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.
**ADMINISTRATION**

DR. THEODORE ANDREADIS was interviewed about eastern equine encephalitis activity in the northeastern US this year and the prospects for next year by Ray Hardman, CT Public Radio (November 5); attended the annual meeting of the Connecticut Working Lands Alliance held in Hartford (November 13); attended a Board Meeting of the Experiment Station Associates held at the Station (November 13); attended the annual meeting of the Connecticut Farm Bureau held in Wallingford (November 21); and attended a meeting held at the State Capitol with representatives from the Governor’s office and commissioners of the Departments of Public Health, Energy and Environmental Protection, and Agriculture to review this year’s response to the outbreak of eastern equine encephalitis in the state and plans for next year (November 25).

**ANALYTICAL CHEMISTRY**

DR. JASON C. WHITE welcomed Prof. Chun Song of Sichuan Agricultural University; Prof. Song will be working at CAES for the next year on nano-enabled agriculture with funding from the China Scholarship Council (CSC) (November 2); was an invited speaker at the Golden Jubilee International Conference on New Millennia Agriculture at CCS Haryana Agricultural University in Hisar, Haryana, India, and gave a lecture entitled “Nanotechnology in agriculture: Balancing applications and implications” (125 attendees) (November 2-8); hosted the monthly “Nanochem-plant” working group ZOOM call for the Center for Sustainable Nanotechnology (CSN) (November 12); participated in a ZOOM call with collaborators from Johns Hopkins University regarding an EPA grant submission (November 12); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with DR. BRIAN EITZER, DR. WALTER KROL, DR. CHRISTINA ROBB, MS. TERRI ARSENAULT, MR. CRAIG MUSANTE, and MS. KITTY PRAPAYOTIN-RIVEROS, participated in the monthly FDA FERN cCAP WebEx call (November 12); participated in a Faculty ZOOM call for the CSN (November 14); participated in the weekly “all-hands” call for the CSN (November 13); along with
DR. NUBIA ZUVERZA MENA presented a talk entitled “Can ceria nanoparticles inhibit the effects of the short chain perfluoroalkyl substance PFBS on plants?” at the Sustainable Nanotechnology Organization annual meeting in San Diego, CA (November 7); presented a guest lecture at the University of Connecticut (UCONN) for the class PVS 1000, Biomedical Issues in Pathobiology with a talk entitled “Nanomaterials: Applications and Implications” (November 13); and was appointed Assistant Research Scientist, a gratis adjunct faculty position for the Dept. of Plant Science and Landscape Architecture at the UCONN College of Agriculture, Health and Natural Resources (November 13).

Prof. Chun Song (center, back) from Sichuan Agricultural University will be working at CAES on nano-enabled agriculture for the next year.

Dr. Jason C. White lecturing at CCS Haryana Agricultural University in Hisar, India, and at the Taj Mahal in Agra, India.
ENTOMOLOGY

DR. KIRBY C. STAFFORD III spoke on “Ticks: It’s More Than Just Lyme Disease” at the annual meeting of the Connecticut Environmental Health Association in Portland, CT (60 attendees) (November 1); spoke on “Lyme Disease and Tick Control” at the annual meeting of the Connecticut Master Gardener Association in Jones Auditorium (40 attendees) (November 2); presented the talk “Review of the ‘Natural’ Product Minefield for Bed Bug Control” at Bed Bug Forum XI in Jones Auditorium (68 attendees) (November 7); participated in a conference call of the Tick Biology, Ecology and Control subcommittee of the Tick Borne Disease Working Group (November 14, 18); spoke to Wesleyan University students touring the Station about Entomology (November 20); and participated in a meeting of the Cooperative Agriculture Pest Survey in Wallingford (13 participants) (November 21).

