Station News

The Connecticut Agricultural Experiment Station
Volume 11 Issue 1 January 2021

Photos by Tracy Zarrillo, Department of Entomology

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.

CAES

The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

This Issue

ADMINISTRATION

DR. JASON C. WHITE gave a presentation entitled "Nanotechnology in Agriculture: Applications and Implications" at the CT Environment Council (CTEC) Annual Meeting and Education Program (virtual) (60 attendees) (December 1); participated in the US FDA Rapid Response Teams (RRT) C2C Annual Meeting (virtual) (December 1-3); participated in a monthly Center for Sustainable Nanotechnology (CSN) all faculty call (December 3); participated in a US FDA LFFM Chem Human and Animal Food one-on-one WebEx call (December 4); was interviewed regarding nano-enabled agriculture by Ms. Naomi Lubick of *Chemical and Engineering News* (December 4); gave a presentation entitled "Putting Science to Work for Society: Helping to Protect Connecticut's Environment During the Pandemic" at the Connecticut Association of Conservation and Inland Wetlands Commissions (CACIWC) Annual Meeting (virtual) (December 5); participated in the Department of Public Health Laboratory Preparedness monthly conference call (December 7); participated in the weekly FDA LFFM WebEx calls for our new Human & Animal Food and Food Defense cooperative agreement programs (December 7, 14); hosted by ZOOM the CSN monthly "Nanochemistry-Plant" working group call (December 8); participated in the weekly CSN all hands call (December 9, 16); spoke by ZOOM with collaborators at MIT and LSU regarding an NSF Engineering Research Center pre-proposal (December 10); hosted the quarterly CAES Safety Committee ZOOM call (December 11); as Managing Editor, hosted an annual Editorial Board meeting for the *International Journal of Phytoremediation* (December 11); as a member of her PhD committee, spoke by ZOOM with Ms. Jaya Borgatta of the University of Wisconsin regarding collaborative research (December 11); participated in the quarterly meeting of the Northeast Region Experiment Station Directors (NERA) by ZOOM (December 15); with **DR. WADE ELMER**, **DR. YU SHEN**, and **DR. YI WANG**, hosted a ZOOM call with collaborators from the University of Minnesota to discuss collaborative research (December 15); with **DR. WADE ELMER** and **DR. YI WANG**, hosted a ZOOM call with colleagues at the University of Massachusetts Amherst to discuss collaborative USDA-funded research (December 15); gave a presentation via ZOOM entitled "Increased Efficacy of Nanoscale Fertilizers" at the United Nations-sponsored Nanotechnology Research and Innovation Forum 2020 (38 attendees) (December 16); hosted by TEAMS the monthly CAES J-1 Visa meeting (December 18); with **DR. WADE ELMER,** hosted a ZOOM meeting with Prof. Malik Maaza of UNESCO UNISA ITL/NRF Africa Chair in Nanosciences & Nanotechnology to discuss future collaborative research (December 22); and with **DR. WADE ELMER**, hosted Representative Dorinda Borer, Representative Joseph Gresko, and Senator Christine Cohen for a tour of CAES facilities and programs (December 30).

ANALYTICAL CHEMISTRY

DR. CHRISTIAN DIMKPA gave a presentation via ZOOM entitled "Perspectives on Scale-up and Commercialization of Nanofertilizers" at the Nanotechnology Research and Innovation Forum 2020 (38 attendees) (December 16). The meeting was organized by the African Materials Research Society (AMRS) and sponsored by the United Nations Economic Commission for Africa (UNECA). This meeting is anticipated to herald mutually beneficial research partnerships between CAES and African institutions involved in nanotechnology applications in agricultural and food systems.

DR. CHRISTINA ROBB attended a board meeting of the Eastern Analytical Symposium (EAS) (December 3) and was elected to the Executive Committee. She will serve as secretary in 2021 and fulfill additional executive board positions before presiding over the conference in 2024.

ENTOMOLOGY

DR. KIRBY C. STAFFORD III participated in a tick IPM working group call (December 9); and participated in a meeting with Dr. Laura Pischel, Yale University, to discuss climate and tick-borne diseases (December 14).

