

# Station News

The Connecticut Agricultural Experiment Station  
Volume 15 Issue 9 | September 2025



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	2
Analytical Chemistry	5
Entomology	8
Environmental Science and Forestry	13
Plant Pathology and Ecology	18
Valley Laboratory	20
Journal Articles Approved	21



**JASON C. WHITE, PH.D.** hosted the monthly CAES j-visa recipient meeting (August 1); along with **Raja Muthuramalingam, Ph.D.** and **CHRISTIAN DIMKPA, PH.D.** met with collaborators at UConn and Carlton University by Teams to discuss mycotoxin sensor development (August 1); along with Dr. Chaoyi Deng met by ZOOM with collaborators at Brookhaven National Laboratory to discuss a joint research project (August 4); was interviewed on WFSB’s Great Day program about the 115<sup>th</sup> CAES Plant Science Day (August 5); participated in Dr. Xiupei Zhou's PhD dissertation defense at the University of Massachusetts Amherst (August 5); along with all agency Staff hosted the 115<sup>th</sup> annual CAES Plant Science Day (August 6); was interviewed by Judy Benson of The Day about CAES research on micro- and nanoplastics in food (August 5); travelled to the University of Minnesota to participate in the PhD defense of Beza Tuga (August 7-8); attended the 65<sup>th</sup> Annual Christmas Tree Growers Association meeting at Jones Family Farms (August 9); met by Teams with staff from the Department of Consumer Protection concerning establishment of the Cannabis Microbiology Reference Laboratory at CAES (August 11, 15); met by Teams with Beck Seeds to discuss a nano-enabled seed priming research (August 11); along with **Chaoyi Deng, Ph.D.** and **Hina Ashraf, Ph.D.** participated in the weekly NSF Center for Sustainable Nanotechnology ZOOM call (August 13, 20, 27); participated by Teams in the monthly AgInnovation call (August 14); participated in a Teams with colleagues at the University of Minnesota and 3M to discuss PFAS phytoremediation studies (August 14, 15); along with **MR. MICHAEL LAST** participated by Teams in the quarterly CAES Board of Control Executive and Finance Committee meeting (August 15); along with **PHILIP ARMSTRONG, PH.D.** and **Goudarz Molaei, Ph.D.** participated in a press conference at CAES with Senator Richard Blumenthal on ticks and tick-borne disease research and surveillance (August 15); gave a remote presentation entitled “PFAS-enabled Phytoremediation” to Kunming University of Science and Technology in Kunming China (August 15); met by Teams with a high school student from Harrison High School (Harrison NY) and her advisor to discuss an experiment on nano-enabled fertilizers (August 18); met by Teams with colleagues at the University of Pittsburgh and Duke University to discuss a new collaborative research project on nanotechnology and agriculture (August 19); along with several CAES staff scientists participated in the UConn Plant Science and Landscape Architecture Faculty Retreat and gave a presentation entitled “Nano-enabled Agriculture: A Path to Food Security in a Changing Climate” (August 20); met by Teams with collaborators at Clemson University and Purdue University to discuss a joint grant proposal (August 21, 29); met by Teams with collaborators at Stonybrook University and Johns Hopkins University to discuss a joint grant proposal (August 21); met by Teams with collaborators at the University of Tennessee to a new joint research project (August 21); along with Mr. Michael Last and the CAES Office of Aquatic Invasive Species (OAIS), hosted representatives from the Office of Policy and Management for a boat trip on the CT River to discuss the impacts of Hydrilla (August 22); along with multiple CAES staff hosted Prof. Tendekai Mahlanza from the Agricultural Research Council in South Africa (August 26); and participated in a Teams call with colleagues at UConn and MIT to discuss collaborative research (August 28).

### PUBLICATIONS:

1. Katsafadou, A. I., Prodromou, S. I., Aalizadeh, R., **White, J. C.**, Thomaidis, N. S., Vizirianakis, I. S., Anastas, P. T., Kyriakides, T. C., Pastides, H., Thompsom, D. C., Vasiliou, V. (2025). Olive oil at the intersection of environment, public health, and one health: A sustainable path to global well-being. *Front. Public Health*. DOI: 10.3389/fpubh.2025.1658525.

**Abstract-** The olive tree and its derivatives—olives, olive oil, and their by-products—are foundational to the Mediterranean diet and are increasingly recognized for their roles in nutrition, medicine, and ecological sustainability. Indeed, one of the most prominent examples of sustainable production and consumption paradigm in a changing climate lies in the olive sector, approached within One Health framework, i.e., the interconnectedness of human health with animal and environmental health. This review explores the multifaceted roles of olive cultivation, olive oil production and consumption, and olive by-products in relation to health benefits, sustainable agriculture, and environmental impact. Olive oil consumption offers significant human health benefits, primarily involving its anti-inflammatory and antioxidant properties. These effects, largely attributed to its rich composition of monounsaturated fatty acids and other antioxidants, mediate its cardioprotective and neuroprotective roles. Beyond human health, olive oil cultivation and its by-products (such as pomace and mill wastewater) have gained attention as valuable feed additives in animal nutrition. These enhance livestock health and welfare, improve meat and dairy quality, and promote sustainable agricultural practices and bioenergy production—ultimately reducing environmental impact and supporting circular economies. From an environmental perspective, the olive sector contributes meaningfully to soil conservation, biodiversity support, and climate change mitigation through carbon sequestration and reduced greenhouse gas emissions. As such, the olive tree is more than a source of a valuable food product: it is a nexus of sustainable development, public health, and ecosystem stewardship. Considering the olive sector within the One Health paradigm highlights its relevance in addressing global challenges at the intersection of food systems, health, and environmental sustainability.

2. Thu Le, N. N., Xue, S., Bairoliya, S., Wang, Y., Cao, B., **White, J. C.**, Xim C., Marhaba, T., Zhang, W. (2025). Unveiling the potential impacts of oxygen and nitrogen nanobubbles in water on plant rhizosphere microbiome. *Rhizosphere*. 35:101163.

