STATION NEWS

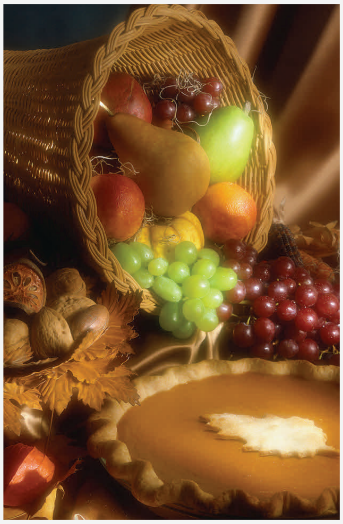
THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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.



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NOVEMBER 2014

Departmental News

DEPARTMENTAL NEWS

ANALYTICAL CHEMISTRY

DR. JASON C. WHITE, along with **DR. WALTER KROL, DR. CHRISTINA ROBB, MR. JOSEPH HAWTHORNE, MS. TERRI ARSENAULT,** and **MR. MICHAEL CAVADINI** attended the Northeast FERN Group webinar on "Analysis of Pesticide Residues in Tea Leaves" (October 23).

DR. BRIAN EITZER attended the monthly Emergency Preparedness meeting in Rocky Hill at the Department of Public Health (October 6), was a participant in the North American Chemical Residue Workshop conference call (25 people) (October 9), led a conference call on the FERN-T022 validation project on (15 people) (October 17), gave a webinar on "Analysis of Pesticide Residues in Tea Leaves" to the Northeast FERN group on (15 people) (October 23), and was a participant in two conference calls concerned with the planning of a new FERN LC/MS class (6 attendees) (October 7 and October 30).

DR CHRISTINA ROBB gave a presentation at Hamden High School entitled "Screening the Food Supply Routinely and in Emergencies" to the Science Club (35 attendees) (October 3).

ENTOMOLOGY

DR. KIRBY C. STAFFORD III participated in a press conference in the CAES atrium by Senator Richard Blumenthal to call for additional federal funding for Lyme research (October 2); was visited by Chris Przybyszewski, US Biologic Inc., to discuss the rodent Lyme vaccine study (October 2); with **DR. SCOTT C. WILLIAMS**, met Rick Jacobson (CT DEEP) and Chris Przybyszewski (US Biologic Inc.) at the CT Department of Energy and Environmental Protection in Hartford to discuss the potential use of the rodent Lyme vaccine (October 3); with **DR. LAURA HAYES**, participated in a conference call of the Tick IPM Working Group (October 8); with **MR. RICHARD CECARELLI**, met with Art Gingert at Lockwood Farm about the placement of an American Kestrel nesting box at the farm (October 9); participated in Bed Bug Forum VIII, organized by **DR. GALE E. RIDGE**, as a member of the Connecticut Coalition Against Bed Bugs, held at Middlesex Community College in Middletown (October 16); participated in Quinnipiac University's Capstone Mentor Fair at their School of Medicine in North Haven (October 16); with **DR. CLAIRE E. RUTLEDGE**, spoke on the emerald ash borer at the meeting of the Connecticut Entomological Society in New Haven (October 17); was visited by Kimberly Foss, Director of Biology and Surveillance, Swamp Inc., Kittery, Maine (October 21); and was interviewed by Jackson Blum, a journalism student at Yale, about the emerald ash borer and invasive insects (October 30).

MR. MARK H. CREIGHTON brought his observation hive and spoke to students in the 4-H program at 4-H Ag Day held at the Nautilus Museum in Groton (75 students attended) (October 15) and spoke about honeybee topics and was presented with the "Beekeeper of the Year" award at the CT Beekeepers Association meeting in Woodbury (75 members attended) (October 18).

