Station News

The Connecticut Agricultural Experiment Station
Volume 7 Issue 10 October 2017

This Issue

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

ADMINISTRATION

DR. THEODORE ANDREADIS presented opening remarks and an overview of CAES current research programs and diagnostic services available to citizens to the Federated Garden Clubs of Connecticut Garden Studies School held in Jones Auditorium (September 26).

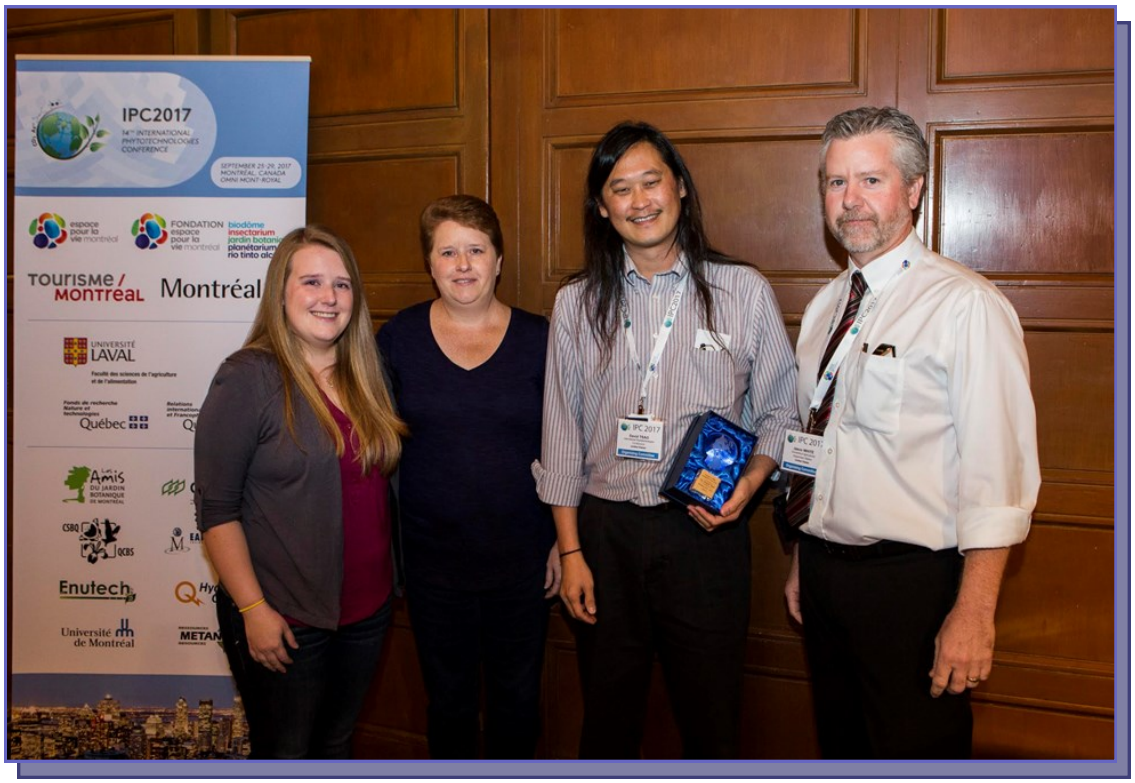
ANALYTICAL CHEMISTRY

DR. JASON C. WHITE spoke with Professor Navid Saleh of the University of Texas at Austin regarding collaborative research focused on the toxicity of energy-related nanomaterials (September 5); spoke with Mr. Drew Story, a graduate student at the University of California Riverside, about the CAES nanotoxicology program and future open post-doctoral positions (September 5); attended the monthly Laboratory Preparedness meeting at the CT Department of Public Health Laboratory in Rocky Hill (September 11); spoke by phone with Dr. Elijah Petersen of NIST and others about a joint manuscript under preparation focused on standardized exposure protocols for engineered nanomaterials (September 13); served as a judge for the FFA Agriscience Fair -at the Big E in Springfield, MA (September 15); participated in the FDA FERN northeast regional teleconference call (September 21); attended the 14th International Phytotechnologies Conference in Montreal, Quebec, Canada, chaired an Editorial Board meeting of the International Journal of Phytoremediation (25 attendees), and was the co-recipient of the Stephen D. Ebbs Award for distinguished service to the field of phytotechnologies (September 25-28); gave an invited Brace Seminar entitled "Engineered Nanomaterials in Agriculture: Assessing the Balance Between Implications and Applications" at McGill University in Montreal, Quebec, Canada (25 attendees) (September 28); and participated in a WebEx with graduate students at the University of Wisconsin and University of Minnesota regarding ongoing collaboration research projects (September 29).

DR. CHRISTINA S. ROBB attended three meetings for the Eastern Analytical Symposium in Princeton, NJ (September 15).

DR. BRIAN EITZER was a participant in the North American Chemical Residue Workshop's Organizing Committee conference call (September 14); the FERN cCAP conference call (September 15); the FERN northeast regional teleconference call (September 21); and discussed the analysis of pesticides in foods with two students from Southern Connecticut State University (September 26).