**Abstract-** Nanobubbles (NBs) in water have demonstrated the ability to enhance plant growth and seed germination, which could lead to a reduction in the use of both water and fertilizers. To better understand the mechanisms behind the plant growth benefits of NBs, this study examines the microbial community structure and diversity of tomato rhizosphere following irrigation with oxygen NBs (ONBs) and nitrogen NBs (NNBs) for 32 days with controlled dissolved oxygen (DO) concentrations (e.g., 9 mg·L<sup>-1</sup> and 25 mg·L<sup>-1</sup> for ONB water and 2 mg·L<sup>-1</sup> and 9 mg·L<sup>-1</sup> for NNB) and irrigation frequencies. Multivariate analysis on 16S rRNA gene sequencing data indicated that both ONB and NNB treatments significantly altered rhizosphere microbial community structure compared to the control. The NB concentration and irrigation frequency also had significant impacts on the rhizosphere microbiome composition. The exposure to NBs increased the abundances of Bacteroidota, Gemmatimonadota, and other beneficial bacterial taxa that contribute to soil nutrient turnover. Moreover, network analysis suggested that NBs facilitated microbial interactions in the rhizosphere and reduced niche formation. Positive correlations were found between tomato plant measurements and many rhizobacteria, including known plant growth promoters like Comamonadaceae as well as potential plant growth promoters that merit further studies. Overall, this study elucidated the ways that NB type, concentration, and irrigation frequency impact tomato rhizosphere microbiome and generated new hypotheses for follow-up studies to further examine the mechanisms and applications of NBs in precision agriculture.

**CAES**



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

# STATION NEWS

**JASON C. WHITE, PH.D.** giving a remote presentation to Kunming University of Sci-



ence and Technology.

## ANALYTICAL CHEMISTRY

The Department hosted Prof. Tendekai Mahlanza from the Agricultural Research Council of South Africa on August 25 to discuss potential opportunities for future collaborations between his institute and CAES. Prof. Tendekai met with a cross section of staff who updated him on their ongoing research related to nanotechnology application and implication in agriculture and environment, and hemp research related to upcycling hemp biomass waste and modulating THC and CBD production using mineral nutrition strategies.

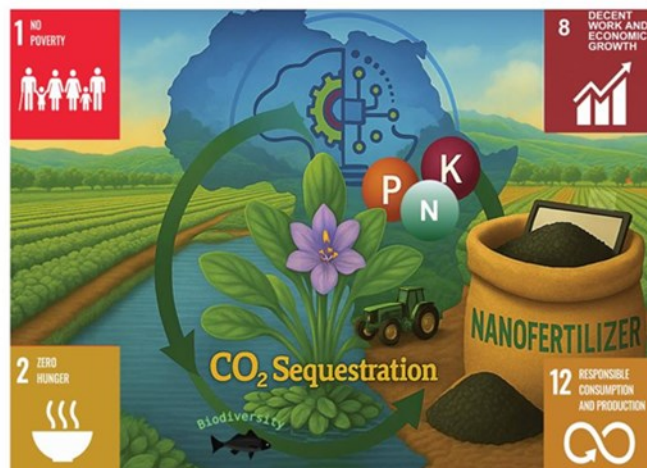
**Mandeep Kaur, Ph.D.** attended ACS Fall 2025 meeting at Washington D.C. (August 17-21) and presented the talk on “Micro-scale polyvinyl chloride co-exposure impacts the uptake and translocation of environmental pollutants by lettuce and wheat”.

**Sudhir Sharma, Ph.D.** attended the ACS Fall 2025 meeting and presented a poster and a talk titled “Small solutions to a huge problem: The potential of cellulose nano/microfibers (CNF) and nano zerovalent iron (NZVI) to reduce heavy metal uptake in food crops”.



**Jingyi Zhou, Ph.D.** attended the ACS Fall 2025 conference and presented the talk “Foliar application of copper-based materials in mitigating salinity stress in lettuce (*Lactuca sativa* L.)”, Washington D.C. (August 17-21)

RSC Sustainability, a Royal Society of Chemistry's journal, selected an artwork from the Department, among other competing artworks, for the cover page of their journal. This recognition provides an excellent opportunity to enhance the visibility and impact of the Station's work on biomass repurposing for nanofertilizers.



### PUBLICATIONS:

1. Irewale, A. T., Elemike, E. E., **Dimkpa, C. O.**, Oguzie, E. E. (2025). Molecular modelling of biochar-ZnO-CuO nano-biofertilizer: adsorption simulation for optimized nutrient delivery. *RSC Sustainability*, DOI: [10.1039/D5SU00646E](https://doi.org/10.1039/D5SU00646E)

**Abstract-** Amid growing concerns regarding the safety, efficacy, and environmental impact of conventional fertilizers, nanotechnology-based alternatives—particularly nano-biofertilizers—have emerged as promising solutions. In this study, we optimized a conceptualized biochar (CBC) structure (with formula: C<sub>60</sub>H<sub>39</sub>NO<sub>13</sub> and molar mass: 981.97 g mol<sup>-1</sup>), building on both our ongoing research and existing literature. Molecular dynamics (MD) simulations were employed to investigate biochar adsorption interactions with zinc oxide (ZnO) and copper oxide (CuO) nanonutrients (NNs), as single and co-adsorbates. Quantitative computational analysis revealed that the CBC molecule exhibits structural stability, with a heat of formation of -226.45 kcal mol<sup>-1</sup>, a total energy of -12,586.15 eV, and an ionization potential of 8.37 eV. Additional evaluations—including COSMO sigma profiling, UV-Vis spectral analysis, and frontier molecular orbital (HOMO-LUMO) mapping—gave deeper insight into CBC molecular properties. Distinct spatial separation of

# CAES



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

# STATION NEWS

these orbitals across different functional groups underscores biochar's chemical stability, despite a small HOMO–LUMO energy gap ( $\Delta E_{\text{gap}} = 0.058106$  eV). Adsorption simulations demonstrated energetically favorable interactions between both NNs and CBC, with a higher affinity for CuO over ZnO (average rigid adsorption energy:  $-17.64$  vs.  $-14.15$  eV). The average structural deformation energy associated with ZnO compared to CuO in the adsorption process ( $-687.68$  eV vs.  $-6.38$  eV) shows different mechanisms or sites of adsorption, respectively. In the co-presence of both nanonutrients, energy parameters were modulated, indicating a positive synergy. These findings offer foundational insights into the molecular properties and thermodynamic behavior of biochar in nanonutrient adsorption. However, recognizing that real world factors such as soil cation exchange capacity, pH, microbiome, and humidity also influence these adsorption interactions, the study discusses their potential effects and recommends the need for further research to bridge theoretical models with empirical data, optimize nanoformulations, assess ecological impacts, and evaluate the economic viability of biochar-based nanofertilizers for sustainable agricultural applications.



**PHILIP ARMSTRONG, SC.D.** was interviewed by the Hartford Courant about recent findings of West Nile virus detections in mosquitoes in Connecticut (August 7); participated in a press conference organized by Senator Blumenthal on reauthorizing funding for the Kay Hagan Tick Act and the CDC Centers of Excellence in Vector-Borne Diseases (August 15); hosted Dr. Paul Bernard, MD, a Yale School of Medicine Microbiology Fellow, and discussed the Connecticut Mosquito and Arbovirus Surveillance Program (August 20).