MS. KATHERINE DUGAS gave an update on the recent Spotted Lanternfly interception to the Southbury Garden Club (40 attendees) (November 1); taught an insect taxonomy and identification class to Advanced Master Gardeners at the Haddam Cooperative Extension office (5 attendees) (November 13); with DR. KIRBY STAFFORD and DR. VICTORIA SMITH, attended and ran the fall State CAPS Committee meeting held at the PPQ office in Wallingford (13 participants) (November 21); and attended and staffed a CAPS and Forest Pest booth at the annual CT Association of Conservation and Inland Wetlands Commissions (CACIWC) meeting held in Cromwell, where she also gave a 60-minute workshop talk about the Cooperative Agricultural Pest Survey Program and invasive pest surveys (50 attendees) (November 23).

MR. MARK H. CREIGHTON moved an apiary at West Rock Nature Center to a new location on the property, due to recent storm damage to the area (November 27).

DR. MEGAN LINSKE with DR. SCOTT WILLIAMS, MR. MICHAEL SHORT, and MS. JAMIE CANTONI were interviewed by Chris Woodside, Environmental Writer for The Connecticut Health Investigative Team, on current and ongoing research and management pertaining to the link between forest and public health (November 6); with DR. SCOTT WILLIAMS, MR. MICHAEL SHORT, and MS. JAMIE CANTONI met with Jim Tomlinson about management strategies for Japanese barberry on Lyme Land Trust properties (November 6); with DR. SCOTT WILLIAMS participated in a conference call with Dr. Erika Machtinger, Assistant Professor of Entomology at Pennsylvania State University, about small mammal trapping methodology and manuscript publication (November 6); and conducted the CT FFA Forestry Career Development Event (CDE) with 11 participating high schools at Lockwood Farm with DR. SCOTT WILLIAMS, MR. MICHAEL SHORT, and MR. JOSEPH BARSKY (approx. 50 attendees) (November 22).

DR. GALE E. RIDGE held Bed Bug Forum XI in Jones Auditorium at the Experiment Station (74 attendees) (November 7); gave a lunchtime lecture on bed bugs and Delusory Parasitosis at UCONN’s Hospital for Special Care in New Britain (45 attendees) (November 20); and with Mike Lipsett (on right, Dr. Ridge center), was interviewed on the magazine program CT-Style (Channel 8) about bed bugs and what and what not to do in managing bed bugs at home (November 21).

DR. CLAIRE E. RUTLEDGE taught “Tree Conditions Laboratory” for Arboriculture 101, at the Connecticut Tree Protective Association office in Wallingford (45 attendees) (November 6).

DR. VICTORIA L. SMITH participated in the annual meeting of the US Forest Service Cooperators, held at the Full Moon Resort in Big Indian, NY, and presented results of the 2019 aerial survey of pests and diseases, and general forest health issues, including beech leaf disease and spotted lanternfly (30 participants) (November 6-7); and participated in the autumn meeting of the Cooperative Agricultural Pest Survey committee, held at the USDA Plant Protection and Quarantine offices in Wallingford (13 participants) (November 21).
DR. KIMBERLY A. STONER spoke at the SALT (Smaller American Lawns Today) Conference at Connecticut College on “Pollinator Habitats: Recent Research” (80 attendees) (November 9).

MS. JAMIE CANTONI originally started working at the Station in the spring of 2014 as a mosquito trapper for the Center for Vector Biology and Zoonotic Diseases. She remained with the Station through the spring of 2016 under the direction of the Department of Forestry and Horticulture, but left to pursue her passion for marine science, working for several zoos and aquariums in both Connecticut and Australia. Jamie realized how much she missed the Station, and returned in the summer of 2018 to work in the Department of Entomology under Dr. Kirby Stafford. She was hired as a Research Assistant III to work on the active surveillance and Center of Excellence tick programs in October 2019.

Mike Lipsett (on right, Dr. Gale Ridge center) was interviewed on the magazine program, CT-Style (Channel 8) about bed bugs and what and what not to do in managing bed bugs at home (November 21).

Ms. Jamie Cantoni

ENVIRONMENTAL SCIENCES

DR. JOSEPH PIGNATELLO gave a talk entitled “Some ways to modify chars for enhanced binding of certain organic and inorganic contaminants” at the ASA-CSA-SSSA Annual Meeting held in San Antonio, TX (approx. 75 attendees total; approx. 45 students) (November 9-14); and participated in a conference call with group leaders from GeoSyntec and the University of Maryland at College Park on a collaborative grant proposal (November 21).

