# STATION NEWS

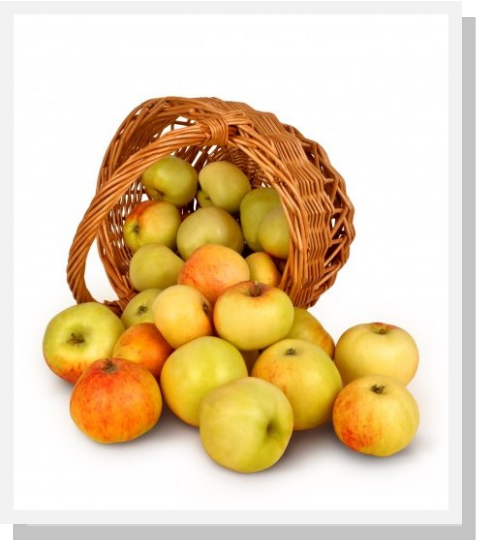
The Connecticut Agricultural Experiment Station

# CAES

The Connecticut Agricultural Experiment Station

*Putting Science to Work for Society since 1875*

The mission of The Connecticut Agricultural Experiment Station is to develop, advance, and disseminate scientific knowledge, improve agricultural productivity and environmental quality, protect plants, and enhance human health and well-being through research for the benefit of Connecticut residents and the nation. Seeking solutions across a variety of disciplines for the benefit of urban, suburban, and rural communities, Station scientists remain committed to "Putting Science to Work for Society", a motto as relevant today as it was at our founding in 1875.



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**Departmental News**



STATION NEWS

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# DEPARTMENTAL NEWS

## ADMINISTRATION

**DR. THEODORE ANDREADIS** presided over a quarterly meeting of the Station's Board of Control held at Lockwood Farm (August 5); was interviewed about the detection of West Nile virus in six Connecticut towns by Nicholas Rondinone, Hartford Courant (August 6); was interviewed about West Nile virus activity in Connecticut and the US this summer by Tony Turzi, Fox News (August 18); participated in a Health Policy Round Table Discussion on Lyme Disease in Connecticut, hosted by Congressman Joe Courtney held at Old Lyme Memorial Town Hall (August 21); participated in a committee meeting of John Soghigian, PhD candidate at Clark University, Worcester, MA (August 25); presented an overview of the history and current operation of the Experiment Station and led a tour of the grounds to a group from the New Haven Preservation Trust (August 26) (20 attendees); and presented an overview of scientific staff and research activities at the Center for Vector Biology & Zoonotic Diseases at CAES at an orientation session for incoming MPH students within the Department of Epidemiology of Microbial Diseases at the YALE School of Public Health (August 31).

## ANALYTICAL CHEMISTRY

**DR. JASON C. WHITE** along **with DR. BLAIRE STEVEN, DR. JOSEPH PIGNATELLO, AND MR. GREGORY BUGEE** met with State Representation Melissa Ziobron and members of the Lake Pocotopaug Association to discuss potential a potential research project on the lake (August 10); was a participant in the FERN cCAP Technical meeting in Silver Springs, MD (August 12) (30 attendees); participated in an organizational teleconference call for the upcoming Sustainable Nanotechnologies Organization (SNO) annual meeting in Portland Oregon (August 17), participated in the quarterly Association of Public Health Laboratories (APHL) Agriculture and Chemist Laboratory Managers call (August 19); held a teleconference call with Professor Greg Lowry of Carnegie Mellon University regarding an upcoming NSF-sponsored workshop on the nexus of food, energy and water systems being held in October (August 20); along with **DR. THEODORE ANDREADIS** met with representatives of the New Haven Preservation Trust (August 26) (15 attendees); and attended the Dissertation Proposal Defense of Ms. Huiyuan Guo, candidate for Ph.D. degree in Plant Biology Graduate Program; I am on her Ph.D. committee (August 31).