**ANGELA BRANSFIELD** participated via Zoom in an ad hoc meeting of Yale University's Biosafety Committee to discuss and review research protocols submitted for expedited consideration (August 4); helped host Dr. Paul Benard, a Yale School of Medicine Microbiology Fellow, and provided an overview of the BSL-3 Laboratory and viral diagnostics as part of the Connecticut Mosquito Surveillance Program (August 20); participated via Zoom in Yale University's Biosafety Committee meeting (August 21).

**KELSEY E. FISHER, PH.D.** presented oral presentation at Plant Science Day "Managing Milkweed Habitat to Support Monarch Butterfly Success" and had table displays with live monarchs and bumblebees (Aug 6); Hamid Shahbaz, Fisher Lab intern, presented "Impact of streptomycin on bumblebees (*Bombus impatens*)" during the Plant Health Fellow Final Research Symposium (Aug 7); remotely presented "Monarch butterfly breeding habitat restoration: How understanding habitat suitability, movement ecology, and behavior can inform best practices for conservation" during the International Monarch Science Symposium (Aug 7; 40 attendees); met and brainstormed with Erik Dopman (Tufts University) and Brad Coates (USDA-ARS-CICGRU) about collaborative opportunities (Aug 4); met with the Terrestrial authorship team about a chapter for "United By Nature", a national knowledge assessment of nature and its benefits (formerly known as the National Nature Assessment) (Aug 8, 22); met with Dr. Sarah Lawson at Quinnipiac University, Tracy Zarrillo, and Caleb Bryan about collaborations and grant opportunities (Aug 11, 27); organized and presented during an educator workshop "Monitoring beneficial and native insects" at the Roger Tory Peterson Estuary Center in Old Lyme, CT (Aug 12; 20 attendees); organized and presented during a radio telemetry workshop at Iowa State University (Aug 18 & 19; 20 attendees); attended the University of Connecticut Plant Science and Landscape Architecture departmental retreat to build collaborative relationships (Aug 20); attended EPA's Insect Resistance Management working group meeting (Aug 21).

**ANDREA GLORIA-SORIA, PH.D.** Hosted graduate student from Utah State University Katie Graybeal for training on the use of next-generation genotyping methods for *Culex pipiens* mosquitoes (August 18-21); hosted Dr. Paul Bernard, MD, a Yale School of Medicine Microbiology Fellow, and discussed mosquito population genetics research (August 20); attended the monthly leadership meeting of the NEVBBD TEC and provided progress updates (August 26).

**GOUDARZ MOLAEI, PH.D.** was interviewed by National Geographic (August 5), Brian Scott-Smith, Journalist & Broadcaster - Media Consultant (August 6), New York Times (August 7), Ed Cara, Author at Gizmodo (August 8), CT Insider (August 11), Connecticut Public (August 11), New England Public Media (August 11), WFSB (August 11), WTNH Channel 8 (August 15), Boston.com (August 19), and Hearst Connecticut Media Group (August 20) about our recent publication on the infection of longhorned tick with Ehrlichia chaffeensis, as well as the introduction of invasive ticks into Connecticut and the US by human travelers and associated public health challenges, which was recently published in CDC Emerging Infectious Diseases and iScience journals, respectively; discussed with Kaveh Khoshnood of Yale School of Public Health about a collaborative project to support efforts to strengthen vector-borne disease surveillance in Sudan (August 5); attended the Plant Science

Day (PSD), presented a poster, “Monitoring Native and Invasive Ticks and Tick-borne Pathogens to Better Guide Public Health Action in Connecticut,” at the Public Health Tent, and served as a member of the PSD organizing committee, 2025 (August 6); presented an invited talk, “The Rising Tide of Native and Invasive Ticks and Tick-borne Illnesses and Ensuing Public Health Challenges,” at the Darien, CT, Public Library (August 13); participated in a press conference organized by Senator Blumenthal, provided a progress report on the tick testing laboratory and related research, and offered support for his efforts on securing funding for the Kay Hagan Tick Act and the CDC Centers of Excellence in Vector-Borne Diseases, including the Northeastern Center of Excellence (NEVBD) (August 15); hosted Dr. Paul Bernard, MD, a Yale School of Medicine Microbiology Fellow, and discussed passive tick and tick-borne disease surveillance and related research (August 20); attended the monthly leadership meeting of the NEVBD TEC and provided progress updates (August 26); and attended the Global Consortium on Climate and Health Education at the World Health Organization (WHO) EMRO region to plan a training course on climate change and public health (including vector-borne diseases) in 2026 (August 27).

**RAFFAELA NASTRI** staffed a booth at the Middlesex and New Haven County 4-H fair to provide outreach about the CAPS program and invasive pests of interest (August 3).

**JACOB RICKER** was interviewed by NBC30 concerning spotted lanternfly populations and potential impacts to CT vineyards (August 20).

**GALE E. RIDGE, PH.D.** met with Dr. Paul Benard a visiting Yale Microbiology Fellow to discuss bed bugs and delusional infestation (August 20); interviewed by Holly Kocet of the Newtown Bee about the spotted lanternfly ( August 21); interviewed by Kent Pierce, WTNH channel 8 TV about the spotted lanternfly (August 27); attend an online summit sponsored by the North American Invasive Species Management Association (NAISMA) on invasive upcycling and how creative environmental stewardship can solve pressing ecological challenges caused by invasive species (August 27); and interviewed by Stephen Underwood, Hartford Currant on the spotted lanternfly and its attraction to the tree-of-heaven, an invasive tree (August 29).

**CLAIRE E. RUTLEDGE, PH.D.** presented a poster at Plant Science Day “Spotted Lanternfly in Connecticut” (August 6); Hannah Flis, Rutledge Lab intern, presented “Pitch pine health and protection in Connecticut”. During the Plant Health Fellow Final Research Symposium (August 7).

**JOHN SHEPARD** was interviewed about the increase and geographic expansion of West Nile virus activity the state by Dylan Fearon, WFSB-TV (August 8); met with Dr. Paul Benard a visiting Yale Microbiology Fellow to discuss Mosquito Biology and Ecology (August 20)

### PUBLICATIONS:

1. McMillan, J. R., Sun, J., Chaves, L. F., and **Armstrong, P. M.** (2025). Using mosquito and arbovirus data to computationally predict West Nile virus in unsampled areas of the Northeast United States. *PNAS Nexus*, 4(8):pgaf227. DOI: 10.1093/pnasnexus/pgaf227

**Abstract:** Predicting and projecting risk of West Nile virus (WNV) to humans in areas without mosquito surveillance data is a key limitation of many WNV surveillance programs. To better inform risk of WNV, we analyzed 20 years (2001-2020) of point-level mosquito surveillance data from Connecticut (CT), United States, using machine learning methods to determine the most informative weather variables and land cover classes associated with monthly *Culex pipiens* collections and WNV detections in mosquitoes. All training models were assessed based on explained deviance, root mean square error, and parsimony of included variables then optimized using a backward selection process. We used these training models to cre-

ate a predictive mapping framework that could spatially extrapolate the monthly risk of WNV activity in mosquitoes across the entirety of the Northeast United States (CT, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, and Vermont) at a  $4 \times 4$  km resolution. We then validated WNV detection probabilities against observed human cases at the town level in CT and the county level for northeastern states using generalized linear (mixed effects) models. Our predicted town- and county-level WNV detection probabilities in mosquitoes were significantly associated with the odds of a human case occurring within the town and/or county. This methodology increases the utility of point-source mosquito surveillance data by creating a flexible workflow for predicting risk of WNV to humans across the Northeast United States using easily accessible online data sources.

