UF | IFAS Extension
UNIVERSITY of FLORIDA

REPORT OF

In-Service Training/CEU Roundup

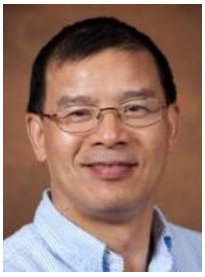
New Technology for Commercial Vegetable and Fruit Production (X)

(IST#: 32032**), FDAC CEU (**ID: 32464**), CCA CEU (**FL 54068 thru FL 54072**)**

Wednesday, February 23, 2022

The Zoom link: https://ufl.zoom.us/j/5010757015




FDACS CEUs				CCA CEUs	
Maximum CEUs			***5.0***		
Ag Row Crop	5.0	Limited Urban Fertilizer	5.0	***Maximum CEUs***	***5.0***
Ag Tree Crop	5.0	Private Applicator	5.0	Crop Management	1.5
Commercial Structutual Fumigation	5.0	Raw Ag Commodity Fumigation	5.0	Nutrient Management	1.0
Demo & Research	5.0	Soil & Greenhouse Fumigation	5.0	Pest Management	2.5

1. Dr. S. Ramasamy: **Sustainable crop production technologies for ethnic vegetables**
2. Dr. G. Vallad: **After 100 years of bacterial spot research, what have we learned?**
3. Dr. Z. Grabau: **Recent developments in nematode management in potato production**
4. Dr. G. D. Liu: **Why does fertigation improve fertilizer use efficiency?**
5. Dr. I. Ampatzidis: **Artificial intelligence for precision agriculture**

G. David Liu
Horticultural Sciences Department
April 20, 2022

New Technology for Commercial Vegetable and Fruit Production (X)

(IST#: 32032**), FDAC CEU (**ID: 32464**), CCA CEU (**FL 54068 thru FL 54072**)**

Wednesday, February 23, 2022

The Zoom link: https://ufl.zoom.us/j/5010757015

IT Professional: Mr. Daniel Mainwaring

Best way to get help: extensiononline@ifas.ufl.edu

Wednesday, February 23, 2022

Summary: *This program had 24 participants including six extension specialists. By using pre-test and post-test, the trainees' knowledge gain was 11.2 percentage points on average. The trainees estimated the techniques they learned from this ISTtraining program can help growers:*

1. ***Save production costs by $102 per acre.***
2. ***Increase income by $202 per acre.***
3. ***There were 18 agents pareticipated in the program. They serve 60.3 farms on average. The farm size is 122 acres. The total acreage they serve is 132,419 acres.***
4. ***The estimated reduction of production costs will be $13,506,718 and income increase $26,748,589 after the new technology is applied by growers in Florida.***
5. ***Reduce nitrogen and phosphorus in groundwater by 12 and 12, respectively.***
6. ***Additionally, the Floridian growers can respectively save fertilizers of nitrogen, phosphrus, and potassium by 35, 36, and 48 lbs/acre.***
7. ***The total savings of N, P, K fertilizers will be 4,634,655, 4,767,084, and 6,356,112 pounds, respectively.***

The objective of this in-service training was to introduce new tools and technologies of Best Management Practices (BMPs) developed for Florida's crop production systems. These tools and technolgies enhance the sustainability of commercial crop production and competitiveness of the agricultural industry in Florida. The training program focused on the management of diseases and nemadtods and nutrients and precision agriculture for better crop production. Five Extension specialists from World Vegetable Center and UF/IFAS presented. The five-and-half hour training included lectures on nutrient and disease/nematode management, and new technology for crop production. Particularlly, an expert addressed AI applications in agriculture to help

growers get equipped with cutting-edeg new technology. More details can be found from the pages 4 through 6.

Agenda

Moderator Dr. Wendy Mussoline

9:45-10:00 AM Gather, Welcome, Introductions
10:00-10:10 AM Sign-in and Pre-test
10:10-10:20 AM Dr. Christopher Gunter, **Program Overview**
10:20-11:10 AM Dr. Srinivasan Ramasamy (World Vegetable Center): **Sustainable crop production technologies for ethnic vegetables**
11:10-12:00 AM Dr. Gary Vallad: **After 100 years of bacterial spot research, what have we learned?**

12:00-1:00PM **Lunch break**
1:00-1:50 AM Dr. Zane Grabau: **Recent developments in nematode management in horicutural crops**
1:50-2:40 PM G. David Liu: **Why does fertigation improve fertilizer use efficiency?**
2:40-3:30 PM Dr. Ioannis Ampatzidis: **Artificial intelligence for precision agriculture**
3:30-3:45PM Post-test and survey
3:45PM Adjourn

This IST was designed for Extension agents and specialits only and ended up with 24 participants. Five FDACS (Program#: 32032; Class ID: 66523) CEUs for Ag Row Crop; Ag Tree Crop; Private Applicator; Commercial Structural Fumigation; Demo & Research; Raw Ag Commodity Fumigation; or Soil& Greenhouse Fumigation. Five CCA (Program ID: FL 54068, FL 54069, FL 54070, FL 54071, FL 54072) CEUs for Crop Management; Nutrient Management; or Pest Management. The trainees earned up to 10 CEUs from this program.