MS. KATHERINE D. DUGAS taught an Advanced Master Gardener course on common garden pests at the Cooperative Extension Office in Norwich (25 Master Gardeners attended) (October 2); gave a talk on common garden pests to the North Haven Daytime Gardeners Garden Club (15 attendees) (October 14); attended and staffed the CCABB Bed Bug Forum VIII at Middlesex Community College with **DR. GALE RIDGE**, **MS. HEIDI STUBER**, and Nicole Gabelman (October 16); with Ms. Nicole Gabelman, provided bed bug and CAES information to students and faculty at the Health Fair at the University of Bridgeport (October 23); and spoke about emerald ash borer, invasives, and future plans for tree management to the Clinton Tree Committee at the Henry Carter Hull Library in Clinton (5 committee members attended) (October 30).

DR. LAURA E. HAYES organized a symposium titled "Ecology and Prevention of Tick-borne Diseases" and gave a talk titled "Host-targeted measures and biopesticides for the integrated management of blacklegged ticks" at the 45th Annual Society for Vector Ecology Conference held in San Antonio, TX (100 adult attendees) (October 2).

DR. CHRIS T. MAIER displayed new entomological literature and a large katydid species at a meeting of the Connecticut Entomological Society at Yale University in New Haven (October 17); spoke about the wild and ornamental host plants of the spotted wing drosophila while attending the Annual New England, New York, and Canadian Fruit Pest Management Workshop in Burlington, VT (44 attendees) (October 21).

DR. GALE E. RIDGE edited and published an extensive article with Michelle Brennan about the Study of Entomology for children for the online magazine Trekaroo (October 10). On (October 16), Bed Bug Forum VIII was held at Middlesex Community College in Middletown, with Dr. Ridge (pictured below), Attorney Judith R. Dicine, Dr. David Tolin, Michael Lipsett, and Charles Mastroberti as speakers. The Forum focused on examining the human aspects of hoarding, the law, parasite-human relations, and treatment failures with bed bug management (110 attendees).

DR. GALE RIDGE participated in the Capstone Mentor Fair held at the Medical School of Quinnipiac University in North Haven (October 16); was invited to review and rewrite the Quinnipiac University Bed Bug Protocol Student Handout (October 20); attended the Cross-Cultural Communication symposium, sponsored by the Department of Consumer Protection, in Hartford (October 23); with **MS. KATHERINE DUGAS** and Ms. Nicole Gableman, staffed a bed bug information table at the Health Fair at the University of Bridgeport (500 attendees) (October 23); lectured on bed bugs and human history at the Connecticut Mental Health Center in New Haven (78 attendees) (October 28); and was interviewed by John Burgeson, Connecticut Post, about the discovery of the Southern Pine Beetle, *Dendroctonus frontalis* Zimmermann, on Long Island, which is suspected to have been introduced by Hurricane Sandy in 2012 (October 30).

DR. VICTORIA L. SMITH participated in the annual meeting of the US Forest Service Northeast Area Cooperators, held at Waquoit Bat National Estuarine Research Preserve, Falmouth, MA, with discussions on winter moth, EAB, aerial survey, and Cynipid gall wasp (25 participants) (October 1-2); volunteered with US Fish and Wildlife Service Stewart B. McKinney Wildlife Refuge on Falkner Island, near Guilford, to take in nest boxes for endangered roseate terns (October

10); participated in the monthly meeting of the Yale Biosafety and Recombinant DNA Committee in New Haven (20 participants) (October 16); and participated in the 38th Annual meeting of the North American Plant Protection Organization, held at Las Brisas Resort in Hualtuco, Mexico, with discussions on quarantines, invasive species, and a symposium on electronic certification of plant exports (150 participants) (October 20-24).

DR. KIMBERLY A. STONER participated in a meeting of the City Farm and Garden Working Group at City Hall in New Haven (October 3); presented a talk titled "Habitat for Bees" to the Advanced Master Gardener Course for Coastal Landscapes at the Mercy Center in Madison (15 attendees) (October 20); and met with Justin Elicker, executive director, and Emily Sloss, community garden manager of the New Haven Land Trust, along with Tom Rathier, to discuss lead and other contaminants at community garden sites, current recommendations from the Environmental Protection Agency, and provisions for soil testing (October 22).