**2. Johnson, R. M.,** Breban, M. I., Nolan, B. L., Sodeinde, A., Ott, I. O., Ross, P. A., Gu, X., Grubaugh, N. D., Perkins, A. T., **Brackney, D. E.,** and Vogels, C. B. F. (2025). Implications of successive blood feeding on *Wolbachia*-mediated dengue virus inhibition in *Aedes aegypti* mosquitoes. *Nat Comm.*, 16, 6971. <https://doi.org/10.1038/s41467-025-62352-2>

**Abstract:** *Wolbachia* is a promising strategy to inhibit dengue virus (DENV) transmission by *Ae. aegypti* mosquitoes. Laboratory studies assessing DENV inhibition by *Wolbachia* typically have not considered natural frequent mosquito blood feeding behavior. Here, we determine the impact of successive feeding on DENV-2 transmission by *Ae. aegypti* in the presence or absence of *Wolbachia* (wAlbB and wMelM strains). We show that successive feeding shortens the extrinsic incubation period (EIP) in wildtype (WT; without *Wolbachia*) and wAlbB mosquitoes through enhanced dissemination. Feeding empirical data into models showed that successive feeding increases the probability of WT and wAlbB mosquitoes surviving beyond the EIP. Importantly, the more epidemiologically relevant comparison of the odds of wAlbB mosquitoes surviving beyond the EIP relative to WT, reveals a larger impact of successive feeding on WT than wAlbB. This indicates a strong inhibitory effect of *Wolbachia* even in the context of natural frequent mosquito blood feeding behavior.

**3. Hall, D. R., Johnson, R. M.,** Kwon, H., **Ferdous, Z.,** Laredo-Tiscareno, S. V., Blitvich, B. J., **Brackney D. E.,** Smith, R. C. (2025). Mosquito immune cells enhance dengue and Zika virus infection in *Aedes aegypti*. *Nat. Comm.*, 16(1), 5891. <https://doi.org/10.1038/s41467-025-61139-9>

**Abstract:** Mosquito-borne arboviruses cause more than 400 million annual infections, yet despite their public health importance, the mechanisms by which arboviruses infect and disseminate in the mosquito host are not well understood. Here, we provide evidence that dengue virus and Zika virus actively infect *Aedes aegypti* hemocytes and demonstrate, through phagocyte depletion, that hemocytes facilitate virus infection to peripheral tissues including the ovaries and salivary glands. Adoptive transfer experiments further reveal that virus-infected hemocytes efficiently confer virus infection to naïve recipient mosquitoes. Together, these data support a model of arbovirus dissemination where infected hemocytes enhance virus infection of mosquito tissues required for transmission, which parallels vertebrate systems where immune cell populations promote virus dissemination. This study significantly advances our understanding of virus infection dynamics in the mosquito host and highlights potential conserved roles of immune cells in arbovirus infection across vertebrate and invertebrate systems.

**4. Morinaga G., Balcazar D., Badolo A., Iyaloo D., Tantely M. L., Mouillaud T., Shakhova M., Geib S. M., Paupy Ch., Ayala D., Powell J. R., Gloria-Soria A., Soghigian J.,** From Macro to Micro: De Novo Genomes of *Aedes* Mosquitoes Enable Comparative Genomics Among Close and Distant Relatives, *Genome Biology and Evolution*, Volume 17, Issue 8, August 2025, evaf142, <https://doi.org/10.1093/gbe/evaf142>

**Abstract:** The yellow fever mosquito (*Aedes aegypti*) is an organism of high medical im-

portance because it is the primary vector for diseases such as yellow fever, Zika, dengue, and chikungunya. Its medical importance has made it a subject of numerous efforts to understand its biology. One such effort was the development of a high-quality reference genome (AegL5). However, this reference genome was sourced from a highly inbred laboratory strain with unknown geographic origin. Thus, the reference is not representative of a wild mosquito, let alone one from its native range in sub-Saharan Africa. To better understand the genetic architecture of *Ae. aegypti* and their sister species, we developed two de novo chromosome-scale genomes with sequences sourced from single individuals: one of *Ae. aegypti formosus* (Aaf) from Burkina Faso and one of *Aedes mascarensis* (Am) from Mauritius. Both genomes exhibit high contiguity and gene completeness, comparable to AegL5. While Aaf exhibits a high degree of synteny to AegL5, it also exhibits several large inversions. We also conducted comparative genomic analyses using our genomes and other publicly available culicid reference genomes to find extensive chromosomal rearrangements between major lineages. The expanded gene families common to Aaf, AegL5, and Am revealed that while the overarching category of genes that have expanded are similar, the specific genes that have expanded differ. Our findings elucidate novel insights into chromosome evolution at both microevolutionary and macroevolutionary scales. The genomic resources we present are additions to a growing arsenal for biologists in understanding mosquito biology and genome evolution.

### GRANTS:

**Rebecca Johnson** (co-mentors **Doug Brackney** of CAES and **Andrea Page-McCaw** of Vanderbilt University) was awarded a K99 Pathway to Independence award from the National Institutes of Health and the National Institute of Allergy and Infectious Diseases. This award totaling \$1,097,175 will provide support for up to two years of additional postdoctoral training as well as three years of funding that will follow her to a tenure-track position. Her project, “Elucidating the processes mediating mosquito basement membrane repair and the implications on within-mosquito virus dynamics”, will investigate the genes and tissues involved in repairing the mosquito midgut basement membrane (BM) following blood feeding. Damage to the mosquito midgut BM following blood feeding has recently been shown to result in earlier virus dissemination from the mosquito midgut and earlier viral transmission via mosquito saliva. This midgut BM damage is transient and appears to create a window of enhanced virus escape. Despite this, the BM repair processes that control this window of escape are unstudied. This project will expand our knowledge of the genes and tissues involved in mosquito midgut BM repair and seek to identify critical ways to alter this process for the purpose of future mosquito or pathogen control.

