

In-Service Training (IST#: 31893)/CEU Roundup (FDACS Program # 30223/CCA Tracking #: FL 53817 thru FL 53822)

New Technology for Commercial Vegetable and Fruit Production (IX)

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

IT Professional: Mr. Dennis Brown

Cell phone: (352)317-1701

Wednesday, February 24, 2021



Dr. L. Sharma

Role of Precision Agriculture in the BMP

Diagnosing Tree Crop Problems in the Field



Dr. D. Treadwell

Developing BMPs for Organic Systems, the Carrot Example

New Tools for Early Plant Disease Assessments



Dr. R. Kanissery

Weed Control in Horticultural Crops: Novel Approaches for Improving Efficacy, Sustainability and Crop-Safety

Impacts of Management on Soil Microbes in Florida Vegetable Production



Dr. L. Ferguson
UC Davis



Dr. M. Paret



Dr. S. Strauss

G. David Liu

Horticultural Sciences Department

May 10, 2021

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New concepts and/or new techniques have been developed to help growers make right decisions for crop production. These new techniques improve the profitability and sustainability of Florida's crop production and help enhance use efficiency of natural resources such as water and fertilizers. To provide an opportunity for our extension agents, CCAs, and graduate students to learn these new techniques, One out-state and five UF/IFAS extension specialists were invited to share their expertise at the New Technology for Commercial Crop Production (IX) IST training program on February 24, 2021.

	Dr. Wendy Mussoline: Moderator
9:00 AM:	Gather, Refreshments, Welcome, Introductions
9:00-9:20 AM	Sign-in and Pre-test
9:20-10:10 AM	Dr. Lakesh Sharma: Role of Precision Agriculture in the BMP
10:10-11:00 AM	Dr. Louise Ferguson: Diagnosing Tree Crop Problems in the Field
11:00-11:50 AM	Dr. Danielle Treadwell: Developing BMPs for Organic Systems, the Carrot Example
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11:50-1:00PM	Lunch break
1:00-1:50 PM	Dr. Mathews Paret: New Tools for Early Plant Disease Assessments
1:50-2:40 PM	Dr. Ramdas Kanissery: Weed Control in Horticultural Crops: Novel Approaches for Improving Efficacy, Sustainability and Crop-Safety
2:40-3:30 PM	Dr. Sarah Strauss: Impacts of Management on Soil Microbes in Florida Vegetable Production
3:30-3:50PM	Post-test and survey
3:50PM	Adjourn

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 systems enhanced the sustainability of commercial crop production and competitiveness of the agricultural industry in Florida. The training program focused on the management of diseases and weeds, and precision agriculture for better crop production. Six Extension specialists from UC Davis and UF/IFAS presented.

The six-and-half hour training will include lectures addressing nutrient and disease, pest, and weed management, and new technology in managing production. Additionally, to help growers overcome challenges in organic crop production, an extension specialist addressed organic vegetable production as well.

This IST ended up with 41 participants. 6 FDACS (Program#: 30223; Class ID: 66523) CEUs for Ag Row Crop; Private Applicator; Natural Area Weed Management; or Limited General Standards/Core. 6 CCA (Program ID: FL 53817, FL 53818, FL 53819, FL 53820, FL 53821, FL 53822) CEUs for Crop Management; Nutrient Management; Integrated Pest Management; or Soil & Water Management.

The evaluations are summarized below.

Overall Evaluation of the IST Training

The education program was rated on a 1 (low) to 5 (high) point scale and summarized below:

- 1. You've learned something new today: 3.7
- 2. The techniques you learned are useful: 3.6
- 3. Please rate your knowledge gain from today's program: 3.4
- 4. The knowledge you gained will help you or your growers save labor: 3.4
- 5. The knowledge you gained will help you or your growers save fertilizer: 3.3
- 6. You intend to change the behavior with the knowledge you gained today: 3.4

Knowledge Gain

Pre-and post-tests were matched by names and graded. Results from only pre- or post-tests without matching 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 16 percentage points from this IST training. A table is generated with the data (Table 1).

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

Count of paired tests	24		Knowledge gain (percentage points)
Number of Questions	16		
Evaluation	Correct answers (%)		
	Pretest	Posttest	
Mean	43	58	15
Median	50	56	6
Mode	50	69	19
Standard error	13.8	3.8	-

Presentation Description

Title: Role of Precision Agriculture in the BMP

Specialist: Sharma, Lakesh, Ph.D.