DR. PHILIP ARMSTRONG was interviewed by the Comcast Newsmakers program to speak about the EEE virus outbreak in New England (November 12); and gave a talk entitled “Transmission of arboviruses by mosquito vectors to live vertebrate hosts is underestimated by in vitro assays” (100 attendees) and attended the executive council meeting of the American Committee of Medical Entomology at the Annual Meeting of the American Society of Tropical Medicine and Hygiene held in Na-
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FORESTRY AND HORTICULTURE

DR. JEFFREY S. WARD, with MR. JOSEPH BARSKY, met with staff of White Memorial Foundation, The Nature Conservancy - Connecticut, Regional Water Authority, and CT DEEP - Forestry to provide an update on research discoveries and discuss continued collaborative research (10 attendees) (November 5); planted a white oak donated by CTPA in Mixville Park (Cheshire) with David Rochford in celebration of the 100th anniversary of the arborist law insuring quality tree care for Connecticut’s residents (November 8); spoke on "A short history of the Connecticut forest" to the Old Guard in West Hartford (108 attendees) (November 12); participated in an NESAF 2020 planning committee conference call (November 12); spoke on invasive plant identification and control in Woodbridge (18 attendees) (November 18); and met with CT NRCS staff in Tolland to discuss influence of soils and topographic features on tree growth (6 attendees) (November 19).

DR. ABIGAIL A. MAYNARD attended a meeting of the Connecticut Soil and Water Conservation Soil Health Committee in Middletown (November 6); talked about the New Crops Program with Don Offinger of Offinger Farm in Wilton (November 12); assisted in greenhouse culture with Lower
PLANT PATHOLOGY AND ECOLOGY

DR. WADE ELMER met with two undergraduate students and Dr. Tim Pusack, of the Marine Ecology & Marine Science at Williams-Mystic in Mystic at Hammonasset Beach State Park to inspect and sample Sudden Vegetation dieback sites (November 5); presented the topic “Try a little salt on your asparagus” at the Green Café at Yale University (17 attendees) November 7); participated with DR. JASON WHITE in the biweekly Center for Sustainable Nanotechnology (CSN) zoom conference meeting (November 12); attended the Ian Sussex Plant Biology Symposium in Jones Auditorium (November 15); met with Mr. Andrew Bramante of Greenwich High School and his student and discussed a science project with his student (November 19); participated in an Editorial Board Conference Call meeting for the American Phytopathological Society (November 20); presented an invited lecture entitled “Nanoparticles for crop health” at the 13th Postgraduate Colloquium held at the Autonomous University of Queretaro, Mexico (69 attended) (November 22); presented an invited lecture entitled “Use of Nanotechnology in Plant Pathology” at the XIX International Symposium on Plant Disease Management held at the Federal University of Lavras in Lavras, Brazil (64 attendees) (November 26-28).

DR. YONGHAO LI presented “Selection and care of houseplants” in the Canterbury Public Library in Canterbury (10 adults attendees) (November 4); presented “Fungi and fungicides - Every gardener needs to know” for the UConn Advanced Master Gardener Program held in Torrington (16 adult attendees) (November 6); lectured on “Tree Diseases” in the Arboriculture 101 Hands-on Night Class held in Wallingford (27 adult attendees) (November 6); presented “Pruning 101” for the UConn Advanced Master Gardener Program in Vernon (16 adult attendees) (November 7); presented “Plant diseases and their management in landscapes” for the CT NOFA Organic Land Care Accreditation Program (46 adult attendees) (November 13); and spoke about the Plant Disease Information Office and disease diagnostics to a group of visiting Wesleyan University students, led by Professor Rosemary Ostfeld (10 adult attendees) (November 20).

DR. ROBERT E. MARRA participated as a member of the Steering Committee for the Connecticut Conference on Natural Resources scheduled at the University of Connecticut on 16 March 2020.
DR. NEIL SCHULTES presented the last lecture in a three-lecture series on “Genetically Modified Plants in Agriculture” in a Yale Course Scie 031 “Current Topics in Science (8 students) (November 1); presented a poster entitled “Nucleobase transport in fire blight pathogen and host “at the annual Ian Sussex Plant Biology Symposium held in Jones Auditorium (75 participants) (November 15).