MS. TRACY ZARRILLO attended the seminar "Presenting Data and Information" given by Edward Tufte in Hartford (October 20). The focus of this course was to teach fundamental design strategies for information displays, including tables, diagrams, maps, charts, video and data visualization.

STATION NEWS

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

HORTICULTURAL INSPECTION SOCIETY AND CAES HOST NURSERY EXERCISE

MS. TIA BLEVINS, **MS. KATHERINE DUGAS, MR. JEFFREY FENGLER, MR. STEPHEN SANDREY, DR. VICTORIA SMITH,** and **MR. PETER TRENCHARD** participated in the Eastern Chapter of the Horticultural Inspection Society Systems Approach to Nursery Certification exercise on (September 30-October 1, 2014), at the Valley Laboratory of the Connecticut Agricultural Experiment Station (Windsor, CT) and Monrovia Nursery (Granby, CT). Thirty inspectors from nine states participated. On the evening of September 30, participants met in the Gordon Taylor Auditorium of the Valley Laboratory, to discuss the goals of the exercise, and to meet our hosts at Monrovia, Vice-president Greg Schaan and production Manager Sali Borelli. Participants divided into three teams, the Pathogen Pirates, the Ramorum Raiders, and the Boxwood Busters. At Monrovia on the morning of October 1, teams were faced with mock situations in the nursery, such as pathogen finds or trace-backs, and they applied principles of the systems approach to each situation. At noon, teams met with Monrovia personnel, to discuss how the nursery would approach each situation. Following lunch at the Valley Laboraotry, CAES researchers **DR. SHARON DOUGLAS, DR. ROBERT MARRA,** and **DR. JAMES LAMONDIA** discussed current findings on boxwood blight, development of best management practices, and management of the disease in nurseries. Participants also had the opportunity to examine actual infected boxwoods, to see the symptoms of disease first-hand.

ENVIRONMENTAL SCIENCES

DR. JOSEPH PIGNATELLO presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16); met with Prof. Howard Fairbrother, Department of Chemistry, Johns-Hopkins University to discuss collaborative research (October 22); and met with Prof. Samuel Arey, École Polytechnique Fédérale De Lausanne, Switzerland, to discuss collaborative research (October 29).

DR. PHILIP ARMSTRONG presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16).

MR. GREGORY BUGBEE lectured on "Invasive Aquatic Plants in Connecticut" at the Connecticut Invasive Plant Working Group Conference at UCONN (approx. 50 attendees) (October 7); taught a course on "Aquatic Plants" to the Federated Garden Club at the Kellogg Environmental Center in Bethany (approx. 30 attendees) (October 15); presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16); and interviewed by Skyler Magnoh of the News Times on cyanobacteria problems in Connecticut lakes (October 30).

DR. BLAIRE STEVEN presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16); and gave a lecture for the Sigma Xi, Quinnipiac Chapter seminar series held at Quinnipiac University, Hamden, titled "From the Very Large to the Extremely Small: Putting Microorganisms in Climate Models" (October 29) (attendance, about 30).

DR. CHARLES VOSSBRINCK presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16).

DR. GOUDARZ MOLAEI presented his research and met with students during the Quinnipiac School of Medicine, Capstone Mentor Fair (October 16) and hosted Kimberly Foss, Director of Biology and Surveillance, Swamp Inc., and discussed potential collaborative research (October 21).

MR. MICHAEL C. THOMAS co-instructed a lab field trip to Archbold Biological Research Station, Venus, Florida, for the Yale University EEB Terrestrial Arthropod class (14 attendees) (October 22-26).

MS. ANGELA BRANSFIELD gave a tour of the BSL3 Laboratory to Ms. Kimberly Foss, Director of Biology and Surveillance, Swamp Inc. (October 21).