### PERSONAL NEWS, SOCIAL EVENTS, VISITORS, AND NEW EQUIPMENT:

During July and part of August Logan Patria, senior forensic science student at the University of New Haven studied forensic entomology and fly development as an independent study under the guidance of **Dr. Ridge**. Nathan Havard and Bakary Santiago students from the Cedarhurst School Passage career program spent six weeks studying entomology and helped archive the insect collection under **Dr. Ridge** and **Katherine Dugas**.

**Insect collection interns and forensic entomology researcher.** From left to right, **Dr. Ridge**, Nathan Havard and Bakary Santiago students from Cedarhurst School Passage career program (studied entomology and interned in the insect collection), **Katherine Dugas**, and Logan Patria (senior forensic science student at the University of New Haven who completed an independent study in Forensic Entomology).



**SCOTT C. WILLIAMS, PH.D.** participated in a meeting with BanfieldBio on a collaborative NIH SBIR grant investigating tick repellent formulations to be integrated into fabrics (August 5); was appointed to the Connecticut Siting Council by Governor Lamont (August 6); as Chair, presided over the monthly evening meeting of the Town of Guilford's Land Acquisition Commission (August 7); attended a Zoom meeting with staff from CT DEEP's hunter safety program about creating an informational brochure on tick protection geared toward members of the hunting public (August 11); participated in an orientation Zoom call with staff from the State of Connecticut Siting Council (August 11); attended an in-person meeting with the Town of Guilford First Selectman, staff from his office, Economic Development, and other members of the Land Acquisition Commission (August 11); participated in a meeting with staff from BanfieldBio, Inc. on a collaborative CDC grant investigating botanical extracts in their potential to manage ticks in peridomestic habitats (August 12); as vice-chair, attended the evening meeting of the Town of Guilford's Inland Wetland Commission over Zoom (August 13); participated in an evidentiary hearing of the State of Connecticut Siting Council (August 14); presented invited lecture on integrated tick management and tick ecology to members of the Coginchaug Outdoor Enrichment Center in Durham (25 attendees) (August 14); participated in a meeting with BanfieldBio on a collaborative NIH SBIR grant investigating tick repellent formulations to be integrated into fabrics (August 19); as Chair of the Town of Guilford's Land Acquisition Commission and with First Selectman Matt Hoey, Vice-Chair of Land Acquisition Gary MacElhiney, and Town of Guilford Environmental Planner Kevin Magee, presided over a Town Meeting to take a vote to purchase 27 acres along Guilford's East River offset by an awarded \$1.6 million State of Connecticut open space grant (August 19); as the Northeast Section Representative, participated in a meeting to review applications for the Professional Certification Review Board of The Wildlife Society (August 20); spoke with Yale Microbiology Fellow Dr. Paul Bernard about tick and tick-borne pathogen ecology research at CAES (August 20); participated in a meeting with staff from the CDC Division of Vector-Borne Diseases on ongoing progress made on a funded integrated tick management project (August 20); participated in the bimonthly meeting of the State of Connecticut Siting Council (August 21); participated in the evening meeting of the Town of Guilford's Conservation Commission (August 27); participated in an evidentiary hearing and public comment session of the State of Connecticut Siting Council (August 28); interviewed by Jed Kim of National Public Radio about annual fluctuating rodent abundances as the result of varying acorn abundances (August 29); co-hosted a Guilford Land Conservation Trust ecological hike with local botanist Lauren Brown on a property recently acquired within the Westwoods block in Guilford (August 31) (15 attendees).

**NATALIE BAILEY** participated in a collaborative meeting with members of the Connecticut Department of Energy and Environmental Protection's Wildlife Division to develop an educational brochure on tick safety and bite prevention tailored to hunters (August 11); traveled to Horse Island in Branford, Connecticut, to assess American dog tick (*Dermacentor variabilis*) density and collect samples from mice (*Peromyscus* spp.) on the island as part of an ongoing tick control investigation in collaboration with the Yale Peabody Museum (August 25, 26).

**JOSEPH P. BARSKY** participated in the Society of American Foresters National Convention local coordinators meeting (August 7); participated in the 2025 Society of American Foresters Diversity Student Mentor Training Session (August 18); interviewed by Jed Kim of National Public Radio about Connecticut's Oak Mast Surveillance Program (August 22).

**JESSICA E. BROWN, PH.D.** as a current class member of The Wildlife Society's Leadership Institute, interviewed a faculty member from Paul Smiths College (NY) about career

paths and mentorship (August 6); participated in a meeting with the Department of Energy and Environmental Protection's Hunter Education Program to collaborate on the creation of hunter-focused tick safety materials (August 11); traveled to Yale Peabody Museum's field station on Horse Island in Branford, CT to assess rodent populations and conduct seasonal tick surveillance (August 25, 26).

**RILEY DOHERTY** met with CT DEEP leadership and the CT Federation of Lakes legislative subcommittee to discuss the obstacles to rapid response of hydrilla and potential solutions (August 11); participated in three AIS rapid response planning meetings with the CT Federation of Lakes legislative subcommittee (August 5, 21, 29).

**JEREMIAH R. FOLEY, IV, PH.D.** met with CT DEEP Natural Diversity Data Base (NDDDB) staff to discuss a scientific collectors permit for threatened and endangered plant research (August 5); provided technical input to former Connecticut representative Christine Plam for an Estuary Magazine article on the current impacts and management of Connecticut River hydrilla at state and federal levels (August 23); met with the U.S. Army Corps of Engineers and CT DEEP NDDDB staff to plan threatened and endangered plant surveys for this season and next at potential herbicide treatment sites in the Connecticut River (August 25); oversaw the completion of Elliana Patterson's Applied Stewardship project, a WCSU master's student study on the salinity tolerance of Clade C Connecticut River hydrilla fragments (August 28).

**SUSANNA KERIÖ, D.SC.** organized a field plot exhibit on "Benefits of Mycorrhizal Inoculation on Landscape Tree Health in Connecticut" (70 visitors) and co-organized a field plot on "50 Years of Chestnut Blight Biocontrol at CAES" with **Nathaniel Westrick, Ph.D.** and **Sandra Anagnostakis, Ph.D.** (Emeritus) during the CAES Plant Science Day (August 6); hosted a high school student Henry Mayne-Chang (Senior, High School of American Studies at Lehman College in New York City) for a research internship (August 11- 22); collaborated with Chris Ozyck and William Tisdale from Urban Resources Initiative at Yale on field plot maintenance as part of the Urban Silviculture Network (August 13 and 20).

**SARA NASON, PH.D.** met virtually with Bryan Berger and Michael Timko (University of Virginia), Fred Corey (Mi'kmaq Nation), Chelli Stanley (Upland Grassroots, and Katie Richards (Maine PFAS Labs), and others to discuss progress on our EPA funded research (August 1); as Chair, led and participated in virtual meetings for the Best Practices for Non-Targeted Analysis working group (August 5, 12, 19).