The evaluations are summarized below.

Knowledge Gain

Pre-and post-tests were matched by names and graded. Results from only pre- or post-tests without mathcing were not graded and discarded. The pre- and post-test grades were used to obtain means, median, and mode, standard errors, and percentage points of knowledge gain. On average, the trainees got a rise of 11.6 percentage points from this IST training. Table 1 shows the data below.

Table 1. Statistics summary for the In-service Training event

Count of paired tests	7		
Number of Questions	20		Knowledge gain (percentage points)
Evaluation	Correct answers (%)		
	Pretest	Posttest	
Mean	74.5	86.1	11.6
Median	81.8	95	13.2
Mode	85.8	100	14.2
Standard error	18.2	18.8	0.6

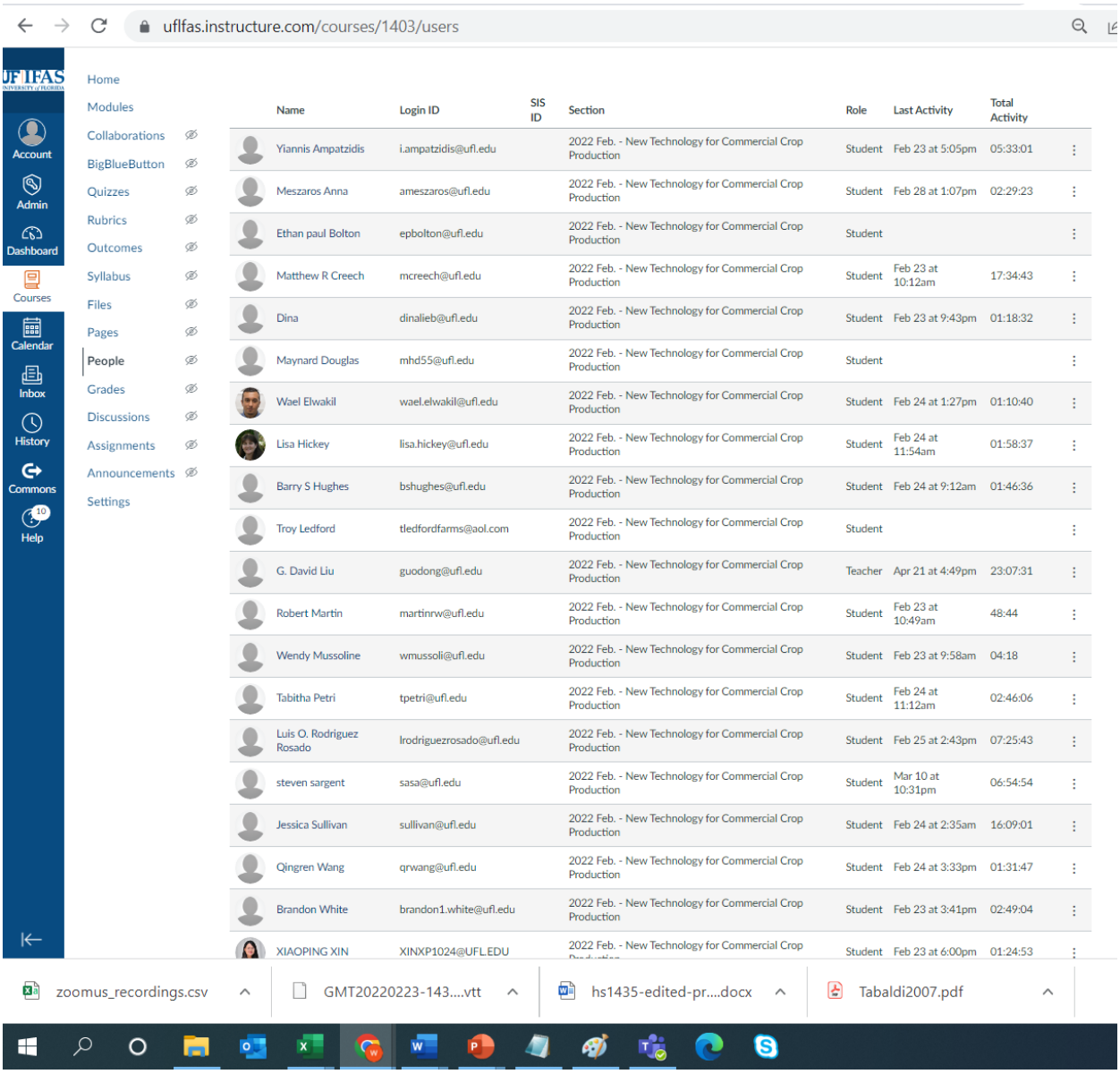
Estimate of the economic and environmental sustainability