DR. NUBIA ZUVERZA-MENA attended the webinar "Single Cell ICP-MS: A New Technique to Quantify Nanoparticles and Metal Concentrations in Individual Cells" presented by the Chemical and Engineering News (C&EN) webinar series (September 20); and presented a poster entitled "Effects of silver based nanoparticles on potato and red worms in soil" at the 14th International Phytotechnologies Conference (IPC) in Montreal, Quebec, Canada (317 attendees) (September 25-28).



At the 14th International Phytotechnologies Conference in Montreal, Quebec, Canada, **Dr. Jason C. White** and Dr. David Tsao (BP Corp.) were co-recipients of the first Stephen D. Ebbs Award for distinguished service to the field of phytotechnologies. Dr. Ebbs passed away earlier this year and this award was established in his memory; pictured on the left are his wife and daughter who were present for the ceremony.

ENTOMOLOGY

DR. KIRBY C. STAFFORD III was interviewed by Ajhani Ayres, Republican American, about flying ants (September 7); presented a talk on ticks at the Tilde Café in Branford (35 attendees) (September 16); welcomed the Federated Garden Club of Connecticut to the Station in Jones Auditorium (September 20); was interviewed by Channel 3 WFSB-TV about the lone star tick (September 20); was interviewed by Ed Stannard, New Haven Register, about the lone star tick (September 20); and was interviewed by NBC CT about the lone star tick; and was interviewed by Tony Terzi, Fox61, about the lone star tick (September 21).

MS. KATHERINE DUGAS set up and staffed a CAES display booth at the Woodstock Fair (September 4-9); with **MR. MARK CREIGHTON** and **MR. ZACHARY BROWN,** staffed a joint Forest Pest/Honey Bee booth in the Connecticut building at the Big E (September 22); and gave a short presentation with **DR. GALE RIDGE** about the Insect Inquiry Office and CAPS program to a visiting group from the Federated Garden Clubs of Connecticut (September 27).

MS. MEGAN LINSKE presented a talk on the professional life of graduate school and conducting research studies in the CAES Center for Vector Biology and Zoonotic Diseases at Nazareth College in Rochester, NY (20 attendees) (September 29).

DR. GALE E. RIDGE was interviewed about swarming ants by Andrew Regalia of the Record-Journal, and NBC News Connecticut (September 6); identified a male jumping bush cricket *Orocharis saltator* as a new state record (September 20); her identification of the Legurian leafhopper *Eupteryx decemnotata* was confirmed (September 27), a second interception of this insect (the first was in 2009); and was interviewed by WTNH TV (September 28) and NBC News Connecticut (September 29) about population increases of the brown marmorated stink bug in Connecticut.

DR. CLAIRE E. RUTLEDGE helped administer Connecticut's Tree Protective Association exams (September 13); gave a talk entitled "Wasps versus Beetles: How we are fighting the Emerald Ash Borer in Connecticut" at the Wilton Public Library in Wilton (20 adults and 2 youths) (September 19); organized, presented, and participated in the 6th Annual Emerald Ash Borer Workshop sponsored by the Connecticut Tree Protection Association in Haddam (45 adults) (September 21); and was interviewed by Patrick Skahill of WNPR in Hartford about southern pine beetle in Connecticut; the resulting segment ran on both NEXT with John Dankosky and the local environmental segment of Morning Edition (September 25).

DR. KIMBERLY A. STONER organized and hosted a meeting of the Connecticut Native Plants for Pollinators and Wildlife Working Group, with guest speaker Michael Piantedosi, of the New England Wildflower Society at the Valley Laboratory, in Windsor (8 attendees) (September 15).

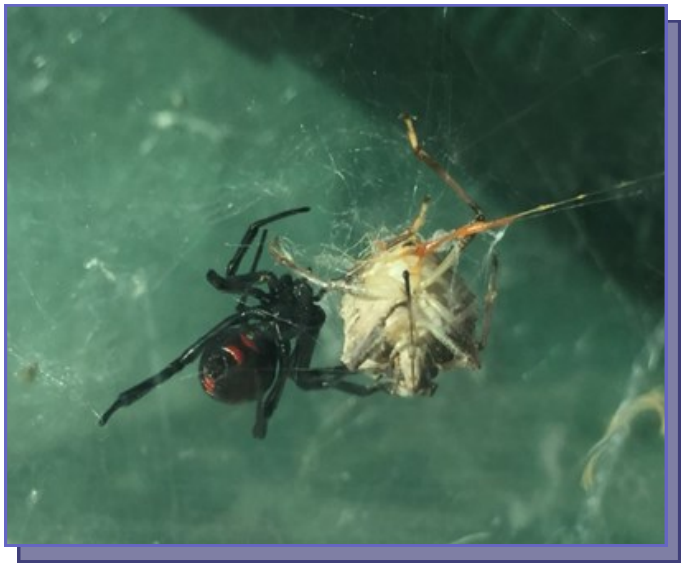


Photo by Kirby Stafford: Black widow *Latrodectus mactans* feeding on a brown marmorated stink bug *Halyomorpha halys*.

ENVIRONMENTAL SCIENCES

DR. JOSEPH PIGNATELLO met and dined with Yale seminar speaker Prof. Derik Peak, Department of Soil Science, University of Saskatchewan (September 13); met with Yale seminar speaker Dr. Abbas Firoozabadi, Director, Reservoir Engineering Research Institute; and met and dined with Yale seminar speaker Prof. Haizhou Liu, Chemical and Environmental Engineering Department, University of California, Riverside (September 27).