**DR. BRIAN EITZER** was a participant in the FERN cCAP Technical meeting in Silver Springs, MD (August 12)(30 attendees); attended the FDA FVM Science and Research Conference in Silver Springs, MD on (August 13-14) (250 attendees); and met with Robert Koethe of the U.S. Environmental Protection Agency EPA-New England, Region 1 Office to discuss pesticide analysis at the CAES and pesticides and pollinator protection research at the CAES on (August 17).

## ENTOMOLOGY

**DR. KIRBY C. STAFFORD III** was interviewed by John Burgeson, Connecticut Post, about ticks and tick research (August 5); was visited by Robert Koethe, Northeast Regional Office EPA, to discuss possible research opportunities with CAES (August 17); with **Dr. Scott C. Williams**, was interviewed by Caleb Hellerman in Redding, CT for a PBS program called Global Health Frontiers, with us in the filming were Michael Short and Megan Floyd (August 19); with Dr. Theodore Andreadis, participated in a Health Policy Round Table Discussion on Lyme disease in Connecticut sponsored by Congressman Joe Courtney in Old Lyme, CT (August 21); participated in a discussion on grants with the Bridgespan Group; and presented a talk on gypsy moth and winter moth at a forum organized by Representative Mike France in Ledyard, CT (August 27) (13 attendees).

**DR. DOUGLAS W. DINGMAN** Convened a planning meeting with Mark Cooper (Director of Health, Westport Weston Health District), Pete Fraboni (Head, Earthplace, Inc.), Sarah Crosby (Staff scientist, Earthplace, Inc.), and David Knauf (Director of Health, Town of Darien) regarding logistics and initiation of the Microbial Source Tracking Project at CAES (August 7) and Submitted and releases twenty six 16S rDNA sequences through the NIH NCBI GenBank database determined for bacterial species *Paenibacillus larvae* subsp. *larvae*, *Paenibacillus larvae* subsp. *pulvifaciens*, and *Brevibacillus laterosporus* (August 19).

**MS. KATHERINE DUGAS** attended a USDA Cerymbicid and Buprestid identification workshop in Amherst, MA (August 12) and gave an insect talk for the youth program at the Danbury Library (August 18) (12 adults and children).

**DR. GALE E. RIDGE** spoke to staff at the Keystone House in Norwalk about managing bed bugs in disabled communities (August 6) (38 attendees); attended, as an expert invitee, a statewide meeting of code agencies and organizations for the purpose of starting to develop the "State Health Improvement Plan (SHIP)" scheduled to be launched in 2020 (August 17) (70 attendees); and interviewed by a staff reporter from the New Haven Register about pesticide resistance in head lice (August 19).

**DR. VICTORIA L. SMITH** participated in discussions on chrysanthemum white rust, emerald ash borer response, medicinal marijuana, and other topics at the 89th annual meeting of the National Plant Board, held at Poco Diablo Resort in Sedona, Arizona (August 2-6) (150 participants).

**DR. KIMBERLY A. STONER** spoke to staff and interns at Jones Family Farm about bees, pollination, and pesticides, sharing data from Jones Farm about floral resources attractive to bees, data on pumpkin pollination, and pesticide residues in pollen and nectar of pumpkin plants (August 12) (20 people, 12 college students); hosted Dr. Rob Koethe of the Region 1 (New England) office of the US Environmental Protection Agency and discussed research on pesticides and bees (August 17); and led a "bug walk" for the New Haven Land Trust at the Quinnipiac Meadows Preserve (August 20) (10 people, 4 under 18).

## FORESTRY AND HORTICULTURE

**DR. JEFFREY WARD** interviewed by Ehlayna Napolitano of the Voices Newspaper about control of running bamboo (August 4); met with Michael Hveem (Executive Director) and Scott Matthies (Steward) of Joshua's Trust to discuss invasive control and forest restoration (August 14); and interviewed about running bamboo biology and control by Ehlayna Napolitano of Voices Newspaper (August 20).