FORESTRY AND HORTICULTURE

DR. JEFFREY WARD spoke on invasive plant control panel at the 2014 Connecticut Invasive Plant Working Group Symposium in Storrs (150 attendees) (October 7); met with Bruce Villwock and James Barnes, CT DOT, in Monroe to discuss roadside forest management (October 16); spoke on tree biology and led two field identification walks at the 2014 Envirothon Forestry and Urban Forestry Workshop in Burlington (120 students, 12 teachers) (October 18); and moderated session on novel uses of urban forests and waste wood at the 2014 CT Urban Forest Conference / Forest Forum in Southington (100 attendees) (October 29).

DR. ADRIANA ARANGO along with **MR. J.P. BARSKY**, attended Electrical Hazard Awareness Program training at Northeast Utilities (October 16) and attended the Connecticut Urban Forest Council Conference in Southington (October 29).

DR. ABIGAIL MAYNARD Talked to students about careers in agriculture at Hamden Hall Country Day School (16 students, 1 teacher) (October 16); Reported on Station activities at a quarterly meeting of the Council on Soil and Water in Windsor (10 Attendees) (October 30).

DR. SCOTT WILLIAMS gave invited lecture titled "Deer Management Paradigms: Exploring the Deer Density Divide Between a Municipality and its Hunters" at the 19th Annual Pine Barrens Research Forum at Brookhaven National Laboratory, Upton, NY (120 attendees) (October 2); attended the Connecticut Invasive Plant Working Group Symposium in Storrs (October 7); was interviewed by Madeline Bodin of the Northern Woodlands publication "The Place You Call Home" about deer and moose behavioral response to climate change (October 15); participated in the 51st meeting of The Connecticut Agricultural Experiment Station's Institutional Animal Care and Use Committee in New Haven (October 23); and as Executive Treasurer, participated in the 26th Annual Connecticut Urban Forest Council Conference and 10th Annual Forest Forum, Plantsville, CT (October 29).

MR. JOSEPH P. BARSKY participated in the quarterly meeting of the Connecticut State Consulting Committee for Agricultural Science and Technology Education at Southington High School (October 1); led a tree identification workshop for high school students at the Connecticut Forest and Park Association Headquarters in Middlefield (October 4); spoke to students at Cheshire High School about career opportunities in natural resources and environmental science (75 students) (October 15); led two tree identification walks for the high school students at the 2014 Envirothon Forestry and Urban Forestry Workshop in Burlington (25 students, 2 teachers) (October 18); and attended the Connecticut Urban Forest Council Conference in Southington (October 29).

MR. MICHAEL R. SHORT attended The Connecticut Invasive Plant Working Group Symposium at UCONN-Storrs (October 7) and staffed a Station display at the 26th Annual CT Urban Forest Council Conference and CT Forest Forum in Southington. (175 attendees) (October 29).

PLANT PATHOLOGY AND ECOLOGY

DR. SANDRA L. ANAGNOSTAKIS gave an invited talk on CAES chestnut work at the annual meeting of the Canadian Chestnut Council held in Brantford, Ontario, and toured their back-crossed chestnut planting (100 attendees) (October 18). Their original resistant chestnut stock came from CAES trees at Lockwood Farm.

DR. SHARON M. DOUGLAS participated in conference calls with CTPA Board of Directors members and Monica Hemingway of ITG Multimedia to discuss the revamping of the CTPA website (October 8 and 31); participated in the monthly CTPA Board of Directors meeting held in the CAES Board Room (October 14); and gave a presentation on "Poisonous plants" at Cedar Mountain Commons Retirement Community in Newington (15 adult attendees) (October 15).

