

In-Service Training ([IST#: 32369](#))/CEU Roundup ([FDACS Program # 39061](#))/ CCA

CEU Tracking #: [FL54737 thru FL 54742](#)

New Technology for Commercial Crop Production (XIII)

Wednesday, February 26, 2025, from 8:45 to 4:00 PM

Delivery Format: In person at Blueberry Classroom 154 and statewide available via Canvas/Zoom for remote participants

Date: 2/26/25		Location: Blueberry Classroom 154 (in person) or statewide via Canvas	
1. 9:20 AM	Dr. S. Lee	Enhancing the Sweetness and Flavor of Florida Strawberries Using Modern Plant Breeding	
2. 10:10 AM	Dr. G.D. Liu:	Oxygen Fertilization: A Game Changer for Soil and Crops	
3. 11:00 AM	Dr. P. Tsouvaltzis	Nutrient Management in Greenhouse Hydroponic Vegetable Production	
4. 1:00 PM	Dr. D. Bryla	Irrigation Scheduling in Blackberries	
5. 1:50 PM	Dr. P. Dittmar	Working With Growers to Identify, Correct, and Prevent Herbicide Injury	
6. 2:40 PM	Dr. S.A. Sargent:	Adapting Technology to Extend Postharvest Quality of Fresh Fruits and Vegetables	



Registration 32369

FDACS CEUs				CCA CEUs	
Maximum CEUs				6.0	
Ag Row Crop	1.0	Private Applicator	1.0	Maximum CEUs	6.0
Ag Tree Crop	1.0	Commercial Lawn & Ornamental	1.0	Crop Management	2.5
Aerial Application	1.0	Limited Urban Fertilizer	1.0	Nutrient Management	1.5
Demo & Research	1.0	Limited Lawn & Ornamental	1.0	Pest Management	1.0
Natural Areas Weed Mgmt	1.0	482 & 487 General Standards/Core	2.0	Soil Management	1.0

<https://pdec.ifas.ufl.edu/hub/RegisterFinal.aspx?dateid=3236911&sessionID=323691&ist=32369>

Instructions

1. Please complete **pre-test** before and post-test after each presentation.
2. For **enrollment** issues Contact **Mr. Peter Disabb** at 352-294-0855 or pdisabb@ifas.ufl.edu,
3. For internet issues, contact **Mr. Dennis Brown** at (352)317-1701 or at dennisb@ufl.edu
4. Please complete **all pre- and post-tests**. Earn CEU credits by achieving at least 75% correct answers **on post-test along with the final survey**.
5. Joint the session at **8:45 AM EDT**.

Agenda

Dr. Wendy Mussoline: **Moderator**

- 8:45-9:00 AM Gather, Welcome, Introduction
- 9:00-9:10 AM Sign-in
- 9:10-9:20 AM Dr. Saqib Mukhtar, **Program Overview**
- 9:20-10:10 AM **Pre-test; *Dr. Seonghee Lee*: Enhancing the Sweetness and Flavor of Florida Strawberries Using Modern Plant Breeding; Post-test**
- 10:10-11:00 AM **Pre-test; *Dr. Guodong Liu*: Oxygen Fertilization: A Game Changer for Soil and Crops; Post-test**
- 11:00-11:50 AM **Pre-test; *Dr. Pavlos Tsouvaltzis*: Nutrient Management in Greenhouse Hydroponic Vegetable Production; Post-test**
- 11:50-1:00PM Lunch break**
- 1:00-1:50 PM **Pre-test; *Dr. David Bryla* ([USDA, Corvallis, Oregon](#)): Irrigation Scheduling in Blackberries; Post-test**
- 1:50-2:40 PM **Pre-test; *Dr. Peter Dittmar*: Working With Growers to Identify, Correct, and Prevent Herbicide Injury; Post-test**
- 2:40-3:30 PM **Pre-test; *Dr. Steve Sargent*: Adapting Technology to Extend Postharvest Quality of Fresh Fruits and Vegetables; Post-test**
- 3:30-3:50PM Survey
- 3:50PM Adjourn

Proposer and Organizer

Dr. Guodong Liu (David)

Associate Professor and Extension Specialist for Crop Nutrition

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Approved CEUs

FDACS CEUs				CCA CEUs	
<i>Maximum CEUs</i>			6.0	<i>Maximum CEUs</i>	6.0
Ag Row Crop	1.0	Private Applicator	1.0	Crop Management	2.5
Ag Tree Crop	1.0	Commercial Lawn & Ornamental	1.0	Nutrient Management	1.5
Aerial Application	1.0	Limited Urban Fertilizer	1.0	Pest Management	1.0
Demo & Research	1.0	Limited Lawn & Ornamental	1.0	Soil Management	1.0
Natural Areas Weed Mgmt	1.0	482 & 487 General Standards/Core	2.0		