**DR. ABIGAIL MAYNARD** visited the Offinger Farm in Wilton and discussed the New Crops Program with Hank Offinger (August 15); visited and discussed the New Crops Program at the Gazy Brothers Farm in Oxford (August 22).

## ENVIRONMENTAL SCIENCES

**DR. PHILIP ARMSTRONG** was interviewed about West Nile virus activity in Connecticut by: NBC Connecticut Channel 30 (August 5), Mark Simms of CT Radio Network (August 6), Frank MacEachern of the Greenwich Daily Voice (August 11), and Leslie Lake of the Hour (August 25).

**MR. GREGORY BUGBEE** was interviewed by Dainelle Faipler of the Willimantic Chronical on invasive aquatic plant problems in Connecticut (August 11).

**MS. JENNIFER FANZUTTI** was interviewed by The News Times reporter Katrina Koerting on invasive aquatic plant mapping of Squantz Pond, New Fairfield (August 6).

**DR. GOUDARZ MOLAEI** presented a short talk, "Tracking Ticks and Tick-associated Diseases in Connecticut" at Plant Science Day (August 5); was interviewed by the Connecticut Post on ticks and tick-associated Diseases (August 6); was interviewed by the New Haven Register on ticks and Babesiosis (August 7); and was Interviewed by PBS on CDC-funded tick control and the tick testing program (August 18).

**DR. BLAIRE STEVEN** gave a short talk, "From the Very Large to the Extremely Small: Including Microbiology in Climate Models" at Plant Science Day (August 5) (approx. 150 attendees); and, along with MR. GREGORY BUGBEE and DR. JOSEPH PIGNATELLO, met with State Representative Melissa Ziobron (34$^{th}$ District), the Town Manager of East Hampton, representatives on the Town of East Hampton's Lake Conservation Commission at the CAES to outline a planned study on harmful algal blooms in Lake Pocotopaug (August 10).

**MR. MICHAEL C. THOMAS** participated in the Dragonfly Society of the Americas Southwest Bio-blitz held at City of Rocks State Park, New Mexico (August 28-29) (approx. 45 attendees).

## PLANT PATHOLOGY AND ECOLOGY

**DR. WADE H. ELMER** served as Ms. Magali Bazzano Thesis advisor and participated in her defense for her Master's degree at University of New Haven (August 19); joined volunteers from the Hiking Alliance Meet-up Group and harvested 51 boxes of apples and 39 boxes of eggplants at Lockwood farm for the Connecticut Food Bank (August 30),

**DR. YONGHAO LI** gave a talk entitled "Chemical Control of Foliar Diseases of Christmas Trees' at the Connecticut Christmas Tree Growers Association's twilight meeting in Andover, CT (August 26) (35 adults).

**MS. LINDSAY PATRICK** and **MS. PAM SLETTEN** attended The Annual Seed Analyst Workshop of the USDA Seed Regulatory and Testing Division (Federal Seed School) in Gastonia, NC (August 24-26).

**DR NEIL SCHULTES** visited Dr. Timothy McNellis at the Department of Plant Pathology and Environmental Microbiology at Pennsylvania State University and discussed a collaborative research concerning the genetics of metabolism in *Erwinia amylovora* (August 18-19).

## VALLEY LABORATORY

**DR. JATINDER AULAKH** assisted Dr. Carole Cheah with a mile-a-minute biocontrol weevil releases in Glastonbury, CT (August 18), and New Milford (August 20); and participated in the Connecticut Christmas Tree Growers twilight meeting held in Andover to introduce himself and his research interests to the growers and board members (August 26).

**DR. RICHARD COWLES** presented the field exhibit 'Assessing neonicotinoid levels in nursery plants' at Plant Science Day in Hamden (August 5); spoke about 'Challenges in using boric acid to manage spotted wing drosophila' as an invited speaker to the American Chemical Society, Boston, MA, (August 17) (30 attendees); and discussed 'Christmas tree insect update' and provided a field demonstration on using a backpack mist blower sprayer at the CT Christmas Tree Growers' meeting held in Andover (August 26) (40 attendees).