DR. WADE H. ELMER participated in the Capstone Mentor Fair at the Medical School of Quinnipiac University in North Haven (October 16); attended the New England Estuarine Research Society meeting held at the UConn-Avery Point campus in Groton (October 17); gave a presentation titled "Use of nanoparticles of Cu, Mn, and Zn to suppress soilborne diseases of eggplants and tomatoes" at the 16th World Fertilizer Congress held in Rio de Janeiro, Brazil (400 attendees) (October 20-24); and gave a presentation titled "Use of nanoparticles of Cu, Mn, and Zn to suppress soilborne diseases of eggplants and tomatoes," attended the Extension/ Industry Meeting, led the Plant Pathology Jeopardy Game, and presided over the Graduate Student Awards at the Annual Meeting of the Northeastern Division of the American Phytopathological Society held in Portsmouth, NH (32 adult attendees) (October 29-31).

DR. FRANCIS J. FERRANDINO gave a presentation titled "Turbulent wind in a vineyard canopy," and was named President of NED-APS, at the Annual Meeting of the Northeastern Division of the American Phytopathological Society held in Portsmouth, NH (32 adult attendees) (October 29-31).

DR. YONGHAO LI attended the Invasive Plant Symposium 2014 at the University of Connecticut in Storrs (October 7); staffed the "hands-on" table with tree diseases for Arboriculture

101 in Wallingford (40 attendees) (October 22); and presented "Update of Plant Diseases in 2014" at the Extension/Industry Meeting at the Annual Meeting of the Northeastern Division of the American Phytopathological Society in Portsmouth, NH (32 adult attendees) (October 29-31).

DR. ROBERT E. MARRA gave a presentation titled "Assessing internal decay in trees nondestructively using tomography" at the 26th Annual Conference on Urban and Community Forestry and 10th Annual Forest Forum held at the Aqua Turf Club in Plantsville (60 adult attendees) (October 29) and presented a talk titled "Molecular diagnostics for the boxwood blight pathogen, *Calonectria pseudonaviculata*" at the Annual Meeting of the Northeastern Division of the American Phytopathological Society held in Portsmouth, NH (32 adult attendees) (October 29-31).

DR. LINDSAY R. TRIPLETT gave a guest lecture titled "*Xanthomonas oryzae* and bacterial blight of rice: Virulence genes, TAL effectors and host defense" for the graduate plant bacteriology class (15 students attended) (October 9) and presented an invited seminar titled "Searching bacterial DNA for new disease resistance strategies in rice" to the Department of Plant and Environmental Protection Sciences at the University of Hawaii at Manoa (40 attendees) (October 10). The visit was sponsored by the University of Hawaii Foundation.

Dr. Lindsay R. Triplett started her position as Assistant Scientist II in the Department of Plant Pathology and Ecology in October. She recently completed postdoctoral training in the rice disease lab at Colorado State University, headed by Dr. Jan Leach, and in 2009 earned her Ph.D. in the tree fruit pathology lab at Michigan State University under Dr. George Sundin. Her research uses genomic studies of *Xanthomonas* bacterial pathogens for understanding virulence strategies and developing diagnostic tools. She lives in Hamden with her husband Preston and son Charles, and she enjoys playing the viola and golf.

VALLEY LABORATORY

DR. CAROLE CHEAH presented a poster on the biological control program of Mile-a-Minute weed in Connecticut at the CIPWG Invasive Plants 2014 Symposium, (October 7) at the University of Connecticut, Storrs.

DR. RICHARD COWLES presented "Neonics and the future: growing plants safe for bees," to the Helena Company educational program, Ledyard (60 participants) (October 23). He provided a seminar on "A quick method for making educational videos," to CAES personnel, New Haven, (7 attendees) (October 27).

DR. JAMES LAMONDIA spoke about research results and chaired the annual meeting of the Northeast Regional Multistate Nematology Technical Committee (NE-1040) held in Morgantown WV (October 13-15); presented research results as a part of the potato cyst nematode research conference call between University researchers and USDA APHIS and Idaho growers and government officials (October 21); with Bradford Robinson of the DEEP, met in Hartford with the Commissioner of the Department of Consumer Protection and staff to discuss pesticide use issues in the medical marijuana program (October 24); and with **MS. ROSE HISKES** and **MS. DIANE RIDDLE**, spoke about plant diseases, insects and soil testing and toured the Valley Laboratory with teachers and students from Windsor High School (10 attendees) (October 31).