**ITAMAR SHABTAI, PH.D.** with **Alice Zhou, Ph.D.**, presented a barn exhibit at the annual Plant Science Day titled: "Using Organic and Inorganic Amendments to Improve Soil Properties" (August 6); met with a program manager at Cascade Climate to discuss funding of research on enhanced rock weathering (August 8); met with collaborators at Yale and The Hebrew University of Jerusalem to discuss a grant proposal to BARD (August 21); met with collaborators at Purdue University to discuss a grant proposal to FFAR (August 21); met with collaborators at the Argonne National Laboratory to discuss analysis of X-ray diffraction data from soil samples (August 22); met with a collaborator at University of Minnesota to discuss a grant proposal to USDA NIFA-AFRI (August 22); met, along with **Alice Zhou, Ph.D.**, with staff scientists at the Environmental Molecular Sciences Laboratory (EMSL) to discuss data collected as part of a collaborative project (August 26).

**ELISABETH WARD, PH.D.** participated in the monthly Forest Ecosystem Monitoring Cooperative State Coordinators meeting (August 11); met with Billy Gridley (Head Steward and President) to discuss potential research collaborations at Aton Forest Natural Area Preserve

and Ecological Field Station in Norfolk, CT (August 12); met with Mike Zarfos, Ph.D., (Executive Director) to discuss ongoing research collaborations at Great Mountain Forest (August 20); met with Mark Bradford, Ph.D., (Professor, The Forest School, Yale School of the Environment) and Maddie Annis to discuss opportunities for integrating soil health research into long-term CAES forest management studies (August 22); met with Alison Adams, Ph.D., (Forest Ecosystem Monitoring Cooperative) and Elena Karlsen-Ayala, Ph.D., (USDA Forest Service) to work on oak wilt risk map for Connecticut (August 22); visited Silver Beech Preserve in Amagansett, NY along with Josh Halsey (Peconic Land Trust) to select sites for beech leaf disease management project (August 25); met with Cameron McIntire, Ph.D., (Forest Pathologist, USDA Forest Service) to discuss opportunities for a collaborative beech leaf disease treatment project to help retain beech genetic diversity in Connecticut (August 27).

**MADLINE WATTS** met with CT DEEP Natural Diversity Data Base (NDDDB) staff to discuss a scientific collectors permit for threatened and endangered plant research (August 5); provided a river tour to the Connecticut Office of Policy and Management with **Greg Bugbee** and

**SUMMER WEIDMAN** to highlight OAIS projects and demonstrate the scale of the Connecticut River hydrilla problem (August 22); led a tour of the hydrilla in the Salmon River for the Connecticut Office of Policy and Management (August 22); met with the U.S. Army Corps of Engineers and CT DEEP NDDDB staff to plan threatened and endangered plant surveys for this season and next at potential herbicide treatment sites in the Connecticut River (August 25); participated in the virtual Plant Science Day committee meeting (August 28).

**LEIGH J. WHITTINGHILL, PH.D.** attended the American Society for Horticultural Science annual conference in New Orleans and discussed many past, present, and future projects with researchers from around the country and presented “Effects of Nutrient Management on Nutrient Leaching in Cut-and-Come-Again Collards Production“ (20 attendees) (July 28-August 1); produced and presented for two field exhibits titled “Baby Pools: Low-Cost Containers for Vegetable Production in Urban Agriculture” and “The Effects of Management Practices on Cut-And-Come-Again Greens Production” at the 2025 annual Plant Science Day (August 6); attended the quarterly meeting for the state Agriculture Science and Technology Education committee (August 19); attended the University of Connecticut Department of Plant Science and Landscape Architecture departmental retreat (August 20); was featured with Kate Bruno in an #MiddleburySummerInternship spotlight on Instagram about Kate’s internship in the Whittinghill lab (August 25).

**YINGXUE (CHARLIE) YU, PH.D.** chaired the session “Rapid Poster Presentations Session #2” at Kirkham Conference 2025, Fukushima, Japan (150 attendees) (August 19); presented a poster “Stability and Mobility of Biodegradable Nanoplastics” at Kirkham Conference 2025, Fukushima, Japan (150 attendees) (August 22).

### PUBLICATIONS:

1. Stewart, R. D., Flury, M., Ajami, H., Anderson, R. G., Green, T. R., Jin, Y., Patrignani, A., Shillito, R., Zhang, W., Abou Najm, M. R., Babaeian, E., Berli, M., Brookshire, E. N. J., Daigh, A. L. M., Franklin, S., Giovando, J., Heinse, R., Heitman, J., Huang, J., Kelleners, T., Naseri, M., Ochsner, T. E., Radolinski, J., Sadeghi, M., Sasi-dharan, S., Shukla, M. K., Tuller, M., Wendroth, O., Wu, J., Wyatt, B. M., Yang, Y., **Yu, Y.**, & Zhang, Z. F., (2025). Emerging issues and research opportunities in vadose

**Abstract:** The vadose zone—the variably saturated, near-surface environment that is critical for ecosystem services such as food and water provisioning, climate regulation, and infrastructure support—faces increasing pressures from both anthropogenic and natural factors, including changing climatic conditions. A more comprehensive understanding of vadose zone processes and interactions is imperative to effectively address these challenges and safeguard water and soil resources. This review outlines selected key issues, knowledge gaps, and research opportunities across six thematic sections. Each section presents a problem statement, a summary of recent innovations, and a compilation of emerging challenges and study opportunities. The selected topics include scaling and modeling of vadose zone properties and processes, soil moisture monitoring initiatives, surface energy balance, interplay between preferential water flow paths and biogeochemical processes, interactions between fires and vadose zone dynamics, and emerging contaminants and their fate in the vadose zone. This overview is intended to serve as a compendium of vadose zone science that encompasses both insights gained from prior research and anticipated needs for the coming years.

2. Jilling, A., Grandy, A. S., Daly, A. B., Hestrin, R., Possinger, A., Abramoff, R., ... **Shabtai, I. A.**, Sokol, N. W., and Whalen, E. D. (2025). Evidence for the existence and ecological relevance of fast-cycling mineral-associated organic matter. *Communications Earth & Environment*, 6(1), 690. DOI: [10.1038/s43247-025-02681-8](https://doi.org/10.1038/s43247-025-02681-8)

**Abstract:** Longstanding theories and models classify mineral-associated organic matter as the large (~60%) but slow-cycling and persistent portion of soil organic matter. Strong physicochemical interactions and diffusion limitations restrict the turnover of mineral-associated organic matter, allowing carbon and nitrogen bound therein to persist in soil for as long as centuries to millennia. However, mineral-associated organic matter is a chemically and functionally diverse pool with a substantial portion cycling at relatively fast (i.e., minutes to years) timescales. Despite a growing body of evidence for the heterogenous and multi-pool nature of mineral-associated organic matter, we lack consensus on how to conceptualize and directly quantify fast-cycling mineral-associated organic matter and its ecological significance. We demonstrate that the dynamic qualities of fast-cycling mineral-associated organic matter vary based on 1) the chemistry of the mineral particles and organic matter, 2) the complex set of interactions between organic matter and the mineral matrix, and 3) the presence and strength of destabilizing forces that lead to decomposition or loss of mineral-associated organic matter (i.e., plant-microbe interactions, agricultural intensification, and climate change). Finally, we discuss potential implications and research opportunities for how we measure, manage, and model the dynamic subfraction of this otherwise persistent pool of soil organic matter.