DR. MEGAN LINSKE was appointed adjunct faculty member at the University of Memphis (December 1); was appointed to University of Memphis doctoral student Rebecca Bing-

ham's graduate committee (December 1); participated in a conference call with staff from the Centers for Disease Control and Prevention to discuss logistics and applications of methods for a new multiyear grant for host-targeted acaricide trials (December 4); and attended the Northeast Regional Center for Excellence in Vector-Borne Disease's trainee seminar (December 18).

DR. VICTORIA L. SMITH participated in a meeting of the CT GIS Workgroup, held via ZOOM (December 9); participated in a meeting of the Yale Biosafety Committee, held via ZOOM (22 participants) (December 17); and participated in a US Forest Service workshop on making documents 508 compliant, held via Teams (27 participants) (December 17). A personal note: To recognize 2021 as the International Year of Plant Health, the National Plant Board held a contest for a calendar with photographs for each month. Two of my photographs were chosen from those submitted and are featured in May and July 2021.

DR. KIMBERLY A. STONER was interviewed about the Multicolored Asian Lady Beetle and biological control by Sophia Arruda, environmental journalism student at the University of Connecticut (December 11); and served on the thesis committee of James Durrell, a graduate student at the University of Bridgeport (December 22).

ENVIRONMENTAL SCIENCES

DR. JOSEPH PIGNATELLO met virtually with collaborators from Villanova University, Pacific Northwest National Laboratory, and Oregon Health and Science University on a SERDP grant project (December 7).

DR. DOUG BRACKNEY presented COVID-19 sewage work to Representatives Dorinda Borer and Joseph Gresko, and Senator Christine Cohen in their visit to CAES (December 30).

MR. GREGORY BUGBEE gave a virtual presentation to the Connecticut Resource and Conservation District on hydrilla in the Connecticut River (approx. 20 attendees) (December 2); and served as a panelist on the Northeast Aquatic Nuisance Species Panel at their virtual annual meeting (approx. 15 attendees) (December 17).

DR. GOUDARZ MOLAEI was interviewed by The Day (https://www.theday.com/local-news/20201218/green-and-growing-line-of-defense-against-ticks-in-winter-woodlands) (December 2); and was interviewed by News 8 (https://www.wtnh.com/news/animals-and-wildlife/be-vigilant-for-ticks-that-remain-active-year-round/) (December 3).

DR. SARA NASON met with Representative Dorinda Borer, Representative Joseph Gresko, and Senator Christine Cohen on their visit to CAES (December 30); was interviewed (via email) by c-hit.org for a news article, which appeared on c-hit.org (http://c-hit.org/2020/12/30/beyond-covid-19-waste-testing-a-vast-public-health-frontier/), as well as in the New Haven Register and the CT Mirror (December 30); and with **DR. QUAN ZENG**, was a co-PI on the winning 2020 Louis A. Magnarelli Postdoctoral Fellowship proposal entitled "Bacteria inter-species communication in soybean rhizosphere and its impact to plant fitness."

FORESTRY AND HORTICULTURE

DR. JEFFREY S. WARD participated in a conference call with state and private foresters to discuss forest management and carbon storage/sequestration (December 1); participated in a Forest Ecosystem Monitoring Cooperator State Coordinators ZOOM meeting (December 2); participated in an NESAF 2020 planning committee conference call (December 8); administered practical and oral examinations to arborist candidates for the Connecticut Tree Protection Examining Board (December 9); participated in a Yankee SAF Legislature Outreach Planning conference call (December 16); participated in a Forest Ecosystem Monitoring Cooperator Steering Committee ZOOM meeting (December 17); and participated in an NESAF 2020 planning committee conference call (December 22).

DR. SUSANNA KERIÖ attended an Urban Forestry Today webinar (December 3); attended a CT DEEP webinar on the Connecticut Forest Action Plan (December 4); and administered oral examinations to arborist candidates for the Connecticut Tree Protection Examining Board (December 9).

DR. ABIGAIL A. MAYNARD reported on Station activities at a quarterly meeting of the Council on Soil and Water Conservation (December 17).

DR. SCOTT C. WILLIAMS participated in a conference call for the Editorial Advisory Board for The Wildlife Society's publication, The Wildlife Professional (December 2); and participated in a conference call with staff from the Centers for Disease Control and Prevention to discuss logistics and application methods for a new multiyear grant for host-targeted acaricide trials (December 4).