Table 2 has the estimate data of the economic and environmental impact from this IST program. The trainees estimated the techniques they learned from this ISTtraining program can help growers:

8. Save production costs by $102 per acre.
9. Increase income by $202 per acre.
10. There were 18 agents pareticipated in the program. They serve 60.3 farms on average. The farm size is 122 acres. The total acreage they serve is 132,419 acres.
11. The estimated reduction of production costs will be $13,506,718 and income increase $26,748,589 after the new technology is applied by growers in Florida.
12. Reduce nitrogen and phosphorus in groundwater by 12 and 12, respectively.
13. Additionally, the Floridian growers can respectively save fertilizers of nitrogen, phosphrus, and potassium by 35, 36, and 48 lbs/acre.
14. The total savings of N, P, K fertilizers will be 4,634,655, 4,767,084, and 6,356,112 pounds, respectively.

Table 2. Estimate of economical and environmental sustainability after the techniques from this IST training are employed for commercial crop production

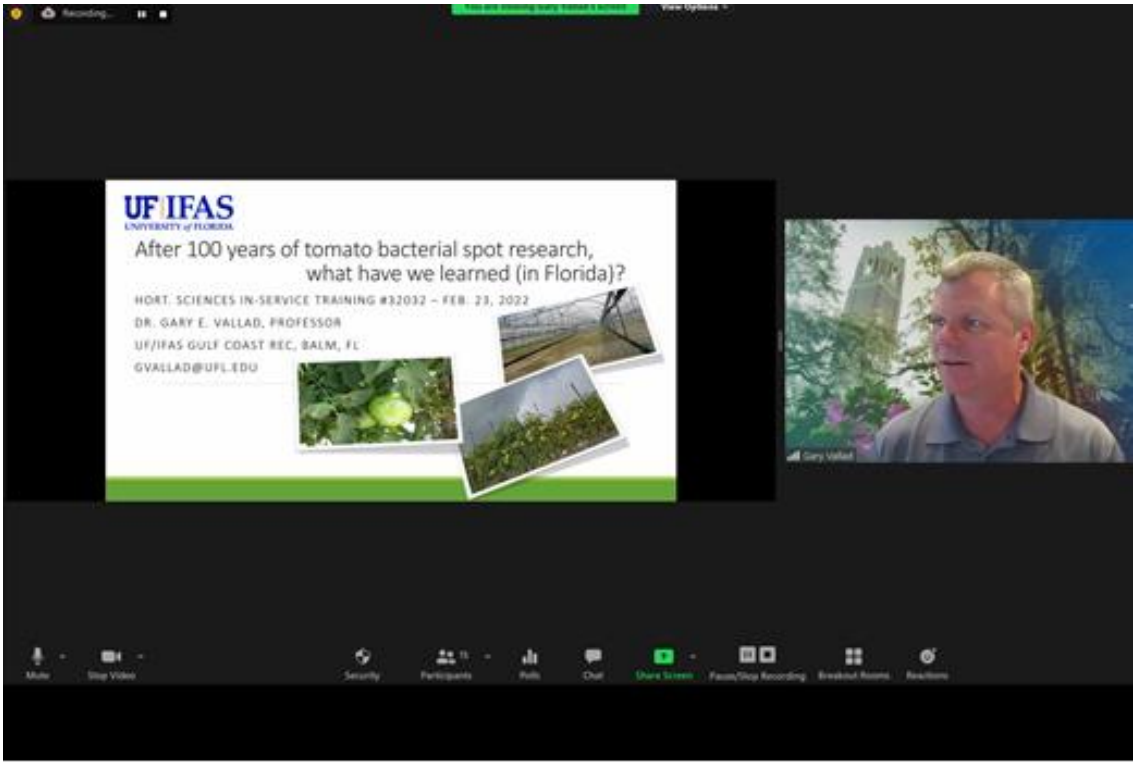
		Estimate of Sustainability						
# of Farms	Farm Size	Cost Reduction	Income Increase	Pollutant Reduction in Groundwater		Savings of NPK (lbs/acre)		
	(acre/farm)	($/acre)	($/acre)	N (ppb)	P (ppb)	N	P	K
15	284.5	102	202	12	12	35	36	48