3. Data, S., Basharat, S., Barker, D., **Pignatello, J. J.**, Kah, M., Leitao, E. M., and Padhye, L. P. (2025). Quaternary-ammonium-grafted flax fibers for removal and release of short-chain PFAS from water. *ACS ES&T Engineering*. DOI: 10.1021/acsestengg.5c00603.

**Abstract:** Short-chain per- and poly-fluoroalkyl substances (PFAS) evade most commercial sorbents, leaving a critical treatment gap in drinking-water protection. Here, we couple advanced polymer grafting with a bioderived substrate to close that gap. Phormium tenax (New Zealand flax) fibers were functionalized via a two-step ATRP route that grafted 20% by weight [poly-2-methacryloyloxy]ethyl trimethylammonium chloride to yield cationic grafted flax fibers. The quaternary-ammonium-grafted fibers removed 86% PFBS and 57% PFBA within 24 h from 100 µg/L PFAS multi-solute at a 50 mg/L dose, outperforming the tested granular activated carbon and matching the performance of a strong-base ion-exchange resin. pH- and salt-

dependent sorption, together with MeOH/1% NaCl elution that recovered >78% PFBS and 97% PFBA, point to electrostatic plus hydrophobic interactions and confirm that the sorbent is readily regenerable for cyclic use. The fibers are nonporous yet rigid, enabling direct use as packed media. Since the feedstock is low-cost, native, renewable, and regenerable with brine-assisted solvent wash, this work exemplifies how materials-science design can deliver scalable, greener solutions for emerging-contaminant removal and guides future optimization of biobased novel sorbents for PFAS remediation.

### GRANTS/AWARDS:

**ELISABETH WARD, PH.D.**, received \$83,000 from the USDA Forest Service Cooperative Forest Health Protection Program to support forest health research and monitoring in Connecticut.

**SUSANNA KERIÖ, D.SC.** received \$120,000 from the USDA Forest Service Biological Control of Invasive Forest Pests program for a project titled “Targeted biocontrol of chestnut blight with hypovirulent strains of *Cryphonectria parasitica*” along with **ELISABETH WARD, PH.D.** and **NATHANIEL WESTRICK, PH.D.**

**NATHANIEL WESTRICK, PH.D.** and **ELISABETH WARD, PH.D.** received \$5,000 from the USDA Forest Service Emerging Pest program for a project titled “Northeast Area Multi-State Comprehensive Oak Decline Monitoring Project.” These funds will be used to support diagnostic testing for oak wilt in Connecticut as part of an early detection rapid response management strategy.

## PLANT PATHOLOGY AND ECOLOGY

**LINDSAY TRIPLETT, PH.D.** presented a talk titled “CAES: A partner in Agricultural Research and Education in Connecticut” at the UCONN PSLA faculty retreat held in Storrs, CT (August 20<sup>th</sup>, 50 adults). The presentation was co-authored by Drs. **HANY DWECK, LEIGH WHITTINGHILL, NATHANIEL WESTRICK, KELSEY FISHER,** and **RAQUEL ROCHA** who also attended. **Dr. TRIPLETT** also led the final research symposium for the 8<sup>th</sup> cohort of the Plant Health Fellows program funded by USDA NIFA’s REEU initiative. Eight students from seven universities presented brief oral presentations about their summer research (August 7<sup>th</sup>, 58 adults). **Dr. TRIPLETT** also chaired the annual meeting of the APS-APHIS Widely Prevalent Bacteria Committee (August 26 via Zoom, 12 adults).

**FELICIA MILLETT** made a site visit to Two Meadow Farm in North Haven (August 1); staffed the Q & A Tent at Plant Science Day (August 6); hosted the NPND Proficiency Committee monthly meeting (August 12, 5 adults); and participated in the NEPDN monthly meeting (August 14, 15 adults).

**QUAN ZENG, PH.D.** presented an oral presentation “Mechanistic characterization of a novel fire blight resistant apple cultivar” at the UConn Department of Plant Science and Landscape Architecture’s faculty retreat (August 20<sup>th</sup>, 50 adults).

### PUBLICATIONS:

1. **Zeng, Q.,** Vrisman, C. M., **Triplett, L.,** Miller, S. A. and Sundin, G. W. (2025). “Chapter 8: Erwinia”. In J.B. Jones et al (Ed), Laboratory Guide for Identification of Plant Pathogenic Bacteria, Fourth Edition. APS Press. Epub: 978-0-89054-698-7.
2. **Triplett, L.** (2025). “Appendix III: Automated Techniques”. In J.B. Jones et al (Ed), Laboratory Guide for Identification of Plant Pathogenic Bacteria, Fourth Edition. APS Press. Epub: 978-0-89054-698-7.

### GRANTS/AWARDS:

**Raquel Rocha, Ph.D.** was awarded the New Innovator in Food & Agriculture Research Award from the Foundation for Food & Agriculture Research (FFAR). This three-year, \$449,989 grant supports pioneering research on the molecular genetics of plant-nematode interactions. The project aims to develop advanced crops that use RNA-based strategies to disrupt nematode proteins, effectively blocking the parasite’s development within plant roots.

## PERSONAL NEWS, SOCIAL EVENTS, VISITORS, AND NEW EQUIPMENT:



The 2025 Plant Health Fellows celebrate completion of their final research symposium on August 7th. L-R: Mikayla Spero, Anna Grey, Hannah Flis, Annette Flotten, Riley Eagleson, Remick McIntyre, Erik Galvin, and Hamid Shahbaz.



The Rocha Lab welcomes **Saikumar Rudra**, who will be researching biocontrol alternatives for root-knot nematodes. Saikumar is pursuing a Master of Science in Environmental Science at the University of New Haven. We're excited to have you on board, Sai!