MR. JOSEPH P. BARSKY participated in an NESAF 2020 planning committee conference call (December 8); participated in a New England Society of American Foresters Executive Committee conference call (December 9); and hosted Leeane Marvin (UConn Natural Resources student) for a job shadow event (December 30).

PLANT PATHOLOGY AND ECOLOGY

DR. WADE ELMER attended (via ZOOM) the Center for Sustainable Nanotechnology All hands meeting (17 attendees) (December 8); met (via ZOOM) with Dr. Rebecca Melanson of Mississippi State University to discuss Special sessions for 2021 APS meetings; participated as a committee member in Cora McGehee's PhD General defense (via Webex) (7 attendees) (December 11); with **DR. JASON WHITE** and **DR. YU SHEN,** ZOOM-conferenced with Dr Christy Haynes, Xiaoxiao Yao (Univ. of MN), and Dr. Pablo Giraldo (UC Riverside) about carbon dot research (December 15); with **DR. JASON WHITE** and **DR. YI WANG,** ZOOM-conferenced with Dr. Om Parkash Dhankher, Baoshan Xing, Sudhir Sharma, Gurpal Singh, and Ahmed Ali regarding Nano Sulfur research (December 15); gave a presentation via ZOOM entitled "Application of Nanoparticles for Disease Suppression and Enhanced Yield in Vegetables" at the Nanotechnology Research and Innovation Forum 2020 (38 attendees) (December 16). ZOOM-conferenced with the APS Foundation committee (12 attendees) (December 16); with **DR. JASON WHITE,** met via ZOOM with Dr. Maliik Maaza, UNESCO UNISA ITL/NRF Africa Chair in Nanosciences & Nanotechnology) to discuss CAES cooperation with African nanotechnology projects (December 22); and with **DR. JASON WHITE** and **MR. MICHAEL LAST**, met with State Senator Christine Cohen, Representative Dorinda Borer, Representative Joe Gresko, and Mr. Terry Jones (Vice President, CAES Board of Control) in Jones Auditorium and toured several laboratories.

Alexander Patti and Edgar Sosa, senior high school students at Greenwich High School who interned with **DR. WADE ELMER** in 2019, were both awarded by the Society for Science for their presentations and 20-page research paper in the Regeneron Science Talent Search 2021 (out of 1,760 applications from 611 high schools across 49 states). It is the nation's oldest and most prestigious science and math competition for high school seniors. Awardees were chosen based on their exceptional research skills, commitment to academics, innovative thinking, and promise as scientists. Each received $2,000, and will compete in two weeks for an additional $25K, and then compete for the grand prize of $250K.

DR. YONGHAO LI attended the Northeast Greenhouse Conference & Expo Webinar: Learn the Newest Strategies to Keep Root Rots from Hurting Your Bottom Line (December 2); presented "Plant Disease Updates 2020" and "The National Plant Diagnostic Network Online Communications and Web Portal Committee Updates" at the Northeast Plant Diagnostic Network ZOOM meeting (18 adults) (December 9); spoke about the Plant Disease Information Office to visiting state legislators (6 adults) (December 30).

DR. ROBERT E. MARRA participated in a meeting (via MS Teams) of State Coordinators for the Forest Ecosystem Monitoring Cooperative (December 2); participated in a Beech Leaf Disease Working Group ZOOM meeting with collaborators from Ohio, West Virginia, Ontario