uflfas.instructure.com/courses/1403/users
Account
Admin
Dashboard
Courses
Calendar
Inbox
History
Commons
Help
Home
Modules
Collaborations
BigBlueButton
Quizzes
Rubrics
Outcomes
Syllabus
Files
Pages
People
Grades
Discussions
Assignments
Announcements
Settings
Name | Login ID | SIS ID | Section | Role | Last Activity | Total Activity
Yiannis Ampatzidis | i.ampatzidis@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 5:05pm | 05:33:01
Meszaros Anna | ameszaros@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 28 at 1:07pm | 02:29:23
Ethan paul Bolton | epbolton@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student
Matthew R Creech | mcreech@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 10:12am | 17:34:43
Dina | dinalieb@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 9:43pm | 01:18:32
Maynard Douglas | mhd55@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student
Wael Elwakil | wael.elwakil@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 1:27pm | 01:10:40
Lisa Hickey | lisa.hickey@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 11:54am | 01:58:37
Barry S Hughes | bshughes@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 9:12am | 01:46:36
Troy Ledford | tledfordfarms@aol.com | 2022 Feb. - New Technology for Commercial Crop Production | Student
G. David Liu | guodong@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Teacher | Apr 21 at 4:49pm | 23:07:31
Robert Martin | martinrw@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 10:49am | 48:44
Wendy Mussoline | wmussoli@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 9:58am | 04:18
Tabitha Petri | tpetri@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 11:12am | 02:46:06
Luis O. Rodriguez Rosado | lrodriguezrosado@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 25 at 2:43pm | 07:25:43
steven sargent | sasa@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Mar 10 at 10:31pm | 06:54:54
Jessica Sullivan | sullivan@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 2:35am | 16:09:01
Qingren Wang | qrwang@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 24 at 3:33pm | 01:31:47
Brandon White | brandon1.white@ufl.edu | 2022 Feb. - New Technology for Commercial Crop Production | Student | Feb 23 at 3:41pm | 02:49:04
XIAOPING XIN | XINXP1024@UFL.EDU | 2022 Feb. - New Technology for Commercial Crop | Student | Feb 23 at 6:00pm | 01:24:53
zoomus_recordings.csv
GMT20220223-143....vtt
hs1435-edited-pr....docx
Tabaldi2007.pdf

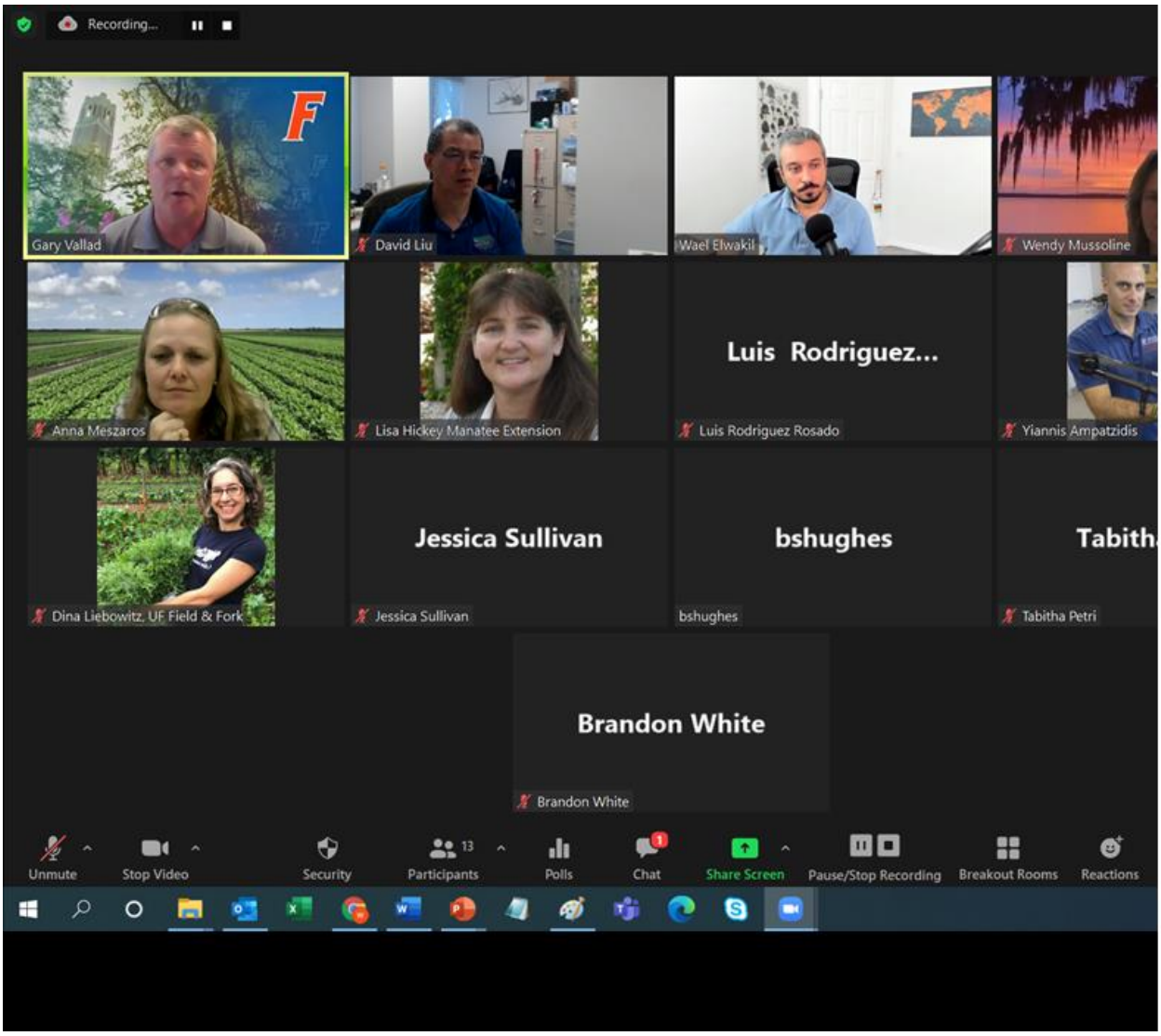
Dr. Christopher Gunter is giving an overview on the program.