**DR. JAMES LAMONDIA** was interviewed about hops research by Laraine Wechsler of the Waterbury Republican American (August 5 and 18); spoke about current hops research as part of the hops field meeting held at the Valley Laboratory (August 18); spoke about 'The use of cover crops for management of root-knot, root-lesion and dagger nematodes as part of a day-long workshop 'Nematology Short Course for Agribusiness' organized by the Northeast Regional Nematology Project held at Michigan State University (August 20); was interviewed about hops culture, diseases and research by Erik Ofgang for Connecticut Magazine (August 26); and spoke about the history of tobacco in Connecticut and past and current CAES tobacco research at the Luddy Taylor Tobacco Museum in Windsor (August 27) (6 people).

**DR. KATJA MAURER** was interviewed about hops culture and diseases by Laraine Wechsler of the Waterbury Republican American (August 5 and 18); and spoke about hops diseases and pests as part of the hops field meeting held at the Valley Laboratory (August 18).

**DR. DEWEI LI** participated in the Pan-American Aerobiology Association Meeting and Spore Camp held at Harvard Forest, Petersham, MA (August 23-26).

## DEPARTMENTAL RESEARCH UPDATES AUGUST 2015

Ma, C.; Chhikara, S.; Minocha, R.; Long, S.; **Musante, C.**; **White, J.C.**; Xing, B.; Parkash-Dhanker, O. 2015. Reduced silver nanoparticle phytotoxicity in *Crambe abyssinica* with enhanced glutathione production by overexpressing bacterial γ-glutamylcysteine synthase. *Environ. Sci. Technol*. 49:10117-10126.

**Abstract**- Silver nanoparticles (Ag NPs) are widely used in consumer products and their release has raised serious concerns about risk of their exposure to the environment and to human health. However, biochemical mechanisms by which plants counteract NP toxicity are largely unknown. Glutathione (GSH) is one of the most important antioxidative defense systems in eukaryotic cells. Glutathione synthesis involves two ATP-dependent reactions that are catalyzed by γ-glutamylecysteine synthase (γ-ECS) and GSH synthetase (GS). We engineered Crambe abyssinica (a member of Brassicaseae) plants expressing the E. coli γ-ECS gene. These plants showed several fold higher levels of GSH in all tissues. In order to study how enhanced synthesis of GSH can protect plants from Ag nanotoxicity, transgenic lines of C. abyssinica expressing γ-ECS were exposed to various concentrations of Ag NPs and AgNO3 (Ag+ ions). Our results showed that transgenic lines were significantly more tolerant to Ag NPs and ions, attaining significantly higher biomass and chlorophyll contents, as well as maintaining higher transpiration rates as compared to WT plants. Analysis of cysteine, γ-EC, GSH and its derivatives phytochelatins (PCs), showed significantly higher levels of these peptides in γ-ECS transgenic lines. Additionally, exposure of γ-ECS lines to Ag NPs and Ag+ ions further increased the levels of γ-EC, GSH, and PCs in transgenic lines compared to WT plants. These results indicate that metabolic pathway for GSH biosynthesis was strongly induced to detoxify Ag nanotoxicity. Additionally, Fe uptake was severely inhibited in both Ag NP and Ag+ ions treated WT Crambe, while no significant difference in the Fe levels was found in Ag treated transgenic lines. The levels of both exchangeable P and Zn in γ-ECS lines treated with Ag NPs and AgNO3 were significantly higher than their control groups. To our knowledge, this is the first direct report of Ag NPs detoxification by the GSH pathway in transgenic plants and among the first to simultaneously evaluate physiological and biochemical responses of a plant subjected to NPs exposure. This study is highly helpful to understand the fate, transport and toxicity of NPs in plants and role of GSH in counteracting the Ag NPs phytotoxicity, which could provide a useful way for mitigating the threat of NPs in the food chain and the environment

Ma, C.; **White, J.C.**; Parkash Dhanker, O.; Xing, B. 2015. Metal-based nanotoxicity and detoxification pathways in higher plants. *Environ. Sci. Technol*. 49, 7109−7122.