MR. GREGORY BUGBEE reported on the 2017 CAES aquatic plant survey of Beseck Lake at a meeting at the Middlefield Community Center; in attendance were Middlefield First Selectman Edward Bailey, Senator Len Suzio, and State Representative Buddy Altobello (September 27).

DR. GOUDARZ MOLAEI met with Dr. Peter Krause, of the Yale School of Public Health, and Dr. Michel Ledizet, of L^2 Diagnostics Inc. to discuss joint research on Powassan virus and other tick-borne pathogens (September 1).

DR. BLAIRE STEVEN gave a departmental seminar, "Sudden Vegetation Dieback as a Model for Carbon Cycling in a Coastal Wetland" in the Department of Natural Resources and the Environment at the University of Connecticut (approx. 15 faculty and 25 student attendees) (September 22).

DR. CHARLES VOSSBRINCK gave three talks at the Society of Invertebrate Pathology Annual Conference, in San Diego: “Genome size in Microsporidia—An evolutionary hypothesis”; “Phylogeny of Microsporidia—Impact of molecular approaches”; and “The Microsporidia as Eukaryotes Microsporidia” (August 13).

FORESTRY AND HORTICULTURE

DR. JEFFREY S. WARD, along with **MR. JOSEPH P. BARSKY**, met with Scott Graves (Southern Connecticut State University) to identify trees and shrubs on natural area in West Haven (September 6); administered practical and oral examination to arborist candidates for the Connecticut Tree Protection Examining Board (September 13); participated at the annual meeting of the Rhode Island Chapter of the Society of American Foresters in Foster, RI (September 13); chaired the Executive Committee meeting of the New England Society of American Foresters in Concord, NH (September 19); and led a workshop "Outdoor identification of plants" for the Gardening Study School 2017 in New Haven (27 attendees) (September 26).

DR. MARTIN P.N. GENT presented a paper on "Factors affecting relative growth rate of lettuce and spinach" at the American Society for Horticultural Science meeting in Waikoloa, Hawaii (30 attendees) (September 19-22).

DR. ABIGAIL A. MAYNARD judged fruits and vegetables at the North Haven Fair (September 7); discussed the Learning Garden at Hamden Hall Country Day School (2 teachers, 27 children) (September 11,21, and 27); visited Bishops Orchards in Guilford (September 12); evaluated the okra at Hindinger's Farm in Hamden (September 25).

DR. SCOTT C. WILLIAMS hosted a meeting of the Connecticut Urban Forest Council (8 attendees) (September 22).

MR. JOSEPH P. BARSKY served as a judge for the FFA Regional Agriscience Fair in West Springfield, MA (10 students, 3 teachers) (September 15); participated in the Executive Committee meeting of the New England Society of American Foresters in Concord, NH (September 19); staffed a CAES display at the Brooksvale Fall Festival in Hamden (50 visitors) (September 30).

PLANT PATHOLOGY AND ECOLOGY

DR. WADE ELMER hosted the Connecticut Alliance Hiking Club at Lockwood Farm where they picked vegetables and fruits for the Connecticut Food Bank (43 adults, 3 children) (August 27); participated by video conference in Ishaq Adisa's Ph.D. defense exam at the University of Texas, El Paso; was invited to be the keynote lecturer at the 14th International Asparagus Symposium in Potsdam, Germany, September3-6, where he presented the talk "Asparagus Decline and Replant Problem, A look back and a look forward at strategies for mitigating losses" (175 attendees) (September 4); co-sponsored the UConn-CAES greenhouse meeting "Keeping Those Dratted Diseases Out of Your Crops" and presented the talk "How Nutrition Can Affect Contagious Plant Diseases" (60 attendees) (September 21).

DR. YONGHAO LI hosted three scientists, Drs. Yanli Xu, Surong Ding, and Wenxiu Zou, from the Northeast Institute of Geography and Agroecology at the Chinese Academy of Sciences (September 6); presented a talk about foliar diseases on Christmas trees and their control at the CCTGA annual fall meeting in New Hartford (40 adults) (September 9); co-sponsored "Keeping Those Dratted Diseases Out

of Your Crops Program" in Jones Auditorium and presented a diagnostic overview of diseases of ornamentals (59 adults) (September 21); was interviewed by Robert Miller at the News -Times about fungal diseases and autumn foliage this year (September 26); was interviewed by Sam Kantrow at News 8 (WTNH) about "When will the colors pop?" (September 26); and presented a talk to Federated Garden Club of Connecticut members about the Plant Disease Information Office during a tour of the Station (26 adults) (September 27).

ROBERT MARRA presented a talk titled "Fungi of the Forest" to the Town & Country Garden Club in Sandy Hook (40 adults) (September 13); participated in a conference call with representatives of ten other northeastern states to discuss a USFS proposal to fund a collaborative effort on detection and diagnostics of oak wilt (September 26); and presented a talk titled "Three Important Tree Diseases You Should Know About" to the Enfield Garden Club in Enfield (20 adults) (September 27).