Dr. Wendy Mussoline is moderating the program.

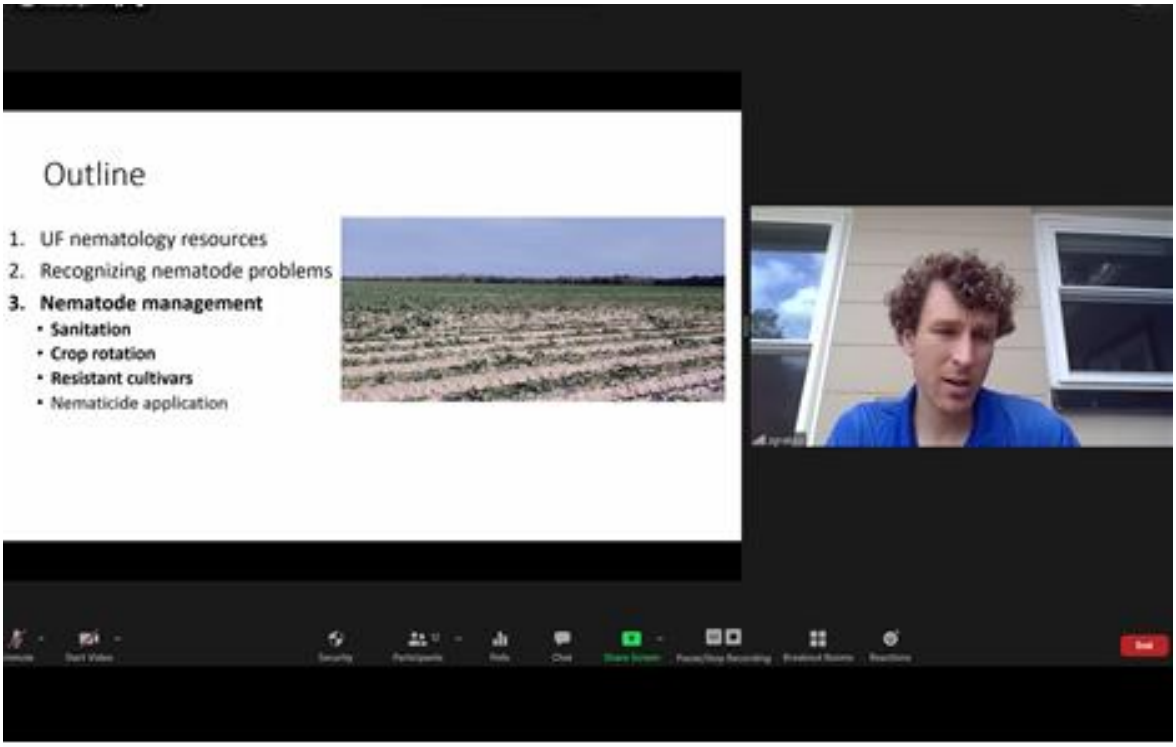
Dr. Srinivasan Ramasamy is presenting.