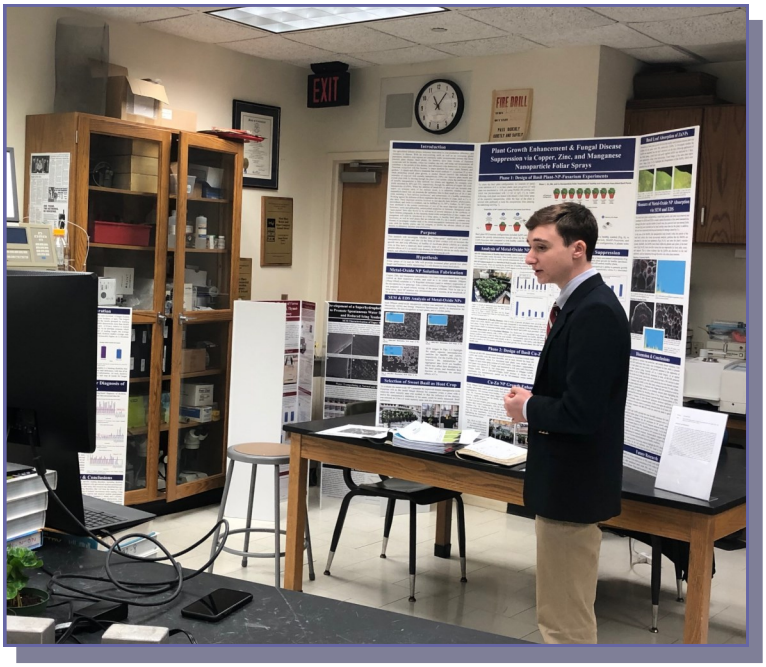
(CA), New York, USDA-ARS, and the US Forest Service (45 participants) (December 9); participated (via MS Teams) in the Steering Committee meeting of the Forest Ecosystem Monitoring Cooperative (December 17); and participated in the Advisory Board meeting to plan for the annual meeting (in March) of the Connecticut Conference on Natural Resources (December 22).

DR. NEIL SCHULTES attended a presentation (via ZOOM) by Ryan Cameron – a SCSU senior Biology major presenting her work during her fall 2020 internship at CAES (25 attendees) (December 4).

DR. STEPHEN TAERUM presented a guest lecture entitled "Heterotrophic Protists in the Rhizosphere" for the Plant Microbial Ecology class at Auburn University (25 adults) (November 13); with **DR. LINDSAY TRIPLETT**, was interviewed by the journal *Phytobiomes*, as their recent paper "Validation of a PNA clamping method for reducing host DNA amplification and increasing eukaryotic diversity in rhizosphere microbiome studies" was selected as editor's pick in the most recent issue of the American Phytopathological Society's magazine (December 30).

DR. LINDSAY TRIPLETT virtually visited the third-grade classes of Shepherd Glen Elementary School in Hamden to answer their questions about plant diseases and being a scientist as part of their Plant Science Unit (39 children, 4 adults) (November 24).

DR. QUAN ZENG hosted a ZOOM meeting with Dr. Mickael Malnoy, from Foundation Edmund Mach, Italy, and Dr. Yannick Jacobs of Yale University and discussed potential collaboration (December 9), joined the graduate student admission meeting with faculty members of the Department of Plant Sciences and Landscape Architecture from the University of Connecticut (December 14).



Alexander Patti and Edgar Sosa (May 2019) (senior high school students at Greenwich High School) who interned with Dr. Wade Elmer.

VALLEY LABORATORY

DR. CAROLE CHEAH was interviewed about her hemlock research and experiences working at Great Mountain Forest in Norfolk by David Leff for an upcoming book (December 9).

MS. ROSE HISKES gave a porcelain berry update from the Connecticut Invasive Plant Working Group (CIPWG) to the Connecticut Association of Conservation and Inland Wetlands Commissions (CACIWC) virtual Annual Conference (70 attendees) (December 5); and co-chaired the virtual Connecticut Invasive Plant Working Group symposium planning committee wrap-up ZOOM meeting (December 8).

DR. JAMES LAMONDIA met to discuss hop breeding research with scientists from the University of Massachusetts (December 2); participated in a SCRI Boxwood Blight Grant project ZOOM meeting (December 4); and participated in the Society of Nematologists annual meeting (December 15-16).

DEPARTMENTAL RESEARCH UPDATES DECEMBER 2020

Adams, A. A., **James LaMondia**, **Richard Cowles**, B. Nicholson, and T. Mione. 2020. Stimulating hatch of tobacco cyst nematode (TCN), *Globodera tabacum tabacum*, by hydroponically obtained weedy *Solanum* spp. root exudates. Nematropica 50:160-169.