Presentation Description:

Fertilizer use, whether inorganic or organic form, can pose a threat to the environment if misused. The nitrogen use efficiency (NUE) is low, ~33% due to the poor synchrony between the N application and crop demand. A real-time active optical sensor could help determine N need of a specific area covered by sensor footprint in a specific time. The sensor uses reflected light from the crop canopy called NDVI to estimate leaf chlorophyll content directly related to leaf N. Estimating leaf N could help in predicting N needs of the plant. Successful sensor-based algorithms have been developed for mid-west states. Similar work with better sensors is required for Florida.

Title: Diagnosing Tree Crop Problems in the Field

Specialist: Ferguson, Louise, Ph.D. (University of California Davis)

Presentation Description:

This presentation will focus on how to prepare and execute a diagnostic field call from the moment of notification through final diagnostic confirmation. Steps will include pre-visit preparation, gathering information of history, situation, spatial variability and symptom expression through the final diagnosis of abiotic and biotic causes.

Title: Developing BMPs for Organic Systems, the Carrot Example

Specialist: Treadwell, Danielle, Ph.D.

Presentation Description

Carrot production is increasing along the east coast due to favorable climatic conditions and market demand. In 2019, farmers in Florida produced 3,000 acres of conventional and 450 acres of organic carrot. Carrot is a long-season crop planted in late fall and harvested in early spring. The crop is grown during season transitions, and the range of air and soil temperatures creates a challenge to predict nitrogen mineralization from organic fertility sources. No BMP recommendations exist for organic crops in Florida. Thus this study was initiated to begin to establish a nitrogen recommendation for organic carrot in Florida. Results will be presented from a three-year study that evaluated a range of nitrogen rates in carrot grown on certified organic land, including crop quality, yield, and crop and soil nitrogen distribution.

Title: New tools for early plant disease assessment

Specialist: Paret, Mathews, Ph.D.

Presentation Description

This presentation will share key research and commercial perspectives on Multispectral sensing, Hyperspectral sensing, Raman spectroscopy, Machine Learning and Artificial intelligence for early identification of plant diseases, and Recombinase Polymerase Amplification for field-based DNA/DNA detection of plant pathogens.

Title: Weed Control in Horticultural Crops: Novel Approaches for Improving Efficacy, Sustainability and Crop-Safety

Specialist: Kanissery, Ramdas, Ph.D. (University of Florida, SWFREC)

Presentation Description:

The presentation will cover novel and alternative approaches for managing a problem that has troubled crop production forever: “weeds.” From weed identification apps to herbicide spraying robots, weed management in commercial horticultural production has advanced rapidly in the adoption of new technologies in the last few decades. The topics discussed will include precision placement of herbicides, novel fumigation strategies and non-chemical techniques like the steam application as effective, sustainable and crop-safe weed control approaches. The potential for utilizing unmanned aerial systems (UAS) for informed weed management decisions will also be discussed.

Title: Impacts of management on soil microbes in Florida vegetable production

Specialist: Strauss, Sarah, Ph.D.

Description: Soils have a complex community of microbes that are critical for soil nutrient cycling and have the potential to impact plant growth. The composition of these communities is influenced by the soil environment, crop, and management practices. Understanding the influence of vegetable management practices on the soil microbial community is critical for determining how we can potentially manipulate soil microbes to improve soil health.

Bio-Skatch of Speakers

Speaker’s BioSketch

New Technology for Commercial Crop Production (IX)

February 26, 2021

Dr. Lakesh Sharma, Assistant Professor Agriculture and State Extension Specialist of Soil Fertility and Sustainable Soil and Water Sciences Department, University of Florida/IFAS, Gainesville, FL. Lakesh’s work is focused on developing new Best Management Practices (BMPs) in Agriculture for Florida growers and revise the old BMPs as needed. He is working on nutrient management using sensor technology along with updated recommendation philosophies. Lakesh has helped in the development of nutrient recommendations for North Dakota State and Maine. He is a state BMPs coordinator and national leader for nutrient management, sensor technology scientists communities. In Florida, Lakesh is developing advanced nitrogen and sulfur recommendations for corn, cotton, and potatoes.

