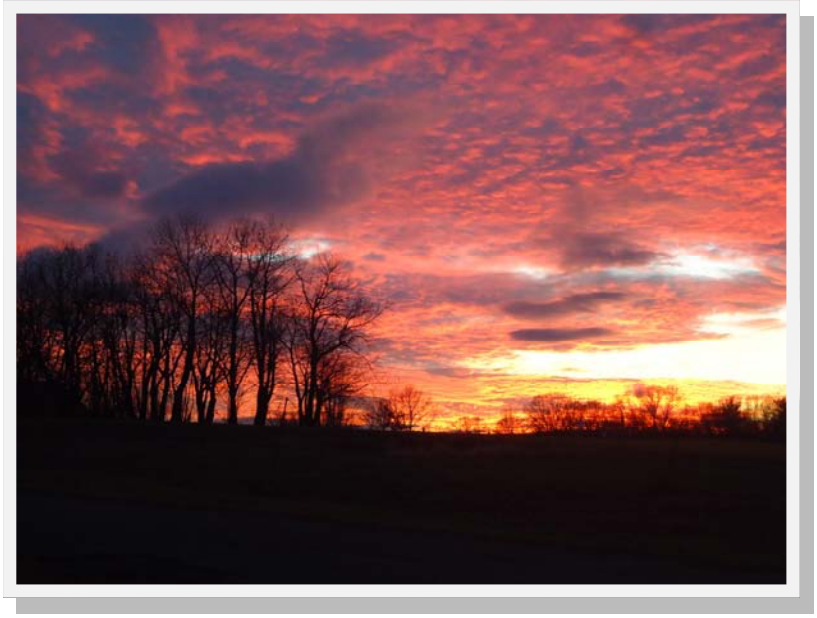
Maynard, Abigail A. How to grow pumpkins in Connecticut. *CAES Fact Sheet*

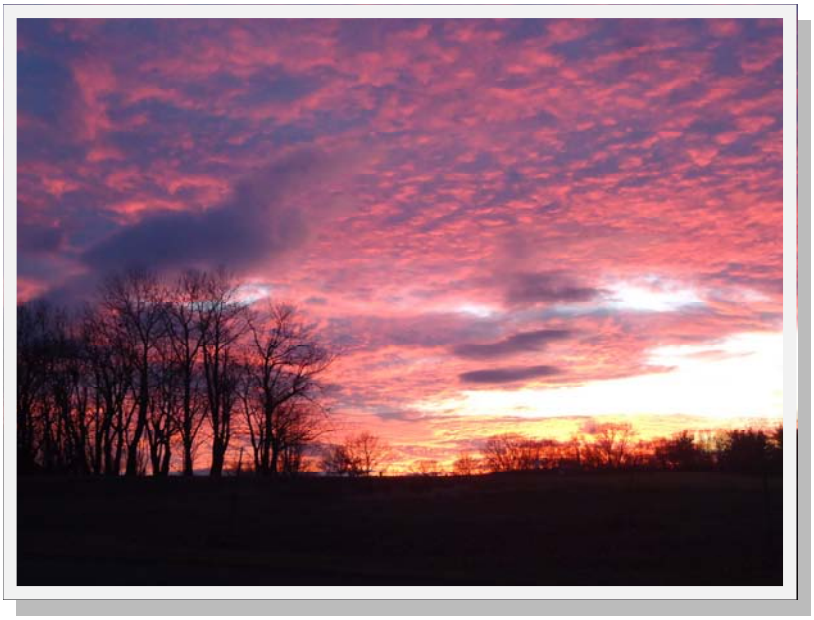
Zhang, Yanyan, **Joseph J. Pignatello,** S. Tao, and B. Zing. Bioaccessibility of PAHs in fuel soot assessed by an in vitro gastrointestinal model: effect of including an absorptive sink. *Environmental Science and Technology*

GRANTS RECEIVED DECEMBER 2014

DR. CAROLE CHEAH was awarded a $22,700 grant for "Biological control of mile-a-minute weed in Connecticut" from USDA APHIS (2015 Cooperative Agreement).

ARTICLES OF INTEREST JULY 2014





These images were taken by Dr. Gale Ridge on Tuesday, December 30, 2014. She was working at the farm at sunset. They are quite gorgeous.

THE CONNECTICUTHE CONNECTICUT AGRICULTURAL EXPERIMENT

Main Laboratories
123 Huntington Street
New Haven, CT 06511-2016
Phone: 203-974-8500

Valley Laboratory
153 Cook Hill Road
Windsor, CT 06095-0248
Phone: 860-683-4977

Lockwood Farm
890 Evergreen Avenue
Hamden, CT 06518-2361
Phone: 203-974-8618

Griswold Research Center
190 Sheldon Road
Griswold, CT 06351-3627
Phone: 860-376-0365

Putting Science to Work for Society.

CAES
The Connecticut Agricultural Experiment Station
Putting Science to Work for Society since 1875

WWW.CT.GOV/CAES

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

Back and Current issues of Station News are located on our website at http://www.ct.gov/caes/cwp/view.asp?a=2826&q=378188

The Connecticut Agricultural Experiment Station (CAES) prohibits discrimination in all of its programs and activities on the basis of race, color, ancestry, national origin, sex, religious creed, age, political beliefs, sexual orientation, criminal conviction record, gender identity, genetic information, learning disability, present or past history of mental disorder, mental retardation or physical disability including but not limited to blindness, or marital or family status. To file a complaint of discrimination, write Director, The Connecticut Agricultural Experiment Station, P.O. Box 1106, New Haven, CT 06504, or call (203) 974-8440. CAES is an affirmative action/equal opportunity provider and employer. Persons with disabilities who require alternate means of communication of program information should contact the Chief of Services at (203) 974-8442 (voice); (203) 974-8502 (FAX); or Michael.Last@ct.gov (E-mail).

Station News was prepared and edited by Dr. Theodore G. Andreadis, Mrs. Vickie Bomba-Lewandoski, and Ms. Rebecca Carlone.