



## *The Connecticut Agricultural Experiment Station*

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*Putting Science to Work for Society  
Protecting Agriculture, Public Health, and the Environment*

*Founded 1875*

### **FOR IMMEDIATE RELEASE**

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### ***Nature Nanotechnology* publishes study from The Connecticut Agricultural Experiment Station (CAES) as part of the NSF The Center for Sustainable Nanotechnology (CSN)**

**New Haven, CT** – A paper from the CAES published by the prestigious journal *Nature Nanotechnology* and featured on the cover of the December 2020 issue describes how the properties of nanoscale micronutrients can be “tuned” to suppress the devastating disease soybean sudden death syndrome. These exciting results were part of a collaborative study within the NSF Center for Sustainable Nanotechnology (CSN) and included researchers from the CAES, the University of Wisconsin (UW)-Madison, the University of Iowa, and the University of Massachusetts-Amherst. Study authors used advanced molecular analysis and computational chemistry to mechanistically describe how nanomaterial properties yielded increased crop growth.

Dr. Jason C. White, CAES Director and one of the lead CSN authors on the study, notes that “early seedling foliar application of very small quantities of nanoscale copper, which is a required nutrient, to boost plant immunity offers great potential as a novel disease management strategy and could be a critical tool in the effort to increase food production to maintain global food security.”

The CSN focuses on fundamental science and involves collaboration between researchers at UW-Madison, 10 other universities, and two government laboratories, including CAES. The CSN works to mitigate problems associated with nanomaterials, such as lithium ion batteries and other electronic waste, and they design and synthesize nanomaterials which may offer benefits to the environment, such as those that can suppress crop pathogens, increase yield and reduce global food insecurity.

Dr. Robert Hamers, CSN Director and Professor of Chemistry at the UW-Madison states that “An understanding of the basic chemical interactions between nanomaterials and the leaf surface is critical to identifying nanomaterial composition and properties that provide the greatest benefit to plant health. Fundamental research in this area is leading to new and exciting approaches to sustainable agriculture with the potential for enormous societal benefit.”

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“This research shows how harnessing nanoscience has the potential to have big impacts in sustainable agriculture. This work also nicely demonstrates a key NSF goal of using new and basic science to continue to advance well established industries” said Dr. David Berkowitz, Division Director of the Chemistry Division at NSF.

The CSN is focused on science, outreach, and workforce development, serving as a strong professional development program for training graduate students and post-doctoral researchers, and with a focus on improving diversity in higher education. CAES investigators on this project include Dr. Jason C. White (CAES Director), Dr. Wade Elmer (CAES Vice Director and Chief Scientist of the Department of Plant Pathology and Ecology), Dr. Yu Shen (CAES Post-doctoral Associate), Dr. Chuanxin Ma (former CAES Post-doctoral Associate but currently a Professor at the Guangdong University of Technology in China), Dr. Roberto De La Torre Roche (former CAES Post-doctoral Associate but now at the US FDA Forensic Chemistry Center), and Dr. Nubia Zuverza-Mena (CAES Department of Analytical Chemistry).

Other study authors include Jaya Borgatta and Dr. Robert Hamers (University of Wisconsin-Madison); Blake Hudson, Ali Abbaspour Tamijani, and Dr. Sara Mason (University of Iowa); and Dr. Baoshan Xing (University of Massachusetts-Amherst).



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*Nature Nanotechnology*, <https://www.nature.com/nnano>

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