Dr. Louise Ferguson is a Professor and State Extension Specialist of Mediterranean Tree Crops in the Department of Plant Sciences in the College of Agricultural and Environmental Sciences at University of California Davis. She has focused on applied production practices of pistachio, olive, fig, citrus and persimmon. Among her research areas are developing mechanical pruning for pistachio and table olive, mechanical harvesting of table olive, salinity tolerance,

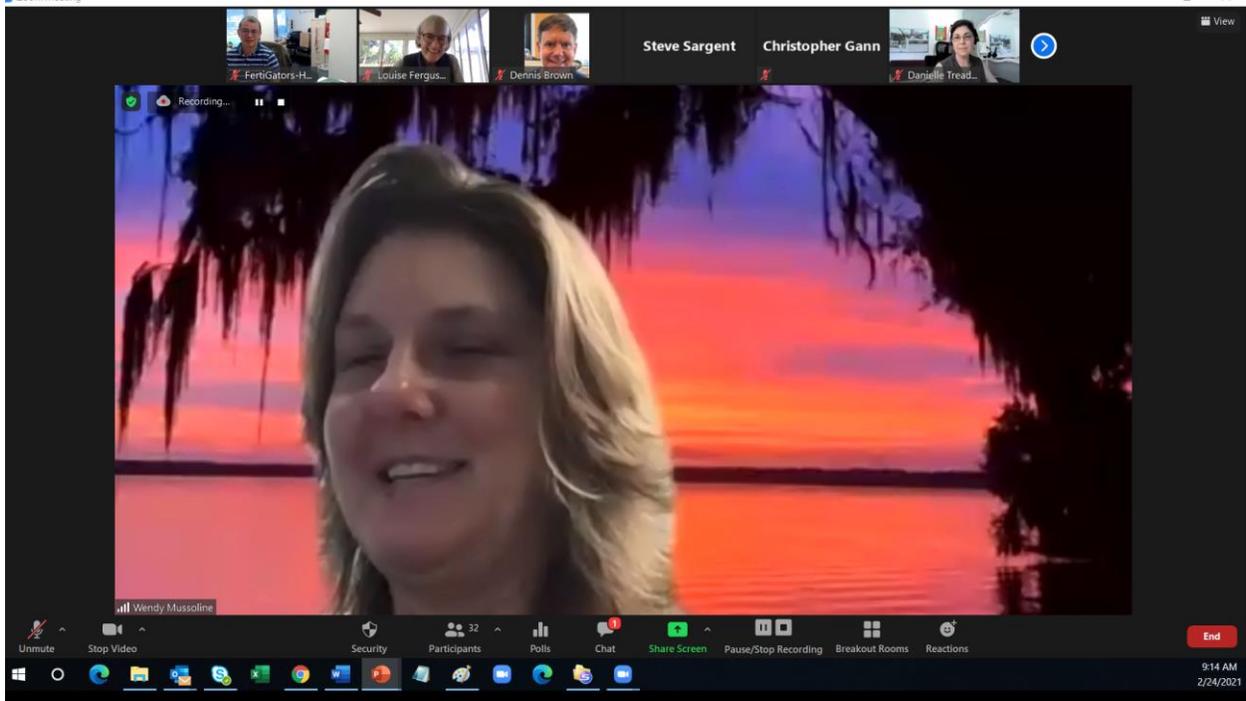
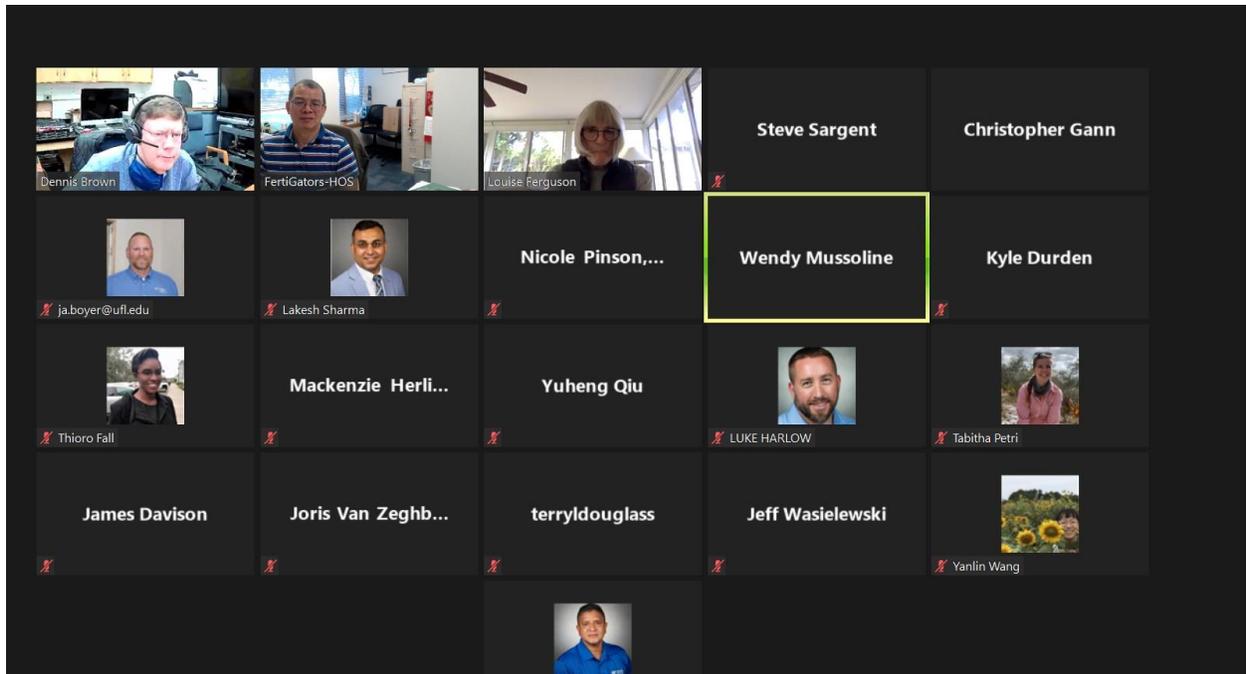
management and physiology of pistachio, heat accumulation based phenological model development of pistachio, breeding of non-caprifying fig cultivars, and mandarin introductions to California. She has coedited pistachio, table olive and citrus production manuals. She has traveled extensively for the for USAID programs in Iraq, Afghanistan, Pakistan, Egypt, and the Republic of Afghanistan. She was voted “2017 Outstanding Extension Educator” is currently President of the American Society of Horticultural Science and Core Faculty for the California Ag Leadership Foundation.