DR. LINDSAY TRIPLETT skyped with students in Mrs. Johnson's 4th grade class at Oak Pointe Elementary School in Irmo, South Carolina, who were matched through the Skype-A-Scientist program; was an invited speaker to the Department of Plant Sciences at the University of Arizona and presented the seminar entitled "A weapon of suicide or warfare: Understanding the functions of the bacterial virulence effector and universal toxin AvrRxo1," and met with faculty and students (42 attendees); and participated in a webinar that followed the National Academy of Science's Citrus Greening Committee Meeting (July 23-25) in Washington, DC to evaluate the success of ten years of Citrus Greening research in the US and to make recommendations for future research (September 28).

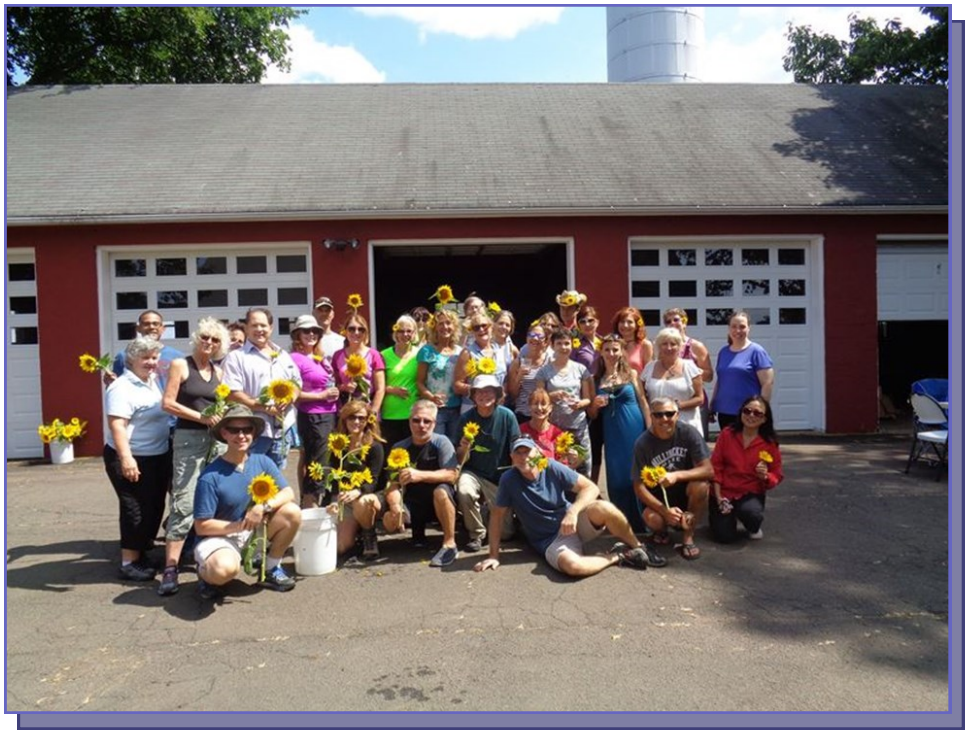


Figure 1. Members of the Connecticut Hiking Alliance met at Lockwood Farm and helped harvest fruits and vegetables for the Connecticut Food Bank.

Dr. Wade Elmer with Dr. Ferandon Cezar Juliatti, President of the Brazilian Phyto-pathology Society (left), and Dr. Edson Ampélio Pozza of Federal University of Lavras (Right).

Students in Mrs. Johnson's 4th grade class at Oak Pointe Elementary School in Irmo, South Carolina who were matched through the Skype-A-Scientist program. The kids had read the "Plant Pathology: Past to Present" Illustrated Storybook to prepare for their conversation with Dr. Lindsay Triplett (September 22). They had a lot of great questions about what it is like to be a scientist. To sign up for this fun opportunity to be matched with a classroom, go to www.skypeascientist.com.

VALLEY LABORATORY

DR. JATINDER S. AULAKH visited with Jean Kreizinger and Brandon at the Western Connecticut State University in Danbury for a weed control advisory and to discuss potential opportunities for guest lecturing (September 8).

DR. CAROLE CHEAH visited and checked the condition of hemlock stands on the Hoffman Evergreen Preserve, Avalonia Land Conservancy with Rick Newton and Avery Farm with Whitney Adams, Joan Smith and Jim Andersen of the Groton Open Space Association (September 1); attended the fall meeting of the Connecticut Christmas Tree Growers meeting at Maple Hollow Farm, New Hartford (September 9); was interviewed by Marven Moss for the Trumbull Daily Voice and the Monroe Courier on mile-a-minute detection in the Town of Monroe (September 15); together with Kris Vagos, of the US Fish and Wildlife Service, released weevils for biological control of mile-a-minute weed on Sheffield Island, Stewart B. McKinney National Wildlife Refuge (September 16); and was interviewed by Jennifer Turiano of the Greenwich Time on biological control of mile-a-minute invasive weed in Greenwich and the rest of Connecticut (September 26).

DR. RICHARD COWLES discussed pros and cons of plant variation, insect, mite, and phytophthora disease management at the walking tour of the CT Christmas Tree Growers Association fall meeting in New Hartford (45 attendees) (September 9); and presented “Insecticides for managing emerald ash borer,” for a CT Tree Protective Association workshop in Haddam (45 attendees) (September 21).