Abstract- Root infestation by the tobacco cyst nematode (TCN) is a significant problem in Solanaceous crops in North America and Europe. Some related Solanaceae that are typically regarded as weeds, are known or suspected hosts of TCN. Cyst nematode eggs usually hatch when chemicals produced by the roots of their specific host plants are detected. The purpose of this experiment was to use root exudates obtained from hydroponically grown plants to identify weedy species of *Solanum* that may stimulate the hatching of TCN. A hatching assay was conducted using three concentrations of root exudate from nine accessions of hydroponically grown *Solanum* spp. All plants were grown under *in vitro* conditions. Linear regression and ANOVA support that hydroponically obtained root exudates from accessions of *S. dulcamara*, *S. ptychanthum*, and *S. physalifolium* elicited a dose-dependent hatching response. *Solanum* spp. growing in or around agricultural fields may act as reservoir hosts, or some accessions may be used as trap crops for TCN management. Hydroponically produced exudate may be a more efficient alternative to field grown plants for nematological studies.

Darya Pokutnaya, Mohammad Reza Shirzadi, Elham Salari, **Goudarz Molaei**, Cutaneous Leishmaniasis during pregnancy, preterm birth, and neonatal death: A case report, *Iranian Journal of Parasitology* 2020; 15 (4): 608-614; https://ijpa.tums.ac.ir/index.php/ijpa/article/view/3190

Abstract- Cutaneous leishmaniasis (CL) is an emergent public health concern, particularly in tropical and subtropical regions. Reports of pregnancy complications are scarce; however, as the endemic range of CL expands in Iran, there is concern of possible detrimental effects on fetal development amongst infected mothers through placental transmission of the parasite or enhanced maternal immune responses. We herein describe the first known case of persistent anthroponotic CL, plausibly responsible for pregnancy complications, preterm birth, and neonatal death in a healthy Iranian primigravida woman. Diagnosis was based on physical examinations of the lesions on the back of both calves of the patient and laboratory analyses including direct smear, culture, and PCR. During active CL infection, the patient gave birth to a premature female neonate who passed three days post-delivery due to immature lung development and subsequent respiratory distress syndrome. This report highlights the challenges associated with CL infection during pregnancy, exacerbation of lesions, and subsequent complications.

Gloria-Soria, Andrea, A. F. Payne, S. M. Bialosuknia, J. Stout, N. Mathias, G. Eastwood, A. T. Ciota, L. D. Kramer, and **Philip M. Armstrong**. 2020. Vector competence of *Aedes albopictus* populations from the Northeastern United States for Chikungunya, Dengue, and Zika Viruses. *The American Journal of Tropical Medicine and Hygiene*, p.tpmd200874.

Abstract- The Asian tiger mosquito (*Aedes albopictus*) is an important vector of a number of arboviruses, including Zika (ZIKV), dengue (DENV), and chikungunya (CHIKV)

viruses, and has recently expanded its range in the eastern United States to southern New England and New York. Given the recent establishment and proliferation of *Ae. albopictus* in this region and the increasing amount of international travel between the United States and endemic countries, there is a need to elucidate the public health risk posed by this mosquito species in the Northeast. Accordingly, we evaluated the competence of four *Ae. albopictus* populations from Connecticut and New York, for two strains each of ZIKV, DENV serotype 2 (DENV-2), and CHIKV, currently circulating in the Americas, to evaluate the local transmission risk by this vector. We found that local *Ae. albopictus* populations are susceptible to infection by all three viruses but are most capable of transmitting CHIKV. Variation in competence was observed for ZIKV and CHIKV, driven by the virus strains and mosquito population, whereas competence was more homogeneous for the DENV-2 strains under evaluation. These results suggest that under optimal circumstances, *Ae. albopictus* could support localized transmission of these viruses and emphasize the importance of maintaining mosquito surveillance and control programs to suppress *Ae. albopictus* populations and limit further range expansion of this species.

Wang, Qing-Hai, Yan-Ping Ji, Yong-Yun Qu, Yu-Kun Qi, **De-Wei Li**, Zhen-Yu Liu, Xiao-Qin Wu. 2020. The response strategies of *Colletotrichum gloeosporioides* s.s. due to the stress caused by biological control agent *Bacillus amyloliquefaciens* deciphered by transcriptome analyses. Biological Control 150: 104372 https://doi.org/10.1016/j.biocontrol.2020.104372