DR. DEWEI LI made an oral presentation "Changes of Melbourne Code (1F=1N) and its implications for aeromycological research" at the International Congress of Aerobiology held in Sydney, Australia (58 attendees) (September 21-26); took his one-month sabbatical leave at Nanjing Forestry University (NJFU) from (September 29-October 28), and made two presentations, "The latest development of fungal systematics" and "Principles of Research Paper Writing (in English) and Publication" at College of Forestry, NJFU with (41 and 84 people in the audience, respectively); and he also conducted lab workshops on hyphomycete specimens collected from two field trips in Jiangsu and Hubei provinces and collaborative studies on fungi associated with pine wood nematode.

ADMINISTRATION

DR. THEODORE G. ANDREADIS met with Kimberly Foss, Director of Biology and Surveillance, Swamp Inc., and discussed collaborative research on eastern equine encephalitis (October 21); attended an Invasive Plant Council Meeting in Hartford (October 21).

STATION NEWS

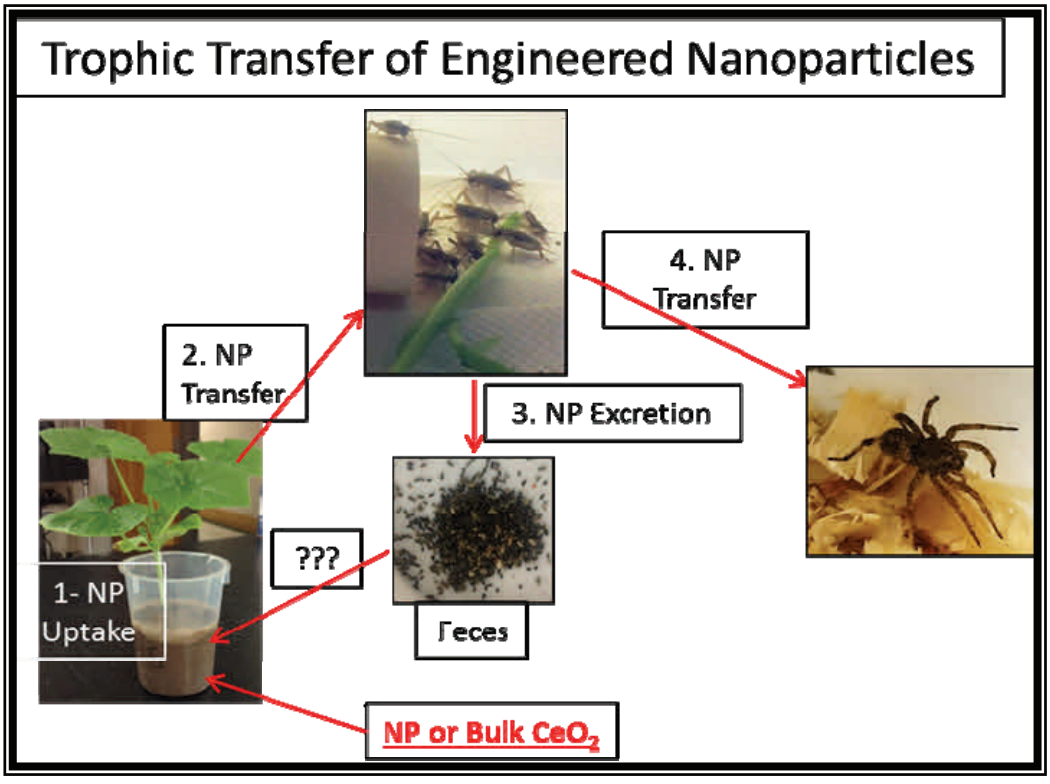
THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

DEPARTMENTAL RESEARCH UPDATES OCTOBER 2014

ANALYTICAL CHEMISTRY

Hawthorne, J.; De la Torre Roche, R.; Xing, B.; Newman, L.A.; Ma, X.; Majumdar, S.; Gardea-Torresdey, J.; **White, J.C.** 2014. Particle-size dependent accumulation and trophic transfer of cerium oxide through a terrestrial food chain. *Environ. Sci. Technol.* 10.1021/es503792f.