DR. JAMES LAMONDIA spoke to the Windsor Garden Club about the history of the Valley Laboratory and research and services conducted at the Station and the Valley Laboratory as well as examples of plant pathology research (30 attendees) (September 11); and conducted oral exams for candidates for the Connecticut arborist license and participated in the quarterly meeting of the Connecticut Tree Protection Examining Board in New Haven (September 13).

DEPARTMENTAL RESEARCH UPDATES SEPTEMBER 2017

Bazzano M. and Elmer, W. 2017. Influence of silicon and *Fusarium palustre* on DMSP levels in *Spartina alterniflora* and on herbivory by *Sesarma reticulatum* Coast and Shelf Science (doi S0272-7714(17)30398-0

Abstract-Sudden Vegetation Dieback (SVD) has been associated with multiple factors affecting the health of *Spartina alterniflora*. These include altered nutrition (N, Si and various metals), herbivory from the purple marsh crab, and the association with a fungal pathogen (*Fusarium palustre*). A metabolite produced by *Spartina alterniflora* that has been associated with plant health is dimethylsulfoniopropionate (DMSP), but little information exist on how these biotic stressors and nutrition interact to affect DMSP levels. Understanding how these factors might be interrelated might provide insight into the etiology of SVD. Surveys of a marsh affected by SVD confirmed lower levels of DMSP and higher concentrations of Si and other metals were present in *Sp. alterniflora* when compared to plants from a marsh that exhibited no signs of SVD. In repeated greenhouse experiments, the application of Si to *Sp. alterniflora* had no effect on DMSP concentrations. However, when plants were inoculated with the pathogenic fungus, *Fusarium palustre,* and then treated with Si, DMSP levels were elevated 27%. Inoculation alone had no effect on DMSP levels. Si application neither favor growth nor suppress the stunting effect of disease by *F. palustre*. Furthermore, grazing by *Sesarma reticulatum*, a herbivorous crab, was not affected by Si nutrition. Grazing was increased by nitrogen fertilization and inoculation with *F. palustre*. Deciphering the role of Si nutrition in *Sp. alterniflora* and dieback remains unresolved, but no evidence suggests enhancing Si nutrition would directly favor marsh health.

Bryan W. Lehner, **Neil P. Schultes, Douglas W. Dingman.** 2017**.** *Paenibacillus larvae* subspecies with dissimilar virulence patterns also group by vegetative growth characteristics and enolase isozyme biochemical properties *AgriGene* 6: 31-36 2017

Abstract- *Paenibacillus larvae* – the causal agent of American foul brood disease in Honey bees – group to different subspecies based upon disease progression and virulence as well as by molecular genotype. Vegetative growth studies reveal that virulence-grouped subspecies arrive at different saturated cell densities. In addition, strains segregating based upon virulence phenotype contain different genotypes in the locus encoding for the key glycolytic enzyme enolase. DNA sequence comparison of enolase loci from 7 *Paenibacillus larvae* strains identified 6 single-nucleotide polymorphisms (SNP) that segregated based on subspecies virulence classification. Only one polymorphism represented a change in amino acid coding (glycine or alanine) at position 331 of the protein. The kinetic properties of two recombinant enolase proteins expressed from enolase alleles isolated from different virulence classed strains (*P. larvae* ATCC 9545 and SAG 10367) yielded a K_m and of 4.2 µM and 1.5 µM and V_{max} of 16.2 µmoles min^{-1} mg^{-1} and 10.8 µmoles min^{-1} mg^{-1}, respectively. Enolase from *P. larvae* SAG 10367 had a maximum reaction velocity lower than and a specificity constant approximately 1.6x higher than that of *P. larvae* ATCC 9545.

Dimkpa, C; White, J.C.; Elmer, W.; Gardea-Torresdey, J. Nanoparticle and ionic Zn promote nutrient loading of sorghum grain under low NPK fertilization. *J. Agric. Food Chem.* 65:8552–8559.

Abstract- Micronutrients can significantly modulate plant responses in the presence of nitrogen, phosphorus, and potassium (NPK). Here, we comparatively evaluated the influence of ZnO nanoparticles (NP) and Zn salt on grain yield, NPK use efficiency, and Zn-enrichment of sorghum grain. Amendments were made by both soil and foliar pathways under ''low'' and ''high'' NPK regimens. Zinc was generally more effective at improving grain yield and nutrient accumulation under high NPK regimes. In soil and foliar Zn applications, grain yield was statistically ($p<0.05$) increased by both Zn types, except at low NPK, where Zn salt effects in soil was insignificant. Across NPK levels in soil or foliar Zn exposures, NP ZnO increased N accumulation by 8-16% or by 4-34% and Zn salt by 18-21% or 9-38%, respectively. Potassium accumulation was increased by 24-27% or 6-15% by NP ZnO, and by 11-44% or 24-38% by Zn salt, in soil or foliar Zn treatment regimes, respectively. In contrast to N and K, P accumulation was largely reduced by both Zn types in soil applications, with an 11% reduction occurring with NP ZnO. At the high NPK, soil Zn applications reduced P accumulation, while foliar Zn application increased P accumulation up to 9%. Both Zn types permitted greater P retention in soil after harvest, potentially reducing P loss in soil. In soil and foliar exposures, NP ZnO increased grain Zn content by 157-174% or 124-132%, and Zn salt by 179-352%% or 200-243%, respectively. To the best of our knowledge, this is the first study describing sorghum response to NP ZnO. The findings in this study suggest a nano-enable strategy for enhancing crop productivity, grain nutritional quality, and N use efficiency based on Zn micronutrient amendments, with potential implications for improved human and environmental health.