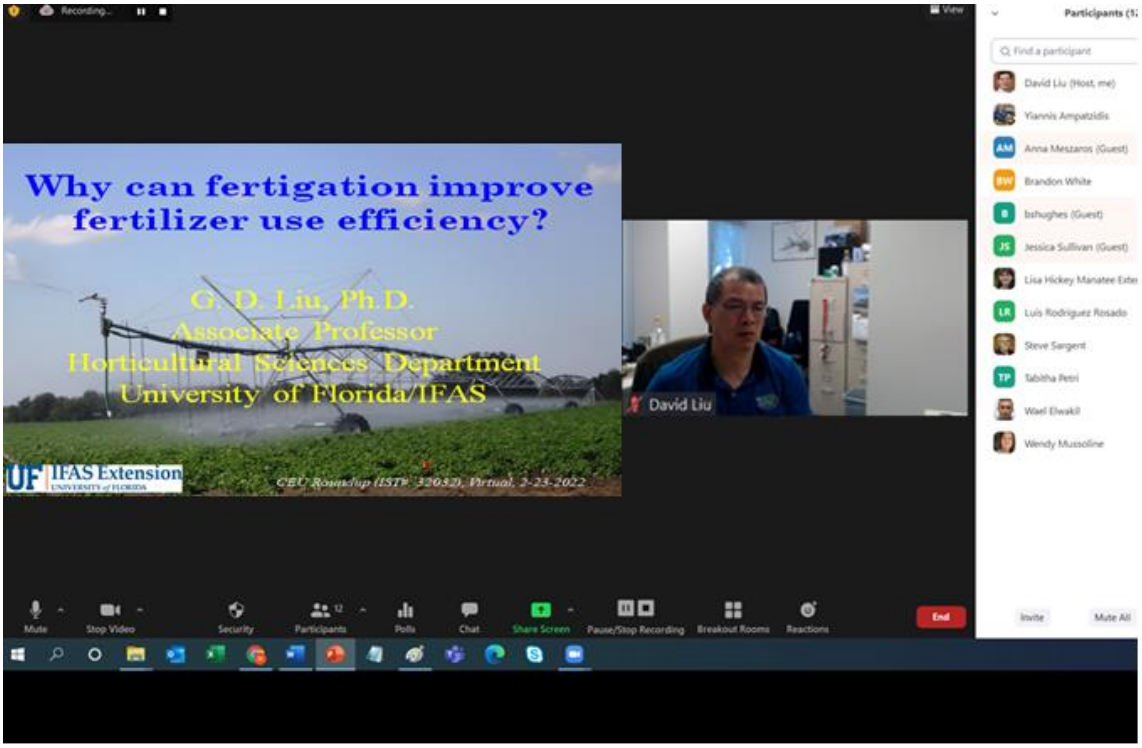
Dr. Gary Vallad is presenting.



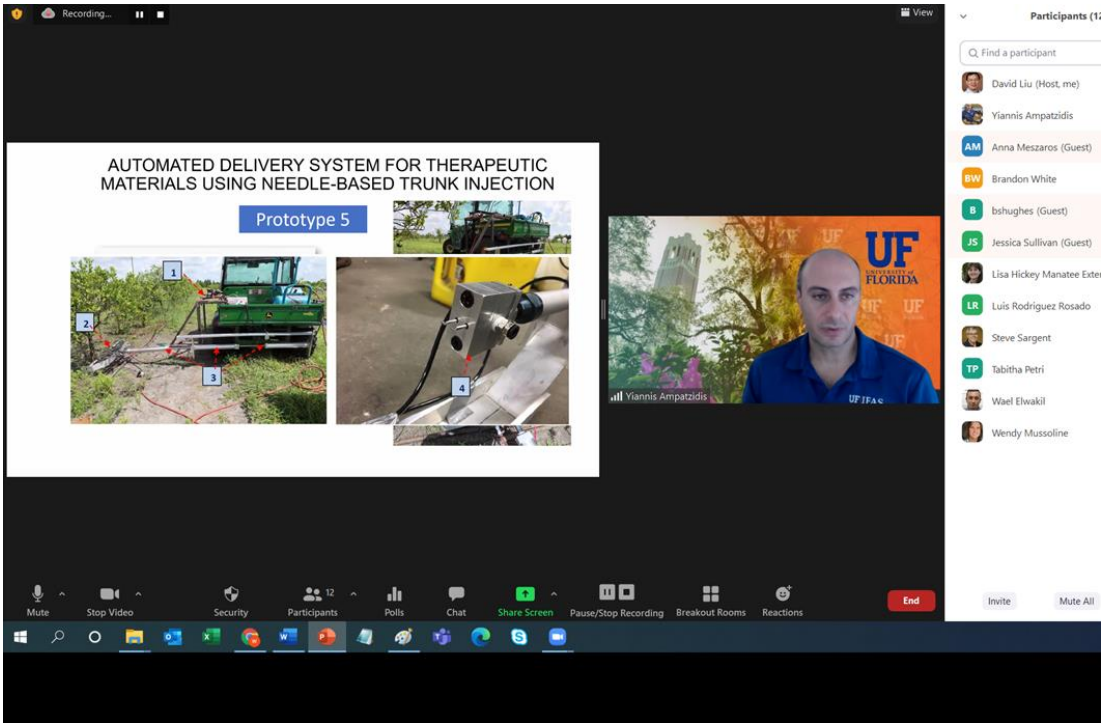
A screenshot of the participants.