Dr. Danielle Treadwell is an Associate Professor and State Extension Specialist in Horticultural Sciences in Gainesville. Her research interests are conservation tillage, cover crop management, and nutrient management in organic and conventional specialty crop systems. She is a member of the Southern Cover Crop Council, The Organic Center’s Science Advisory Committee, and a Leadership Team Member for eOrganic, the national extension community for organic professionals. Her current research efforts include ongoing organic carrot research, cover crop management in agronomic crops and orchards, and cultural pest management in organic peach.

Dr. Mathews Paret is an Associate Professor and State Extension Specialist of Plant Pathology at the University of Florida/IFAS. Dr. Paret's primary research includes studies on the etiology and epidemiology of plant diseases of vegetables and ornamental crops, development of integrated pest management strategies for diseases of economic relevance, and detection and characterization of plant pathogens.

Dr. Ramdas Kanissery is an Assistant Professor and State Extension Specialist of weed management in the Horticultural Sciences Department at the University of Florida (UF)/IFAS and is located at Southwest Florida Research and Education Center (SWFREC). He develops weed control strategies in citrus and vegetable production with the goal of having a positive impact on crops and the environment. He also leads outreach efforts that offer weed identification, crop-safe herbicide use, and herbicide phytotoxicity diagnosis through field days, workshops, and in-service training. Kanissery has authored more than 50 research and extension publications and serves as an *ad hoc* reviewer and editorial board member for several journals.

Dr. Sarah Strauss, is an Assistant Professor and State Extension Specialist of soil microbiology at the University of Florida/IFAS Southwest Florida Research and Education Center, received her PhD at Arizona State University. Prior to her appointment at UF, she held postdoctoral positions with the USDA-ARS in Wenatchee, WA, and Davis, CA. Her research focuses on examining the interactions between soil microbial communities and crop production and utilizing that knowledge to develop effective methods to manipulate these interactions for Florida crops and soils. Since beginning her position four years ago with UF, Dr. Strauss has presented her research over 30 times to growers and scientists across the state and the US. Dr. Strauss has authored more than 20 journal publications.



Recording...

Participants (34)

Q. Find a participant

- GD Grant Davis
- JW Jeff Wasielewski (Guest)
- Jim Boyer
- Juanita Popenoe
- jwalter@ufl.edu
- Morgan Pinkerton

Invite Mute All

Chat

yes, thanks, Dennis!