Presentation Description

Title: Enhancing the Sweetness and Flavor of Florida Strawberries Using Modern Plant Breeding Biotechnologies

Speaker: Dr. Seonghee Lee, UF/IFAS

Description: This presentation will explore innovative approaches to improving the sweetness and flavor profiles of Florida strawberries through modern plant breeding biotechnologies. By integrating advanced genomic tools and molecular breeding techniques, researchers are identifying key genes responsible for flavor and sugar content. These innovations aim to develop strawberry cultivars with enhanced taste, which are not only appealing to consumers but also better suited to Florida's growing conditions. The session will discuss ongoing research, potential challenges, and the future of flavor-enhanced strawberries for the Florida strawberry industry.

Title: Presentation Description: Oxygen Fertilization: A Game Changer for Soil and Crops

Speaker: Dr. Guodong Liu (David), UF/IFAS

Description: This presentation delves into the innovative practice of oxygen fertilization to improve soil health such as soil redox potential and enhance crop yields. By introducing supplemental oxygen into the soil, this technique can positively influence redox potential, promoting better root respiration, increased nutrient availability and uptake, and improved overall plant

growth. Oxygen fertilization addresses challenges like soil waterlogging caused by hurricanes, overirrigation, poor oxygen bioavailability of deep well irrigation water, and salinity stress, leading to healthier soils and more productive crops. Through research findings and practical examples, this session will explore the science behind oxygen fertilization, its applications in modern agriculture, and how it can be integrated into farming practices for optimal results.

Title: Nutrient management in greenhouse hydroponic vegetable production

Specialist: Dr. Tsouvaltzis, Pavlos (University of Florida/IFAS)

Description: Hydroponic production of vegetables is considered as the most sustainable production system due to significant benefits, such as optimal water and nutrient management among several others. However, it is an intensive cropping system that requires adequate knowledge in establishing a successful operation. Starting with some general concepts and definitions related to hydroponics, the presentation will provide valuable information about the main parts of the equipment that typically make up a standard hydroponic unit, basics in nutrient solution (NS) preparation, other components that are needed for fertilizer injection, NS transport and application and NS collection network set up. Recommendations about suitable fertilizers to be used during the NS preparation, their mineral composition in relation to the crop, interactions between minerals, precise calculation of fertilizer rates, fertigation management and several practical tips to be considered before the installation of a hydroponic system, as well as before and after transplanting will be presented in detail.

Title: Irrigation Scheduling in Blackberries

Specialist: Dr. David Bryla (USDA-ARS, [Corvallis, Oregon](#))

Description: Irrigation scheduling requires knowledge of several factors, including rooting depth and the daily water requirements of the crop. We used large underground weighing devices called “lysimeters” to accurately measure daily water use in blackberries. At full production, the plants required nearly half a gallon of water from either rain or irrigation to produce just one blackberry, and over 12.5 gallons of water to produce enough berries to fill a 6 oz clamshell. Additional measurements indicated that the plants extracted water primarily from the top two feet of soil on cooler days and up to four feet deep on warmer days. Growers can use this information to make informed decisions on how much water to apply and determine how frequently irrigation is needed.

Title: Presentation description on Working with Growers to Identify, Correct, and Prevent Herbicide Injury

Specialist: Dr. Peter Dittmar

Description: Herbicide injury is a significant challenge for many growers, impacting crop yield and quality. This presentation will explore practical strategies for identifying herbicide damage, understanding its symptoms, and diagnosing the root causes. We will discuss the importance of communication between agricultural professionals and growers to ensure timely intervention and proper corrective actions. Additionally, we will cover preventative measures that can be taken to minimize the risk of herbicide injury, including proper application techniques, selecting the right

herbicides, and environmental factors to consider. Join us to learn how to safeguard crops and enhance productivity through effective herbicide management.

Title: Adapting Technology to Extend Postharvest Quality of Fresh Fruits and Vegetables

Specialist: Dr. Steven Sargent

Description: Fresh fruits and vegetables are very perishable after harvest and are labor-intensive, especially during harvest and handling operations. Technological advances during the past century have attempted to address these constraints, including the introduction of mechanization in some crops and cooling. Adaptation of current and new technologies continues to be a challenge but also shows promise. Examples will be presented and discussed.