**Abstract-** The potential risks from metal-based nanoparticles (NPs) in the environment have increased with the rapidly rising demand for and use of nano-enabled consumer products. Plant's central roles in ecosystem function and food chain integrity ensure intimate contact with water and soil systems, both of which are considered sinks for NPs accumulation. Thus, it is necessary to comprehensively understand plant-nanoparticle interactions so as to accurately assess potential risks to the environment and the food chain. After a review of the current literature on NPs interactions with terrestrial plants, we document phytotoxicity caused by NPs exposure at physiological, biochemical and

molecular levels. Although the mechanisms of plant defense against oxidative stress induced by metal-based NPs are unclear, some relevant studies have been recently published. Possible detoxification pathways that might enable plant resistance to oxidative stress and facilitate NPs detoxification are reviewed herein. Given the importance of understanding the effects and implications of metal-based NPs on plants, future research should focus on: (1) addressing key knowledge gaps in understanding molecular and biochemical responses of plants to NPs stress through 'global' assays (such as RNA-sequencing, proteomics, metabolomics); (2) designing long-term experiments under field conditions at realistic exposure concentrations to investigate the impact of metal-based NPs on edible crops and the resulting implications to the food chain and to human health; (3) establishing an impact assessment to evaluate the effects of metal-based NPs on plants with regard to ecosystem structure and function.

Sillen, W.; Thijs, S.; Abbamondi; G.R.; Janssen, J.; Weyens, N.; **White, J.C.**; Vangronsveld, J. 2015. Effects of silver nanoparticles on soil microorganisms and maize biomass are linked in the rhizosphere. *Soil Biol. Biochem*. 91:14-22.

**Abstract-** Silver nanoparticles, despite their great promise and effectiveness as an antimicrobial compound in a myriad of applications, pose a threat on non-target bacteria and fungi in the natural environment. Because microorganisms are involved in an extensive interaction network with many other organisms, these interaction partners are prone to an indirect influence of silver nanoparticles. Here, we focus on the effects in the rhizosphere, the interaction platform between microorganisms and plants in soil. For plants in a natural soil environment, microorganism-mediated effects of silver nanoparticles are a very important though underexplored issue. Direct effects of these particles on plants, especially species like maize that excludes most metals, are restricted due to the limited uptake of the relatively low amount of silver nanoparticles that ends up in, and is often strongly adsorbed onto, soil. In this work, we evaluate the effect of silver nanoparticles on maize plants as well as on the bacteria and fungi in their rhizosphere and the surrounding bulk soil. By using maize biomass measurements, microbial community fingerprints, and indicators of microbial physiology, it is shown that 100 mg kg-1 silver nanoparticles in soil induces a maize biomass increase, and that this effect coincides with significant structural and physiological alterations of the bacterial communities in the rhizosphere. Fungal communities are less affected by silver nanoparticles. The rhizosphere is a soil compartment with specific characteristics differentiating it from the bulk soil, and these differences are mirrored in the effects of silver nanoparticles on microorganisms in the two soil compartments. Overall, microorganisms in the rhizosphere seem to play an important role, which appears to be different for bacteria and fungi, in the effects of silver nanoparticles on plants in realistic situations with natural systems. Therefore, this microorganism-factor should be considered as an essential effector in environmental exposure studies of substances like silver nanoparticles.

Moon, S.L., Dodd, B.J.T, **Brackney, D.E.**, Wilusz, C.J., Ebel, G.D., J. Wilusz. Flavivirus sfRNA suppresses antiviral RNA interference in cultured cells and mosquitoes and directly interacts with the RNAi machinery. *Virology*. 2015 Nov 485:322-329; doi:10.1016/j.virol.2015.08.009.