Ma, C.; **White, J.C.**; Zhao, J.; Zhao, Q.; Xing, B. 2018. Uptake of engineered nanoparticles by food crops: Characterization, mechanisms, and implications. *An. Rev. Food Sci. Technol.* 9:1.

Abstract- With the rapidly increasing demand for and use of engineered nanoparticles (ENPs) in agriculture and related sectors, concerns over the risks to agricultural systems and to crop safety have been the focus of a number of investigations. Significant evidence exists for NP accumulation in soils, including potential particle transformation in rhizosphere and within terrestrial plants, resulting in subsequent uptake by plants that can yield physiological deficits and molecular alterations that directly undermine crop quality and food safety. In this review, we document in vitro and in vivo characterization of NPs in both growth media and biological matrices; compare the NP uptake patterns, biotransformation, and the underlying mechanisms of nanotoxicity; and summarize the environmental implications of NP presence in agricultural ecosystems. A clear understanding of nano-impacts (advantages and disadvantages) on crop plants will help to optimize the safe and sustainable application of nanotechnology in agriculture for the purposes of enhanced yield production, disease suppression, and food quality.

Structural Transformation of Biochar Black Carbon by C60 Superstructure: Environmental Implications, Minori Uchimiya*, Joseph J. Pignatello, Jason C. White, Szu-Lung Hu, Paulo J. Ferreira, Scientific Reports, online September 18; DOI:10.1038/s41598-017-12117-9

Abstract-Pyrogenic carbon is widespread in soil due to wildfires, soot deposition, and intentional amendment of pyrolyzed waste biomass (biochar). Interactions between engineered carbon nanoparticles and natural pyrogenic carbon

(char) are unknown. This study first employed transmission electron microscopy (TEM) and X-ray diffraction (XRD) to interpret the superstructure composing aqueous fullerene C60 nanoparticles prepared by prolonged stirring of commercial fullerite in water (nC60-stir). The nC60-stir was a superstructure composed of face-centered cubic (fcc) close-packing of near-spherical C60 superatoms. The nC60-stir superstructure (≈100 nm) reproducibly disintegrated pecan shell biochar pellets (2 mm) made at 700 °C into a stable and homogeneous aqueous colloidal (<100 nm) suspension. The amorphous carbon structure of biochar was preserved after the disintegration, which only occurred above the weight ratio of 30,000 biochar to nC60-stir. Favorable hydrophobic surface interactions between nC60-stir and 700 °C biochar likely disrupted van der Waals forces holding together the amorphous carbon units of biochar and C60 packing in the nC60 superstructure.

Bioaccessibility of PAHs and PAH derivatives in a fuel soot assessed by an in vitro digestive model with absorptive sink: Effects of aging the soot in a soil -water mixture Yanyan Zhang, Joseph J. Pignatello, and Shu Tao; Science of the Total Environment, on line, https://doi.org/10.1016/j.scitotenv.2017.09.227.

Abstract-Aging soot in soil under neutral aqueous condition for 30 days significantly ($p < 0.05$) reduced the apparent gastrointestinal bioaccessibility (Bapp) of polycyclic aromatic hydrocarbons (PAHs) and PAH derivatives (d-PAHs) natively present in a composite fuel soot sample. Bapp was determined under fasting conditions by a previously developed in vitro digestive model that includes silicone sheet as a third phase absorptive sink in the small intestinal stage. Redistribution of contaminants from soot to soil, determined in independent experiments, was too small to affect Bapp. Prior uptake by soot of a commercial humic acid representing dissolved soil organic matter had no impact on Bapp. We identified two causes for the reduction in Bapp by soil and found they were approximately additive. One is an aging time-independent "matrix effect" attributable to competitive sorption by the soil of labile contaminant that is desorbed from the soot during the digestion test. The other is the dissolution of soluble substances from the soot during the aging process that increases soot surface area and nanoporosity. The increased surface area and nanoporosity drive contaminants from labile to nonlabile states in the soot and decrease the desorption into the digestive fluid, the former contributing most to the reduction in Bapp. The present study shows that mixing of raw soot with soil has important effects, both aging and non-aging, on the bioaccessibility of soot-borne contaminants.

Castañeda-Ruiz, Rafael F., Xiu-Guo Zhang, De-Wei Li, Luís Fernando Pascholati Gusmão, Simón Pérez-Martínez, & Daynet Sosa. 2017. Notes on Vamsapriya and V. camagueyensis comb. nov. Mycotaxon 132: 553–557. https://doi.org/10.5248/132.553

Abstract—A new combination, Vamsapriya camagueyensis, is proposed to accommodate Corynespora camagueyensis based on the type of conidial septa. Vamsapriya camagueyensis is distinguished by blastocatenate, cylindrical, 6–9-euseptate, brown to reddish-brown conidia. A key to Vamsapriya species is provided.