Abstract- Walnut is cultivated all over the world for its precious woody nut and edible oil. Walnut anthracnose caused by *Colletotrichum* spp. is a disastrous disease in the walnut plantation. In China, this disease is difficult to control. The efficacies of the traditional preventing and controlling measures are inadequate. It causes serious losses every year. In the interaction systems of 'antagonistic organism-pathogen', the response mechanisms of the pathogen to the stress of antagonistic organisms were largely unknown. To understand the response mechanisms of walnut anthracnose pathogen, *Colletotrichum gloeosporioides* sensu stricto (s.s.) TS-09R was treated with *Bacillus amyloliquefaciens*, and RNAseq gene expression analyses were performed. A total of 610 genes expressed differentially (DEGs). Among these genes, 387 genes were up-regulated and 223 genes were down-regulated. Gene ontology (GO) analysis showed that 409 DEGs involved in the categories of biological process, and cellular component. The KEGG pathway enrichment analysis showed that all up-regulated DEGs were enriched in amino acid metabolism, biosynthesis of other secondary metabolites, and xenobiotics biodegradation and metabolism. Further analyses indicated that *C. gloeosporioides* s.s. TS-09R up-expressed significantly some DEGs associated with cell membrane synthesis and, or maintaining stabilization, antioxidant and anti-stress to build the cell membrane, maintain the normal physiological function of cells. At the same time, it improved detoxification efficiency and reduced its sensitivity to the exogenous antimicrobial substance (EAS). It also improved the activity of the efflux pump translocating EAS out of the cells, reduced accumulation, and minimized injuries to cells. *C. gloeosporioides* s.s. TS-09R also up-expressed significantly genes associated with sporulation to promote spore production for survival in adversity. *C. gloeosporioides* s.s. TS-09R recruited numerous genes to respond to or resist the biocontrol of *B. amyloliquefaciens*. The response model was a holistic and complex network involving multiple genes and multiple signaling pathways. Additionally, the glutathione-S-transferases (GST) activities of *C. gloeosporioides* s.s. TS-09R, TS-09 cultured for 5 days and 9 days were calculated, and the GST activity had a similar change trend to the GST-related gene expression. The result indicated that the hypothetical response strategies were reliable. In this paper, we provided new insights into the onset of the interaction system of '*C. gloeosporioides* s.s. – *B. amyloliquefaciens*'. The results will contribute to exploring comprehensively the mechanism of *B. amyloliquefaciens* according to the response mechanisms of *C. gloeosporioides* s.s.

JOURNAL ARTICLES APPROVED DECEMBER 2020

Awio, T., K. Senthilkumar, **Christian O. Dimkpa**, G. W. Otim-Nape, B. Kempen, P. C. Struik, and T. J. Stomph. Micronutrients in East African lowlands: Are they needed to intensify rice production? *Field Crops Research*

Awio, T., K. Senthilkumar, **Christian O. Dimkpa**, G. W. Otim-Nape, P. C. Struik, and T. J. Stomph. Yield and yield gaps in Ugandan lowland rice system and options to improve smallholder production. *Agricultural Systems*

Cowles, Richard S. The story of the Christmas cookies. *The Real Tree Line*

Daughtrey, M., C. Hall, J. Weiland, F. J. Baysal-Gurel, F. Gouker, P. Kong, J. Crouch, **James LaMondia**, J. Pscheidt, L. Santamaria, N. Shishkoff, K. Snover-Clift, V. Castroagudin, **Srikanth Kodati**, X. Li, and X. Yang. Boxwood Blight Insight Group Newsletter, November 2020. https://www.boxwoodhealth.org/research-updates.

Dimkpa, Christian O., M. G. N. Campos, J. Fugice, K. Glass, A. Ozcan, Z. Huang, U. Singh, and S. Santra. Novel dual-capped Zn-urea nanofertilizers for facilitating nanoscale nutrient application. *Environmental Science & Technology*

Farooq, T., M. Adeel, Z. He, M. Umar, N. Shakoor, **Washington da Silva**, **Wade H. Elmer**, **Jason C. White**, and Y. Rui. Nanotechnology and plant viruses: A novel disease management approach for resistant pathogens. *Nature Communications*

Hagstrom, A. L., P. Anastas, A. Boissevain….**Sara L. Nason**, et al. (31 authors). Yale School of Public Health Symposium: An overview of the challenges and opportunities associated with per- and polyfluoroalkyl substances (PFAS). *Science of the Total Environment*