**Abstract:** Productive arbovirus infections require mechanisms to suppress or circumvent the cellular RNA interference (RNAi) pathway, a major antiviral response in mosquitoes. In this study, we demonstrate that two flaviviruses, Dengue virus and Kunjin virus, significantly repress siRNA-mediated RNAi in infected human cells as well as during infection of the

mosquito vector *Culex quinquefasciatus*. Arthropod-borne flaviviruses generate a small structured non-coding RNA from the viral 3′ UTR referred to as sfRNA. Analysis of infections with a mutant Kunjin virus that is unable to generate appreciable amounts of the major sfRNA species indicated that RNAi suppression was associated with the generation of the non-coding sfRNA. Co-immunoprecipitation of sfRNA with RNAi mediators Dicer and Ago2 suggest a model for RNAi suppression. Collectively, these data help to establish a clear role for sfRNA in RNAi suppression and adds to the emerging impact of viral long non-coding RNAs in modulating aspects of anti-viral immune processes.

Wang Y.X., Chen J.Y., **Li De-Wei**, Huang J.B., Zheng L. 2015. First report of canker of *Magnolia denudata caused* by *Fusarium decemcellulare* in Hubei, China. Plant Disease 99: 1036-1037. http://dx.doi.org/10.1094/PDIS-11-14-1111-PDN

**Abstract.** *Magnolia denudata* is an ornamental tree (Magnoliaceae) native to central China, where it has been cultivated for more than 2,000 years (Li et al. 2012). It is commonly used as a landscape tree for its attractive flowers and fragrance. In 2012, symptoms of canker were observed on approximately 100 trees of *M. denudata* at a park in Qichun County (115.18°E, 30.14°N), Hubei Province, China. Lesions were initially small, watery, oval or circular, and then developed into dark spots with roughened and split surfaces. These spots enlarged, coalesced, and became necrotic or decayed. After infection, diseased trees withered and some died entirely. A fungus was consistently isolated from symptomatic branch samples collected in April 2014 with a 100% isolation rate from 20 branch pieces that were surface sterilized with 75% ethanol and 4% sodium hypochlorite solution. The isolates MDQC-1 and MDQC-2 were used to further study characteristics of the pathogen. Cultures of the isolates on potato dextrose agar (PDA) initially developed into white colonies and turned rose-colored after 3 days of incubation, turning darker with age. Colony diameters on PDA at 25°C expanded at an average rate of 3.1 mm per day. Yellow conidial masses were formed on sporodochia after 7 to 10 days of incubation. The cultures also developed abundant aerial mycelium. Macroconidia were produced with a blunt apical cell and a foot cell, slightly curved, thick walled, 7 to 10 septate, 87.5 ± 8.7 × 5.8 ± 0.4 µm ($n$ = 30). Microconidia were largely produced on monphialides in the aerial mycelium, ovate, 0-septate, colorless, in chains, 7.5 ± 1.4 × 3.2 ± 0.4 µm ($n$ = 30). Chlamydospores were absent. The pathogen was identified as *Fusarium decemcellulare* Brick based on descriptions in Leslie and Summerell (2006). Genomic DNA was extracted, and the rDNA of the internal transcribed spacer (ITS) regions 1 and 2 and the 5.8S gene were amplified using primers ITS1 and ITS4. The translation elongation factor 1α (TEF-1α) gene region was amplified using primers EF1 and EF2. The ITS sequence (GenBank Accession No. KM893858) showed 99.4% identity with the strain *F. decemcellulare* (AB587017) and the TEF-1α sequence (KM875661) showed 97.5% identity with the strain *F. decemcellulare* (AB674295). Pathogenicity tests were performed with the isolate MDQC-2 (China forestry culture collection center accession CFCC 50120) by hyphal inoculation onto surfaces of five branches. Controls consisted of five branches inoculated with PDA without the fungus. All branches were incubated in a growth chamber at 25°C and 80 to 90% relative humidity. Seven days after inoculation, necrotic spots were observed on all inoculated branches and were the same in appearance as the original symptoms, while no symptoms developed on the control branches. Koch's postulates were fulfilled by reisolation of *F. decemcellulare* from diseased branches. The reisolated fungus had the same cultural characteristics as the originally isolated fungus. The pathogenicity tests were repeated with similar results. Although *F. decemcellulare* is a pathogen of many host plants, it had not been previously reported in *M. denudata* (Fu and Chen 1988). Thus, this is the first report of *F. decemcellulare* infecting *M.*