Li De-Wei, Jing-Yuan Chen & Yi-Xun Wang 2017. Wiesneriomyces machilicola, a new species of hyphomycetes from China. Mycotaxon 132: 559-563. https://doi.org/10.5248/132.559

Abstract—A new microfungus collected from dead leaves of Machilus ichangensis in China is described and illustrated as Wiesneriomyces machilicola Wiesneriomycetaceae, Dothideomycetes). The species is distinguished by 3–6-celled, straight or falcate, hyaline conidia, 35–45 µm long.

Schultes, Neil P., Besnik Murtishi and De-Wei Li* 2017. Phylogenetic relationships of Chlamydomyces, Harzia, Olpitrichum and their sexual allies, Melanospora and Sphaerodes. Fungal Biology 121(10): 890-904. (*corresponding author) https://doi.org/10.1016/j.funbio.2017.07.004

Abstract—Phylogenetic analyses using internal transcribed spacer (ITS), large subunit rRNA (LSU), and small subunit (SSU) sequence data showed that Harzia, Chlamydomyces, and Olpitrichum are con-generic. Thus, Chlamydomyces, and Olpitrichum were reduced to synonymy of Harzia. The generic concept was amended and expanded accordingly. Eight new combinations were proposed. Melanospora and Sphaerodes are phylogenetically related to Harzia. However, several members of Melanospora and Sphaerodes are polyphyletic and belong to Hypocreales or Microascales in Sordariomycetes. The Proteophiala morph is not only a crucial morphological character, but also has a phylogenetical significance in defining Melanosporales. It is hypothesized that the taxa with synanamorphic or asexual Proteophiala all belong to Ceratostomataceae, Melanosporales.

Galán C, Ariatti A, Bonini M, Clot B, Crouzy B, Dahl A, Fernandez-González D, Frenguelli G, Gehrig R, Isard S, Levetin E, Li DW, Mandrioli P, Rogers CA, Thibaudon M, Sauliene I, Skjoth C, Smith M, Sofiev M. 2017. Recommended Terminology for Aerobiological Studies. Aerobiologia 33(3): 293-295. DOI 10.1007/s10453-017-9496-0

Abstract–Aerobiology is an interdisciplinary science where researchers with different backgrounds are involved in different topics related to microorganisms, airborne biological particles, e.g. pollen and spores, and phenology. Some concepts, words or expressions used in aerobiology have a clear definition, but are, however, frequently misused. Therefore, the working group ‘‘Quality Control’’ of the European Aerobiology Society (EAS) and the International Association of Aerobiology (IAA) would like to clarify some of them, their use and presentation.

JOURNAL ARTICLES APPROVED SEPTEMBER 2017

Anderson, John F., **Philip M. Armstrong**, **Michael J. Misencik**, **Angela B. Bransfield**, **Theodore G. Andreadis**, and **Goudarz Molaei**. Seasonal distribution, blood feeding habits, and viruses of mosquitoes in an open-faced quarry in Connecticut, 2010 and 2011. *Journal of the American Mosquito Control Association*

Andreadis, Theodore G., **Michael C. Thomas**, and **John J. Shepard**. *Amblyospora khaliulini* (Microsporidia: Amblyosporidae): investigations on its life cycle and ecology in *Aedes communis* (Diptera: Culicidae) and *Acanthocyclops vernalis* (Copepoda: Cyclopidae) with redescription of the species. *Journal of Invertebrate Pathology*

Elmer, Wade H. Asparagus decline and replant problem: a look back and a look forward at strategies for mitigating losses. *Acta Horticulturae*

Elmer, Wade H. Impact of water and nutrient management on disease problems. *Water and Nutrient Management for Greenhouse Crops*, K. Williams, S. Mangiafico, and D. Merhaut, Eds., University of California Division of Agriculture and Natural Resources

Gloria-Soria, A., **Philip M. Armstrong**, J. R. Powell, and P. E. Turner. Infection rate of *Aedes aegypti* mosquitoes with dengue virus depends on the interaction between temperature and mosquito genotype. *Proceedings of the Royal Society B*

LaMondia, James A. and **Katja Maurer**. *Calonectria pseudonaviculata* dispersal mechanisms and implications for management. *Phytopathology* (Abstract)

Linske, Megan A., **Scott C. Williams**, **Kirby C. Stafford**, and I. M. Ortega. *Ixodes scapularis* (Acari: Ixodidae) reservoir host diversity and abundance impacts on dilution of *Borrelia burgdorferi* (Spirochaetales: Spirochaetaceae) in residential and woodland habitats in Connecticut, USA. *Environmental Entomology*

Ridge, Gale E. The secret life of the common bed bug, *Cimex lectularius* L.: observations on biology and behavior. *American Entomologist*

Stoner, Kimberly A. Proper timing to mow native plant meadows can protect pollinator habitat. *CAES Fact Sheet*