DR. STEPHEN TAERUM presented “What are protists doing in the maize rhizosphere?” to the Sussex Plant Biology Symposium held in Jones Auditorium (60 attendees) (November 15).

DR. QUAN ZENG taught two guest lectures entitled “Bacterial plant pathogens and diseases” and lab “Diagnosis of bacterial plant diseases and isolation of bacterial pathogens” at the University of Connecticut (16 students) (November 13); gave an oral presentation entitled “Role of the type III secretion system during the infection of apple flowers by a phytopathogenic bacterium” at the Sussex Plant Biology Symposium organized by Yale Department of Molecular, Cellular and Developmental Biology (60 attendants) (November 15).

DR. CAROLE CHEAH gave a presentation on “Eastern Hemlock: Prospects for Conservation & Sustainability” at the Appalachian Mountain Club Annual Gathering, Portland (50 attendees) (November 17).

ROSE HISKES along with Dr. Yonghao Li, taught the Connecticut Tree Protective Association Arboriculture 101 students about tree diseases at the Tree Conditions Lab, Wallingford (42 attendees) (November 6); participated in a Connecticut Invasive Plant Working Group symposium planning committee meeting, Windsor (November 14); and taught Advanced Master Gardeners about “Insect Pests of Plants” at Bartlett Arboretum, Stamford (17 attendees) (November 19).


Abstract- This work assesses the potential of mesoporous silica nanoparticles with or without a chitosan coating to suppress Fusarium wilt (Fusarium oxysporum f. sp. niveum) in watermelon (Citrullus lanatus) by virtue of dissolving to release silicic acid. Plant health was assessed by monitoring the total biomass and fruit production in both healthy and pathogen-infected plants up to 100 days after a single nanoparticle application (500 mg/L) at the seedling stage. Both types of mesoporous silica nanoparticles enhanced the innate defense mechanisms of watermelon, with mesoporous silica nanoparticles (MSNs) and chitosan-coated mesoporous silica nanoparticles (CTS-MSNs) reducing disease severity by ~40% and ~27%, respectively, as measured by the area-under-the-disease-progress curve. Changes in gene expression measured several weeks after nanoparticle application demonstrated reduced expression of several stress-related genes after CTS-MSN and MSN treatments, indicating a reduced disease burden on the plant. Although treatment did not impact fruit production from diseased plants, a single application of chitosan-coated mesoporous silica nanoparticles at the seedling stage led to a 70% increase in the fruit yield of uninfected watermelon. Monitoring plant biomass revealed that MSNs and CTS-MSNs had no significant impact on the biomass reductions in diseased plants, likely because seedlings were treated and biomass was measured weeks later in the fully grown plants. These findings demonstrate the utility of a single application of mesoporous silica nanoparticles with or
without a chitosan coating as a nano-enabled agricultural amendment, and current work is focused on optimizing the material synthesis and treatment regimens for maximum benefit.


Abstract: This protocol describes the generation of axenic Aedes aegypti, which can be raised from larvae to adults in the absence of a microflora. The total protocol including the time taken to grow E. coli (used in one of the diets) takes two days to set up. The mosquitoes will develop normally with a slight developmental lag compared to conventionally raised mosquitoes (~1 week). Two larval diets are described, a liver:yeast (LY) extract diet and an LY diet supplemented with heat-inactivated E. coli. Axenic mosquitoes raised on food supplemented with heat-inactivated E. coli develop slightly faster than axenic mosquitoes raised without killed bacteria. This axenic system allows the manipulation of the mosquito microbiome and transitions the microbiome into a variable that can be controlled and manipulated in a mechanistic manner.