ABSTRACT: The accumulation and trophic transfer of nanoparticle (NP) or bulk CeO2 through a terrestrial food chain was evaluated. Zucchini (Cucurbita pepo L.) was planted in soil with 0 or 1228 µg/g bulk or NP CeO2. After 28 d, zucchini tissue Ce content was determined by ICP-MS. Leaf tissue from each treatment was used to feed crickets (Acheta domesticus). After 14-d, crickets were analyzed for Ce content or were fed to wolf spiders (family Lycosidae). NP CeO2 significantly suppressed flower mass relative to control and bulk treatments. The Ce content of zucchini was significantly greater when exposure was in the NP form. The flowers, leaves, stems, and roots of zucchini exposed to bulk CeO2 were 93.3, 707, 331, and 119,000 ng/g, respectively; NP-exposed plants were 153, 1510, 479 and 567,000 ng/g, respectively. Crickets fed NP CeO2-exposed zucchini leaves contained significantly more Ce (33.6 ng/g) than did control or bulk-exposed insects (15.0-15.2 ng/g). Feces from control, bulk and NP-exposed crickets contained Ce at 248, 393 and 1010 ng/g, respectively. Spiders that consumed crickets from control or bulk treatments contained non-quantifiable Ce; NP-exposed spiders contained Ce at 5.49 ng/g. These findings show that NP CeO2 accumulates in zucchini at greater levels than equivalent bulk materials and that this greater NP intake results in trophic transfer and possible food chain contamination.



STATION NEWS

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

ENTOMOLOGY

Estep, Laura K., Torriani, S.F.F., Zala, M., Anderson, N.P., Flowers, M.D., McDonald, B.A.,Mundt, C.C., Brunner, P.C. 2014. Emergence and early evolution of fungicide resistance in North American populations of *Zymoseptoria tritici.* Plant Pathology. *Accepted*. DOI: 10.1111/ppa.12314.

ABSTRACT: Although fungicide resistance in crop pathogens is a global threat to food production, surprisingly little is known about the evolutionary processes associated with the emergence and spread of fungicide resistance. Early stages in the evolution of fungicide resistance were evaluated using the wheat pathogen *Zymoseptoria tritici*, taking advantage of an isolate collection spanning 20 years in Oregon, USA, and including two sites with differing intensity of fungicide use. Sequences of the mitochondrial cytb protein conferring single-mutation resistance to QoI fungicides and the nuclear *CYP51* gene implicated in multiple-mutation resistance to azole fungicides were analyzed. Mutations associated with resistance to both fungicides were absent in the 1992 isolates, but frequent in the 2012 collection, with higher frequencies of resistance alleles found at the field site with more intensive fungicide use. Results suggest that the QoI resistance evolved independently in several lineages, and resulted in significant mitochondrial genome bottlenecks. In contrast, the *CYP51* gene showed signatures of diversifying selection and intragenic recombination among three phylogenetic clades. Our findings support a recent emergence of resistance to the two fungicide classes in Oregon, facilitated by selection for mutations in the associated resistance genes.