## VALLEY LABORATORY

**JATINDER S AULAKH, PH.D.** attended the fall meeting of the Connecticut Christmas tree growers' association and presented a research plot demonstration on horsenettle control in Shelton CT (August 9, 2025); and gave a technical demonstration on 115TH annual plant science day in Hamden, CT (August 6, 2025); and submitted a co-authored paper entitled "Glyphosate- and Atrazine-Resistant Palmer amaranth in New York: Confirmation and Management with Alternative POST Herbicides" (August 14, 2025); and visited with the natural resources manager, Mr. Kent Ritter at CTARNG in East Haven for an invasive plant management planning (August 27, 2025); and visited with Mr. Pete Picone, wild life biologist at CTDEEP, to select sites for potential collaborative research trials on invasive plant management (August 28 and 29, 2025).

**RICHARD COWLES, PH.D.** presented the Barn Exhibit "Deer Repellents: DIY Options," at Plant Science Day, Hamden, CT (Aug. 6). He talked about "Mites and disease management," Aug. 9, which was the 65th Anniversary Fall Field Day for the Connecticut Christmas Tree Growers' Association, Shelton, CT (100 participants). He discussed "Prospects for using potassium phosphite products for managing phytophthora root rot" at a special meeting for Christmas tree specialists, Sherbrooke, QC, Aug. 22 (20 participants).

**NATHANIEL WESTRICK, PH.D.** presented a poster entitled "Characterizing the Endophyte-to-Pathogen transition of *Colletotrichum siamense*" at Plant Science Day (August 6) (1000 Participants); participated in a *Neopestalotiopsis* working group consisting of academic plant pathologists focused on the threat of *Neopestalotiopsis rosae* to strawberry production in the United States (August 13)(35 Participants); participated in the departmental retreat for the Department of Plant Science and Landscape Architecture at UConn (August 20)(70 Participants); presented a talk entitled "Etiology and management of boxwood blight" to the Boxwood Blight Insight Group (August 20)(22 Participants).

Bharadwaj, R., **Xue, Q., Ridge, G. E., Dweck, H. K. M.** Hexanal is a potent attractant for fourth instar nymphs of spotted lanternflies. *Journal of Experimental Biology*.

Chen, Y., **White, J. C.**, He, E., Peijnenburg, W.J.G.M., Zhao, Y., Qiu, H. Aerosol-phase aging drives nanoplastic bio-adhesion and triggers a toxicological cascade compromising plant fitness and food quality. *Nature Food*.

Cobb, N., duClos, B., Kammerer, M., Mathis, C., Rasmussen, C., Russo, L., Schlauch, J., Tucker, T., **Zarrillo, T.** A response to Porman et al. USGS Bee Lab Collaborative Science and Big Data are Essential for Understanding Bee Biodiversity. *Annals of the Entomological Society of America*.

**Deng, C., Sharma, S.**, Ashraf, H., Goyal, V., Yaregal, N., Muthuramalingam, R., Qin, L., **Cai, Z.**, Zhou, X., Vera-Reyes, I., **Dimkpa, C. O., Wang, Y., White, J. C.** Comparative Evaluation of Foliar-Applied Nanosulfur on the Salinity Tolerance of Soybean (*Glycine max* L.). *Environmental and Biogeochemical Processes*.

Habito, J. D., Wang, Y., **da Silva, W. L., White, J.C.**, Kah, M. Field evaluation of nanosulfur to control grapevine powdery mildew. *ACS Materials Letters*.

Jiang, Z., Tang, C., Liu, S., Fang, Y., Zhou, J., Xiao, M., Luo, Y., Ge, T., Cai, Y., Yu, B., **White, J. C.**, Li, Y. Nano-enabled biochar fertilizer mitigates the priming effect and promotes soil carbon stability in subtropical bamboo plantations. *Soil Biology and Biochemistry*.

Lü, K.-Y., Zhang, S.-Y., Wan, Y., Li, S., **Li, D.-W.**, and Zhu, L.-H. *Neopetalotrips iberica* Causing Needle Blight on *Pinus massoniana*. *Crop Protection*.

Qin, L., Deng, C., Boyjoo, Y., **Sharma, S.**, Ashraf, H., Wang, M., Zhao, L., Sabliov, C. M., Bhaw-Luximon, A., **Dimkpa, C. O., Wang, Y.\***, Chen, S.\* , **White, J. C. \*** Nano-Stimulated Immunity: Modified CuS Nanoparticles Trigger Multi-Level Defense Against *Fusarium* in Tomato (*Solanum lycopersicum*). *Advanced Functional Materials*.

Shao, D., **Westrick, N. M.**, Liu, W., Yarden, O., Zhao, J., Kimura, Y., Maeda, H., Smith, D. L., Kabbage, M., Dickman, M. B. A broadly conserved fungal chorismate mutase hijacks the plant shikimate pathway to regulate salicylic acid production and other secondary metabolites. *mBio*.

Wan, Y., **Li, D.-W.**, Zhang, Q.-Y., Si, Y.-Z., Sun, J.-W., Ding, X., Huang, L., and Zhu, L.-H. Phylogeny, species diversity and divergence time of *Diaporthe* causing leaf blight on *Acer palmatum* in China. *Crop Protection*.

Woodard, S. H., Du Clos, B. D. **US National Native Bee Monitoring Research Coordination Network**, and Williams, N. M. Actions for improving data-driven conservation of US wild bees. *Proceedings of the National Academy of Sciences*.

CAES



The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

# STATION NEWS

**Yuan, J., LaReau, J. C., Lawrence, B., Meadows-McDonnell, M., Steven, B., Shabtai, I.** Threshold-Meditated Responses in Carbon Utilization and Microbiome Community Structure Across a Soil Moisture Gradient. *Soil Biology and Biochemistry*.

Zhang, X.-Y., Zhang, Q.-Y., **Li, D.-W.**, Fan, B. New insights into the classification and evolution of Capnodiales s. lat., with three new genera and six new species of endophytic fungi isolated from Pinus. *IMA Fungus*.

Zhao, J.-M., Peng, C.-X., Zhang, Q.-Y., **Li, D.-W.**, Huang, L. Five novel species of Curvularia (Pleosporales, Pleosporaceae) isolated from turfgrasses. *Fungal Biology*.



# 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



Main Laboratories, New Haven



Lockwood Farm, Hamden

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



Griswold Research Center, Griswold



Valley Laboratory, Windsor

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

Putting Science to  
Work for Society.

## 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 Jason White, Ph.D., Director, The Connecticut Agricultural Experiment Station, 123 Huntington Street, New Haven, CT 06511, (203) 974-8440 (voice), or [Jason.White@ct.gov](mailto: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](mailto:Michael.Last@ct.gov) (e-mail).



<https://portal.ct.gov/CAES>

Volume 15 Issue 9  
September 2025

Station News was prepared and edited by Dr. Jason White, Ms. Vickie Bomba-Lewandoski, and Mrs. Natalie Rivera.