Abstract: Bacterial spot caused by Xanthomonas spp. is a highly destructive disease of tomatoes in Florida. The bacterial strains are copper (Cu)-tolerant, making Cu bactericides ineffective in disease management. Magnesium oxide (MgO) is an effective alternative to Cu bactericides against Xanthomonas spp. However, the effect of particle size on bactericidal activity and fruit ele-mental levels are unknown. In this study, nanoparticle (nano) (20 nm) and micron (0.3 and 0.6 µm) MgO were evaluated by in vitro culture amendment assays at 12.5, 25, 50, 75, and 100 µg/ml and byepifluorescence assay at 100 µg/ml to understand the impact of particle size on bacterial cell viability. Nano MgO had significantly greater bactericidal activity than micron MgO at low concentrations of 25-50 µg/ml against a Cu-tolerant X. perforans strain (SNK, p = 0.05) in vitro. Disease severity of plants treated with nano and micron MgO at 200 and 1,000 µg/ml were evaluated. Nano MgO at 200 µg/ml was the only treatment that consist-ently reduced bacterial spot disease severity compared to the untreated in two field trials (LSD, p = 0.05). Fruits from the field studies were assessed for elemental levels using Inductively Coupled Plasma Optical Emission Spectroscopy (ICP-OES). Nano MgO did not alter the accum-ulation of Mg, Cu, Ca, K, Mn, P and S compared to fruits from the untreated plants. In this study we demonstrated that although both nano sized MgO and micron sized MgO have bacte-ricidal activity against copper tolerant strains in vitro, only nano sized MgO is effective in bac-terial spot disease management under field conditions.


Abstract: The rapid development of nanotechnology has raised concern regarding the environmental toxicity of nanoparticles (NPs). However, little is known about the molecular mechanisms underlying NP toxicity in plants. Broad bean (Vicia faba L.) plants were cultivated in soil amended with 0, 10, and 100 mg cadmium sulfide (CdS)-NPs kg soil⁻¹ for 4 weeks and then the phenotypic, biochemical, and metabolic responses of the plants to CdS-NPs stress were evaluated. Metabolomics analysis revealed the significant up-regulation of several antioxidative metabolites, including N-acetyl-5-hydroxytryptamine, 2-hydroxybutanoic acid, putrescine and flavone, upon CdS-NPs exposure, but no negative phenotypic effects were visible (plant biomass, photo-
synthetic pigment contents, and lipid peroxidation). This observation was in accordance with the observed regulation of antioxidative-defense-related metabolic pathways (tyrosine pathway and phenylpropanoid biosynthesis) that were identified by biological pathway analysis. Importantly, twice as many metabolites were modulated in the leaves than in roots, including three nitrogen-related (purine metabolism; alanine, aspartate, and glutamate metabolism; β-alanine metabolism) and two carbon-related (pantothenate and CoA biosynthesis and carbon fixation) metabolic pathways. These results indicate that to alleviate the toxicity of CdS-NPs exposure in soil, plants significantly reprogram the metabolic profiles of leaves rather than of roots, which may subsequently impact both harvest and crop quality.

Qiao, Huan, Xiao-Rui Sun, Xiao-Qin Wu, Gui-E Li, Zao Wang, and De-Wei Li. 2019. The phosphate-solubilising ability of *Penicillium guanacastense* and its effects on the growth of *Pinus massoniana* in phosphate limiting conditions. Biology-Open 8: bio046797. doi: 10.1242/bio.046797