Speaker's Bio-Sketch

Dr. Wendy Mussoline, the Putnam County Extension Director, has and will continue to serve as the UF/IFAS Commercial Agriculture Extension Agent for Putnam County. She started her Extension Career as a Multi-County Agent for both Flagler and Putnam in October 2017. Her primary responsibilities are to help commercial growers and ranchers remain economically and environmentally sustainable through science-based research. She completed her post-doctoral research with Dr. Ann Wilkie (UF Soil & Water Sciences) focused on the bioenergy potential from agricultural feedstocks, particularly sweet potato. She completed her doctorate in Environmental Engineering from the Erasmus Mundus Joint Doctorate Program (EMJD) in Europe. Her research was to maximize the energy potential and enhance degradation kinetics of the lignocellulosic feedstock, namely rice straw, to improve biogas production and electricity generation through anaerobic digestion.

Dr. Saqib Mukhtar, Professor and Associate Dean for Extension, Agriculture and Natural Resources provides leadership in the development, implementation, and evaluation of IFAS/Extension's major initiatives that address critical issues in Florida's food, agricultural, natural resources, and horticultural production systems.

Dr. Seonghee Lee, an Associate Professor in the Horticultural Science Department at the Gulf Coast Research and Education Center, University of Florida, received a Ph.D. in Plant Pathology from North Dakota State University. Over the past nine years, Dr. Lee has specialized in strawberry molecular genetics and genomics, applying advanced molecular tools to enhance the UF strawberry breeding program and support the development

of new cultivars. His research focuses on improving strawberry genetics, yield, and quality to ensure sustainable growth and profitability for Florida's strawberry industry.

Dr. Guodong Liu (David), Associate Professor, and State Extension Specialist in nutrient eco-management of vegetable and fruit crops. David received his Ph.D. in Plant Nutrition from the Chinese Academy of Agricultural Sciences, his M.S. in Plant Physiology and Biochemistry, and his B.S. in Crop Sciences both from Hunan Agricultural University. David's academic interests include improving nutrient and water use efficiencies for commercial crop production. David works closely with state and county faculty and growers to enhance the sustainability of agriculture and the environment as a component of best management practices (BMPs).

Dr. Pavlos Tsouvaltzis has joined the University of Florida since February 2023 as assistant professor in Vegetable Horticulture at Southwest Florida Research & Education Center. He received his Bachelor, MSc and PhD from the Department of Horticulture at the Aristotle University of Thessaloniki, Greece. He was also a postdoctoral associate in the University of Florida and an adjunct professor in the University of Foggia in Italy. During his 14 years of experience as a faculty member, his research has focused on studying several preharvest factors that affect crop yield and vegetable quality, during production outdoors or in protected structures, both on soil and on soilless substrates. Simultaneously, he has developed expertise in postharvest management of vegetables and recently in developing technologies that monitor plant physiology and produce quality non destructively using

spectroscopic techniques. He has authored more than 45 journal publications related to vegetable horticulture.

Dr. David Bryla, a Research Horticulturist and Lead Scientist at USDA-ARS Horticultural Crops Production and Genetic Improvement Research Unit in Corvallis, Oregon, received his PhD in Plant Biology from the University of California, Davis. He is a Fellow of the American Society for Horticultural Science and is recognized internationally for his research on mycorrhizal associations, root physiology, and water and nutrient management of tree fruits, vegetables, and small fruit crops. He has authored more than 120 scientific journal publications and is the Assistant Editor in Chief for *HortScience*.

Dr. Peter Dittmar: Dr. Dittmar is an Associate Professor of Horticulture at UF/IFAS in Gainesville. His program focus is weed management in vegetable, deciduous fruit, and nut crops. His extension program includes updating weed management recommendations in UF/IFAS guides, working with county extension faculty, and speaking at field days and commodity meetings. His research program addresses weed biology, integrated weed management, and herbicide efficacy and phytotoxicity.

Dr. Steven Sargent (sasa@ufl.edu) is Professor and Extension Postharvest Specialist at the University of Florida/IFAS, in the Horticultural Sciences Department. He received his graduate degrees from Michigan State University in Horticulture (M.S.) and Agricultural Engineering Technology (Ph.D.). His focus area is application of technology to reduce postharvest losses of fresh fruits and vegetables by maintaining/extending quality. He

has studied the application of harvest technology, including the use of harvest aids in tomatoes and reduction of damage in mechanically harvested blueberries. Also, he has investigated cooling methods for a variety of tropical and temperate crops, both current and those with potential for expanded production.