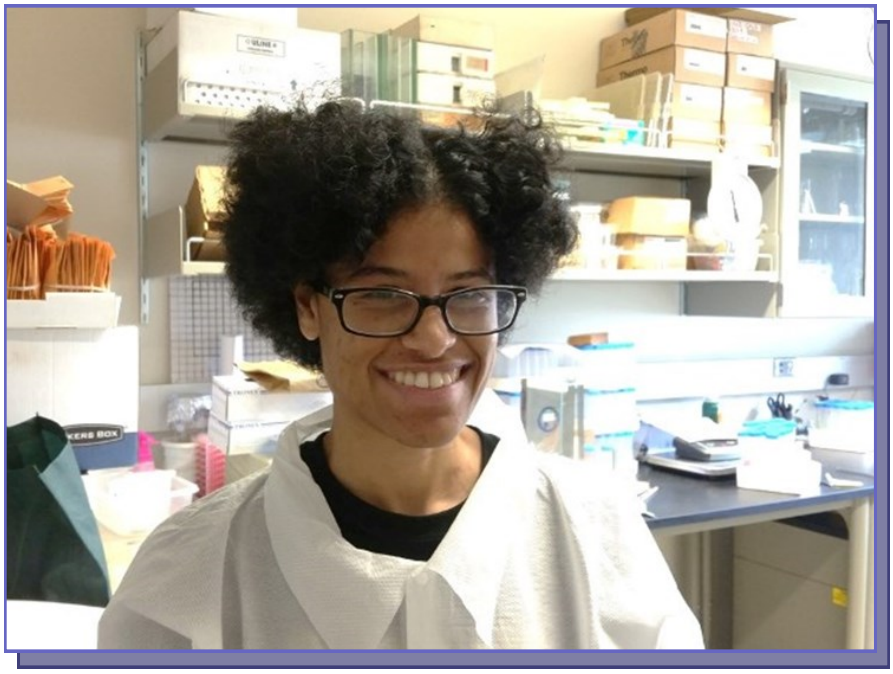
Tan, Y., T. Lam, L. Heberlein-Larson, S. Smole, A. Auguste, S. Hennigan…**Philip M. Armstrong**, **Theodore G. Andreadis**,…S. Das. Phylodynamic analysis of eastern equine encephalitis virus reveals source-sink transmission dynamics in the United States. *Proceedings of the National Academy of Sciences USA*

Wang, Q.-H., K. Fan, **De-Wei Li**, S.-G. Niu, L.-Q. Hou, and X.-Q. Wu. Walnut anthracnose caused by *Colletotrichum siamense* in China. *Australasian Plant Pathology*

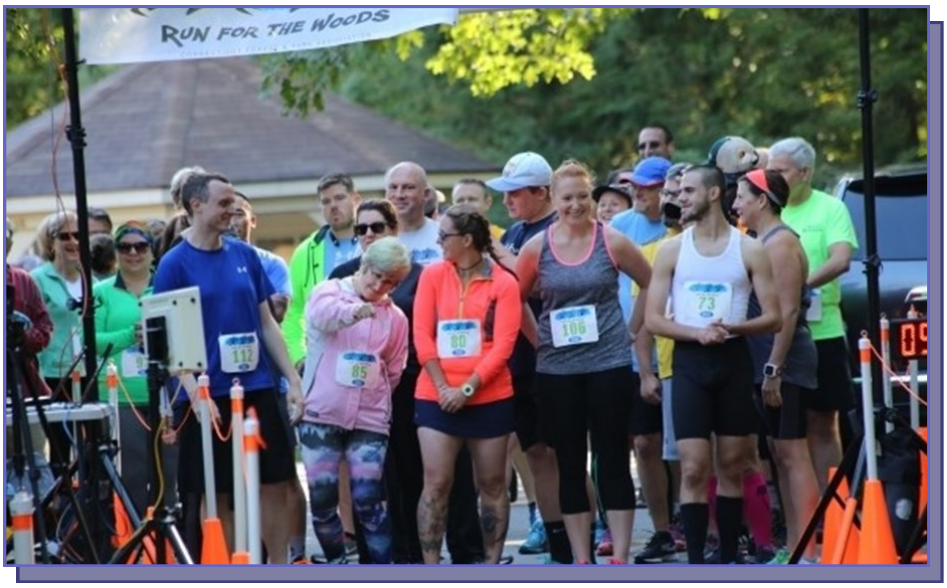
Xiao, F., A. H. Bedane, J. X. Zhao, M. D. Mann, and **Joseph J. Pignatello**. Changes of surface and adsorptive properties of corncob-derived black carbon (char/biochar) after thermal air oxidation. *Geoderma*

Yang, Y., and **Joseph J. Pignatello**. Participation of the halogens in photochemical reactions in natural waters and treated waters. *Molecules*

ARTICLES OF INTEREST SEPTEMBER 2017



Ms. Amanda Griffin is volunteering for **Drs. Triplett and Elmer** in the Department of Plant Pathology and Ecology. Amanda is a recent graduate of Eckerd College in St. Petersburg, FL and will soon apply to graduate school.



Dr. Lindsay Triplett attended the Run for the Woods 5k at Sessions Woods on September 9th with husband Preston and son Charles to help support the Connecticut Forest and Park Association. Preston (pictured in blue) was second overall in the 5k race, and first in the 30-39 age division to win a pair of trail socks!

CAES

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