ENVIRONMENTAL SCIENCES

Teng Zeng, **Joseph J. Pignatello**, Russell Jingxian Li, and William A. Mitch, Synthesis and Application of a Quaternary Phosphonium Polymer Coagulant To Avoid N-Nitrosamine Formation, *Environmental Science & Technology*, online October 16, 2014 DOI: 10.1021/es504091s

ABSTRACT: Quaternary ammonium cationic polymers, such as poly (diallyldimethylammonium chloride) (polyDADMAC) are widely used for coagulating and removing negatively charged particles and dissolved organic matter (DOM) from drinking water. Their use, however, has been linked to the formation of carcinogenic *N*-nitrosamines as byproducts during chloramine-based drinking water disinfection. In this study, a novel quaternary phosphonium cationic polymer, poly(diallyldiethylphosphonium chloride) (polyDADEPC), was synthesized such that the quaternary nitrogen atom of polyDADMAC was substituted with a phosphorus atom. Formation potential tests revealed that even under strong nitrosation conditions, polyDADEPC and related lower-order P-based compounds formed oxygenated and not nitrosated products. Bench-scale jar tests using three different source waters further demonstrated that polyDADEPC achieved coagulation performance comparable to commercial polyDADMACs for particle and DOM removals within the typical dose range used for drinking water treatment. This work highlights the potential use of a phosphonium coagulant polymer, polyDADEPC, as a viable alternative to polyDADMAC to avoid nitrosated byproduct formation during chloramination.

ARTICLES OF INTEREST OCTOBER 2014

Research published by Mark June-Wells, Jordan Gibbons and **Gregory Bugbee** entitled "Water Chemistry Preferences of Five Nonnative Aquatic Macrophyte Species in Connecticut: a Preliminary Risk Assessment Tool" has been nominated for the Journal of Lake and Reservoir Management's James LaBounty Award for Best Paper. This nomination acknowledges work deemed among the most important contributions during the past year.

GRANTS RECEIVED OCTOBER 2014

Metal nanoparticles for management of Phytophthora fruit rot and Fusarium wilt of watermelon. Mathew Paret (PI) and Josh Freeman (Co-PI), University of Florida; **Wade H. Elmer,** (Co-PI), Connecticut Agricultural Experiment Station. Total awarded $9,600 ($2,000 to CAES).

JOURNAL ARTICLES APPROVED OCTOBER 2014

Brown, Heidi E., A. Young, J. Lega, **Theodore G. Andreadis**, J. Schurich, and A. Comrie. Climate change influences on West Nile virus vectors in the northern U.S. Earth Interactions

Egan, Cameron, **De-Wei Li**, J. Klironomos. Detection of arbuscular mycorrhizal fungal spores in the air. Fungal Ecology

Hayes, Laura E., J. A. Scott, and **Kirby C. Stafford, III**. Winter weather as a predictor of annual *Ixodes scapularis* nymphal densities at long-term study sites in Connecticut. Ticks and tick-borne Diseases

LaMondia, James A. Management of Boxwood Blight Caused by *Calonetria pseudonaviculata*. Proceedings of the International Plant Propagator's Society

LaMondia, James A. and **Sharon M. Douglas**. *Calonectria pseudonaviculata* Can Cause Leaf Spot and Stem Blight of *Pachysandra terminalis* and *P. procumbens*. Proceedings of the International Plant Propagator's Society

Mukherjee, A., Sun, Morelius, Tamez, Bandyopadhyay, Niu, **Jason White**, Peralta-Videa, Gasdea-Torresdey. Differential toxicity of bare and hybrid ZnO nanoparticles in green peas (*Pisum satirum* L.): A life cycle study. Journal of Agricultural Food Chemistry

Pakpour, Sepideh, **De-Wei Li**, J. Klironomos. Predicting fungal spore concentrations in the air in response to climate change – Long-term trends in two North American cities. Nature

Servin, A., **Wade Elmer**, **A. Mukherjee**, **R. De la Torre-Roche**, H. Hamdi, **Jason C. White**, and C. Dimkpa. Nanoscale micronutrients suppress disease. VFRC Report

Zhang, X. H., G. H. Zhao, **DeWei Li**, S. P. Li, and Q. Hong. Identification and evaluation of strain B37 of *Bacillus subtilis* antagonistic to sapstain fungi on poplar wood. The Scientific World Journal

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION

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

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

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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.