From Dennis Brown to Me (Direct Message)

You're welcome!

Ok I'm headed home. You will probably have to help Louise but she should be set to go. Also she and I did a test so she is as prepared as possible.

From Me to Dennis Brown (Direct Message)

Thanks, See you soon.

To: Dennis Brown (Direct Message) File

Type message here...

18:03 AM 2/24/2021

Recording...

Participants (34)

Q. Find a participant

- JW Jeff Wasielewski (Guest)
- Jim Boyer
- Juanita Popenoe
- jwalter@ufl.edu
- Morgan Pinkerton
- OL Oscar Liburd (Guest)

Invite Mute All

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To: Dennis Brown (Direct Message) File

Type message here...

18:04 AM 2/24/2021

Recording...

David Liu jwalter@ufla... Wendy Mussoline Wael Elwakil Carlton Vining Danielle Teedwell

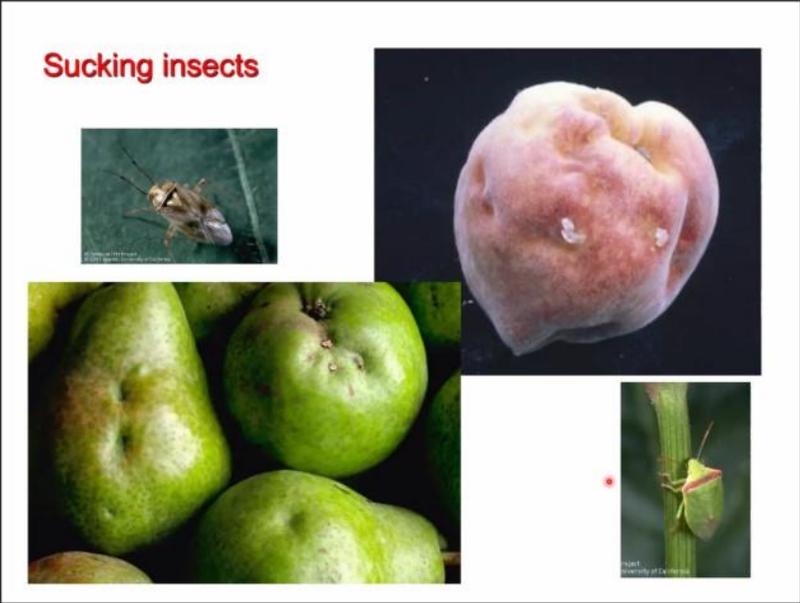


Louise Ferguson

11:01 AM
2/24/2021

Recording...

Sucking insects



Louise Ferguson

RECORD ATTENDANCE FOR IST #31893: NEW TECHNOLOGY FOR COMMERCIAL CROP PRODUCTION (IX)

On this page, you can record the attendance for the registered participants of an IST. For each registrant, mark their attendance for their session. Your changes will be saved automatically as you record each person's attendance.

Attendance Record Updated.

Please use the key below to record attendance by:

ATTENDANCE KEY

- No Response** = Unrecorded / null response
- Attended** = This person attended all portions of this session
- Did Not Attend** = This person did not attend any portion of this session
- Partially Attended** = This person attended a portion(s) of this session, but not all of it

Session #: 318931 - New Technology for Commercial Crop Production (IX)

Mark all as:	No Response	Attended	Did Not Attend	Partially Attended
Marina Amparado 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
John Albani 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
James Boyer 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Paul Buck 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Daniel Christmas 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ernest Davis 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
James DeBruin 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jonathan Gervasio 2/24/2021	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Terry Douglas 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bobbie Clenden 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wael Elwadi 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thomas Fall 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Christopher Gano 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Kimberly Glasscock 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Luke Harlow 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nebendine Herby 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Christopher Kim 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diane Liburd 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dempson Liu 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Guidone Liu 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carmelle McAvey 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wendy Murovich 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
William Nelson 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Irene Ojnowich 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sabina Pest 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Margaret Probertson 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nicole Pincus 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Suzette Poppeno 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Yuheng Qiu 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lesley Rehrlich 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Aron Rosenzweig 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marc Sanders 2/24/2021	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
German Santoveya Nivardo 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ali Sarkisash 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lakshmi Sharma 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
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John Van Zeeharsack 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carlton Vinson 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Joseph Walker 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Baron Wang 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Jeff Wasilenko 2/24/2021	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Total registered for Session #318931: 41