**Abstract** - Microbes in soil can degrade insoluble inorganic and organic phosphorus, which are components of the soil phosphorus cycle and play an important role in plant growth. *Pinus massoniana* is a pioneer tree species used for afforestation in southern China and grows in poor, acidic soil. A shortage of available phosphorus in soil limits the growth of *P. massoniana*. To alleviate this situation, it is necessary to improve soil fertility. A fungal strain (JP-NJ2) with the ability to solubilize phosphate was isolated from the *P. massoniana* rhizosphere. The ability of JP-NJ2 to solubilize inorganic and organic phosphorus and promote the growth of *P. massoniana* was evaluated. It showed that JP-NJ2 could grow in NBRIP inorganic phosphate (AlPO₄, FePO₄·4H₂O, and Ca₃[PO₄]₂) fermentation broths, with the highest phosphorus concentration (1.93 mg/ml) and phosphate-solubilizing rate (43.7%) for AlPO₄ and in Monkina organic phosphate fermentation broth with a phosphorus concentration of 0.153 mg/ml. The phosphate-solubilizing capability in inorganic and organic fermentation broths was negatively correlated with pH. JP-NJ2-produced acids at a total concentration of 4.7 g/l, which included gluconic (2.3 g/l), oxalic (1.1 g/l), lactic (0.7 g/l) and malonic (0.5 g/l) acids. It prioritized extracellular acidic phosphatase and combined with phytase to solubilize organic phosphates. The fungal suspension and extracellular metabolites from phosphate-solubilizing fungi promoted the shoot length of *P. massoniana* seedlings by 97.7% and 59.5%, respectively, while increasing the root crown diameter by 46.8% and 27.7%. JP-NJ2 was identified as *Penicillium guanacastense* based on its morphology and phylogenetic analyses of five genes/regions (ITS, ben A, cmd, cox1 and tef). This is the first report on *P. guanacastense* isolated from pine tree rhizosphere soil in China and its high phosphate-solubilizing capability, which promoted the growth of *P. massoniana*. *P. guanacastense* JP-NJ2 has potential use as a biological fertilizer in forestry and farming.

**JOURNAL ARTICLES APPROVED NOVEMBER 2019**

Aulakh, Jatinder S. Weed alert: First report of Palmer amaranth in Connecticut - Watch out for this pigweed! CAES Fact Sheet


Cowles, Richard S. Chemical control for spotted wing drosophila. *Proceedings, New England Vegetable and Berry Growers Association Conference*

Cowles, Richard S. White pine weevil management in Christmas tree plantations. *Great Lakes Christmas Tree Journal*

Cowles, Richard S. Zimmerman pine moth biology and management. *Great Lakes Christmas Tree Journal*

Cowles, Richard S. and DeWei Li. Exploring sustainable management for armored scales in Christmas tree plantations. *The Real Tree Line*
ARTICLES OF INTEREST NOVEMBER 2019


Ward, Jeffrey S. and Scott C. Williams. Influence of white-tailed deer hunting and residual stand structure on tree regeneration in temperate deciduous forests. Wildlife Society Bulletin


2019 Connecticut FFA Association Forestry Career Development Event

On November 22, 2019 the Department of Forestry and Horticulture hosted the Connecticut FFA Association Forestry Career Development Event (CDE) at the Lockwood Farm Pavilion. This year’s Forestry CDE evaluated students’ knowledge of forest management practices, forest mensuration, topographic map interpretation, forestry-related equipment, chainsaw troubleshooting, and tree identification.

Forty-eight students from 12 State FFA Chapters participated in this year’s event, with the 4-student team from E.O. Smith High School Agricultural Education Program taking first place. Students from E.O Smith FFA will represent the State of Connecticut in regional and national competitions at the 2020 Eastern States Exposition and the 2020 National FFA Convention in Indianapolis, IN.

We would like to thank Eric Hansen of Ferrucci & Walicki, LLC for his assistance.

Dr. Scott Williams, Mr. Michael Short, and Mr. Joseph P. Barsky of the Dept. of Forestry and Horticulture and Dr. Megan Linske of the Dept. of Entomology organized and oversaw the event.
MR. ROBERT DURGY presented a lecture describing the Griswold Research Center’s propagation of Connecticut Charter Oak seedlings for a tree dedication ceremony at the Enfield Public Library in Enfield (30 attendees) (October 31); and presented a lecture on common beneficial and pest insects in the home garden for the University of Connecticut Advanced Master Gardener Program held in Brooklyn (7 attendees) (November 15).
The Connecticut Agricultural Experiment Station

Putting Science to Work for Society since 1875

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Lockwood Farm, Hamden

Griswold Research Center, Griswold

Valley Laboratory, Windsor

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Station News was prepared and edited by Dr. Theodore G. Andreadis, Ms. Vickie Bomba-Lewandoski, Ms. Sandra Carney, and Ms. Brandi Marks.