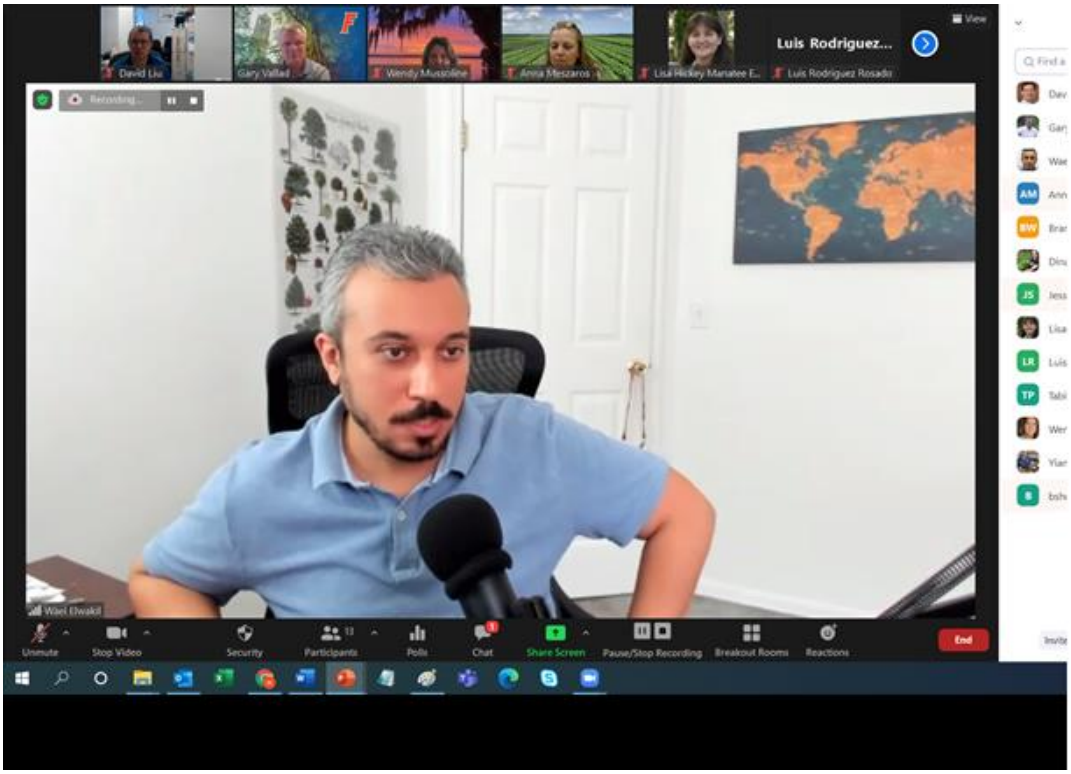
Dr. Zane Grabau is presenting.



Dr. G. David Liu is presenting.



Dr. Ioannis Ampatzidis is presenting.



Dr. Weal Elwakil is asking a question.

Presentation Description

Title: Sustainable crop production technologies for Asian ethnic vegetables
Specialist: Dr. Srinivasan Ramasamy
Presentation description:
Asian ethnic vegetables include leafy brassicas (pak-choi, heading and non-heading Chinese cabbages), yard-long bean, vegetable soybean, wax gourd, bitter gourd (or bitter melon), etc. Production of these vegetables is mainly constrained by the pests and diseases. Hence, the farmers rely predominantly on the use of chemical pesticides, which pose serious threats to human and environmental health. Integrated pest management (IPM) packages based on healthy seedling production, resistant cultivars, protected cultivation, pheromone and colored sticky traps, bio-control agents and bio-pesticides offer sustainable solutions. Successful use of IPM packages in the production of Asian ethnic vegetables will be discussed.