Kharadi, R. R., J. K. Schachterle, X. Yuan, L. F. Castiblanco, J. Peng, S. M. Slack, **Quan Zeng**, and G. W. Sundin. Genetic dissection of the *Erwinia amylovora* disease cycle. *Annual Review of Phytopathology*

Kodati, Srikanth, N. Gambir, G. Yuen, A. Adesemoye, and S. E. Everhart. Diversity and aggressiveness of *Rhizoctonia* spp. from Nebraska on soybean and cross-pathogenicity to corn and wheat. *Plant Disease*

Li, Yonghao. Brown rot of stone fruits. *CAES Fact Sheet*

Li, Yonghao. Pythium blight of turfgrasses. *CAES Fact Sheet*

Liu, W., **Lindsay R. Triplett**, and X.-L. Chen. Emerging roles of post-translational modifications in plant pathogenic fungi and bacteria. *Annual Review of Phytopathology*

Marmiroli, M., and **Jason C. White**. Advances in identifying and tracking malicious contamination in agri-food supply chains: A historical perspective. Chapter in: *Developing Smart Agri-food Supply Chains: Using Technology to Improve Safety and Quality*, L. Manning, (ed.), Burleigh Dodds Science Publishing.

Senthilkumar, K., F. S. Sillo, I. Dieng, J. Rodenburg, K. Saito, **Christian Dimkpa**, and P. S. Bindraban. Productivity and profitability of foliar and soil applied micronutrients in rice under different environmental growth conditions in Tanzania. *Field Crops Research*

Steven, Blaire, M. L. Phillips, J. Belnap, L. V. Gallegos-Graves, C. R. Kuske, and S. Reed. Resistance, resilience, and recovery of dryland soil bacterial communities across multiple disturbances. *Applied and Environmental Microbiology*

Williams, Scott C., **K. C. Stafford III**, **Megan A. Linske**, **Douglas E. Brackney**, A. M. LaBonte, **Heidi R. Stuber**, and **D. W. Cozens**. Effective control of *Amblyomma americanum* coupled with reduced *Ehrlichia* spp. prevalence via permethrin treatment of white-tailed deer in coastal Connecticut, USA. *Ticks and Tick-Borne Diseases*

Yang, X., V. L. Castroagudin, M. Daughtrey, A. Loyd, J. E. Weiland, N. Shishkoff, F. Baysal-Gurel, L. Santamaria, C. Salgado-Salazar, **James A. LaMondia**, J. Crouch, and D. Luster. A diagnostic guide for Volutella blight of the family Buxaceae. *Plant Health Progress*

Zhu, J., J. Wang, **Yu Shen**, X. Zhan, A. Li, **Jason C. White**, J. Gardea-Torresdey, and B. Xing. The role of charge and size in the translocation and distribution of zinc oxide nanoparticles in wheat cells. *Environmental Science & Technology*

CAES

The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

The Connecticut Agricultural Experiment Station

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

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

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

Putting Science to Work for Society.

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 https://portal.ct.gov/CAES/Publications/Publications/Station-News

Equal employment opportunity means employment of people without consideration of age, ancestry, color, criminal record (in state employment and licensing), gender identity or expression, genetic information, intellectual disability, learning disability, marital status, mental disability (past or present), national origin, physical disability (including blindness), race, religious creed, retaliation for previously opposed discrimination or coercion, sex (pregnancy or sexual harassment), sexual orientation, veteran status, and workplace hazards to reproductive systems unless the provisions of sec. 46a-80(b) or 46a-81(b) of the Connecticut General Statutes are controlling or there are bona fide occupational qualifications excluding persons in one of the above protected classes. To file a complaint of discrimination, contact Dr. Jason White, Director, The Connecticut Agricultural Experiment Station, P.O. Box 1106, New Haven, CT 06504, (203) 974-8440 (voice), or Jason.White@ct.gov (e-mail). 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, Michael Last at (203) 974-8442 (voice), (203) 974-8502 (FAX), or Michael.Last@ct.gov (e-mail).

Station News was prepared and edited by Dr. Jason White, Ms. Vickie Bomba-Lewandoski, Ms. Sandra Carney, and Ms. Brandi Marks.

https://portal.ct.gov/CAES

Volume 11 Issue 1
January 2021