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## JOURNAL ARTICLES APPROVED AUGUST 2015

**Douglas, Sharon M.** Browning, dieback, and decline of Eastern red cedar. *CAES Fact Sheet*

Cheng, Q., A. S. Windham, K. H. Lamour, A. M. Saxton, **Yonghao Li,** and M. T. Windham. Infection process of switchgrass rust *(Puccinia emaculata)* urediniospores on leaves of a susceptible switchgrass *(Panicum virgatum* L.). *Plant Disease*

**Stafford III, Kirby C.** The gypsy moth. *CAES Fact Sheet*

**Triplett, Lindsay R.,** S. Cohen, C. Heffelfinger, C. Tekete, V. Verdier, C. L. Schmidt, S. Dellaporta, A. J. Bogdanove, and J. E. Leach. A resistance locus in the American heirloom rice variety Carolina Gold Select is triggered by diverse TAL effectors and is effective against African strains of *Xanthomonas oryzae* pv. *oryzicola*. *The Plant Journal*

Zou, Y., **Claire E. Rutledge,** K. Nakamuta, **Chris T. Maier,** L. M. Hanks, A. B. Richards, E. S. Lacey, and J. G. Millar. Identification of a pheromone component and a critical synergist for the invasive beetle *Callidiellum rufipenne* (Coleoptera: Cerambycidae). *Environmental Entomology*

## GRANTS RECEIVED AUGUST 2015

"Expansion of FERN activities at the Connecticut Agricultural Experiment (CAES)." **J.C. White** et al. Awarded from FDA in September 2015 for 5 years; $1,890,000.

"CT DoAg/CAES conformance with the Animal Feed Regulatory Program Standards (AFRPS)." **J.C. White** et al. Awarded from FDA in September 2015 for 5 years; $750,000.

"Retaining export and food security of U.S. specialty crops: low-emission methyl bromide fumigation for quarantine and pre-shipment uses," Spencer Walse, **Joseph J. Pignatello**, William Mitch, Gerhard F. Knapp, and David Zilberman. Final year of funding was awarded by the California Dried Plum Board on June 23, 2015 for $106,066 on Food Safety grant 34913, USDA TASC Project

"Identifying opportunities and challenges for the use of bioproducts to increase the sustainability of ornamental and vegetable production in controlled environments" ($50,000). **Dr. Wade Elmer** serves as Co-Pi and will participate in a three day workshop with other scientists working on biocontrol in the greenhouse.

Volunteers from the Hiking Alliance met at Lockwood Farm and harvested fruit and vegetables for The Connecticut Food Bank


Participants of the Annual Seed Analyst Workshop of the USDA Seed Regulatory and Testing Division met in Gastonia, NC.

## Hops Research Meeting Held at the Valley Laboratory

Forty-three people attended the Connecticut Agricultural Experiment Station's first hops research meeting held at the Valley Laboratory on August 20, 2015. Dr. Jim LaMondia and Dr. Katja Maurer welcomed growers and spoke about current hop research, toured field plots and presented production data and management strategies. Dr. Victor Triolo spoke about low trellis hops and greenhouse hops. HopsHarvester of Honeoye Falls NY conducted a demonstration of a PTO-driven hops combine. Brewers, growers and interested participants ended the meeting with a roundtable discussion of the future of the hops industry in Connecticut.

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

Main Laboratories, New Haven

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, Mrs. Vickie Bomba-Lewandoski, and Ms. Rebecca Carlone.