Title: After 100 years of bacterial spot research, what have we learned?
Specialist: Dr. Gary Vallad

Presentation Description: Talk will review the history of tomato bacterial spot research with a focus on taxonomy, epidemiology, and integrated disease management.

Title: "Recent developments in nematode management in horticultural crops"
Specialist: Grabau, Zane (University of Florida)
Presentation Description: Plant-parasitic nematodes are one of the major threats to horticulture production in the Southeast. A basic understanding of the different types of plant-parasitic nematodes, how to recognize symptoms, and resources for confirming nematode infestations are foundational to nematode management. Nematode management relies on a few basic strategies including crop rotation, resistant cultivars, and nematicide application, but tools available to implement these strategies are evolving. New crops and cover crops are being explored for nematode management, and new nematicide chemistries are available.

Title: Why does fertigation improve fertilizer use efficiency?
Specialist: Dr. David Liu (University of Florida)
Presentation Description: This talk will focus on fertigation for improving nutrient use efficiency for vegetable production using potato as an example. Fertigation through center pivot irrigation saves nitrogen fertilizer significantly. This talk will also cover problems in fertigation and solutions as well.

Title: Artificial Intelligence applications for precision agriculture
Specialist: Yiannis Ampatzidis, ABE, SWFREC, IFAS/UF

Presentation Description: This talk presents emerging technologies for precision agriculture applications. It explains how artificial intelligence, automation, and robotics can be used to enhance precision management of recourses. Examples of emerging technologies presented here include smart and variable rate sprayers for pest and disease management, robotic harvesters for fruit and vegetables, UAVs for precision nutrient management and disease detection (among others).

Speaker's Bio-Sketch

Dr. Christopher Gunter, professor and department head of Horticultural Sciences at UF. Chris received his B.S. from Purdue University, M.S. and Ph.D. from the University of Wisconsin-Madison. All the degrees are in horticulture. Dr. Gunter joined UF/IFAS in June 2021.
Dr. Srinivasan Ramasamy is the Lead Entomologist and the Flagship Program Leader for Safe and Sustainable Value Chains at the World Vegetable Center, Taiwan. Obtained more than 28 million USD for Research and Development projects. Coordinated research and formation of linkages among more than 20 countries in six continents (Asia, Africa, Europe, Oceania and North and South America). Partners include universities, private sector, farmer groups, NGOs, governmental and international organizations. Supervised and trained >75 students, Postdoctoral Fellows, interns, research technicians and associates from around 15 countries. Offered training to NGOs, National Agricultural Research and Extension Organizations, private sector, farmers, and farmer's groups (organized and/or involved in >25 training events in 10 countries). Published more than 170 papers including research and review articles, book chapters, field guides and Conference Proceedings to his credit.
Dr. Gary Vallad, professor and state extension specialist of Plant Pathology at the University of Florida, received a B.S. in Biotechnology and Microbiology and a M.S. in Crop and Weed Science from North Dakota State University, and a Ph.D. in Plant Pathology from University of Wisconsin-Madison. Dr. Vallad's research and extension program at the Gulf Coast Research and Education Center focuses on the diagnosis and management of diseases common to vegetable and ornamental production with an emphasis on the development and implementation of integrated disease management strategies. Dr. Vallad has published over 200 research and extension articles. He currently serves as an editor for the APS Press Editorial Board, and the journals PhytoFrontiers and European Journal of Plant Pathology, and was a past editor for Phytopathology and the Journal of Plant Pathology.

Dr. Zane Grabau (University of Florida), Assistant Professor-Nematology. As a research-extension specialist, his work focuses on nematode management and ecology in agronomic (peanut, cotton, corn, soybean) and horticulture crops (potatoes, sweetpotatoes, and carrots among others), primarily in the North Florida region. Zane received his Master's and PhD. from the University of Minnesota in Plant Pathology with thesis and dissertation work on field

management of soybean cyst nematode. Applied, field-based investigations of integrated nematode management are the core of his program at the University of Florida. He has developed strong connections with Florida growers and stakeholders by involving them in his program and extending research results to them.

Dr. G. David Liu, 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, M.S. in Plant Physiology and Biochemistry, and 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 environment as a component of best management practices (BMPs).

Speakers' BioSketch

Dr. Yiannis Ampatzidis is an associate professor in the Agricultural and Biological Engineering Department of University of Florida (UF). He leads the Precision Agriculture Engineering program at Southwest Florida Research and Education Center (SWFREC). His current research focus is on smart and digital agriculture, artificial intelligence (AI), UAVs, machine vision for plant stress and disease detection, mechatronics, automation, robotics, precision agriculture and machine systems with special interest in development, implementation and evaluation of agricultural machines and control systems for high value crops.