

REPORT

of

In-Service Training (IST#: 30932)/CEU Roundup (FDACS Program # 18465)

New Technology for Commercial Vegetable Production (III)

Conference ID: 7834030

Wednesday, February 26, 2014

Polycom from 1304 Fifield Hall to 15 host sites statewide



Dr. Steve Phillips

4R Nutrient Stewardship for Florida Agriculture

**Vegetable Grafting, an Emerging Practice for
American Vegetable Growers**



Dr. Joseph Noling

**New Technologies to study the Biology and Management
of Plant Parasitic Nematodes**



Dr. Sanjun Gu

**Improved Plastic Mulch Technology and New Fumigant
Chemistries for Soil-Borne Pest Management**



Dr. Steve Sargent

Postharvest Handling for Quality and Freshness



Dr. Joshua Freeman

G. David Liu, Fred Fishel, and Kelly Morgan
Horticultural Sciences, Agronomy, and Soil and Water Science Departments

Tuesday, April 28, 2015

REPORT

of

In-Service Training (IST#: 30932)/CEU Roundup (FDACS Program # 18465) NEW TECHNOLOGY FOR COMMERCIAL VEGETABLE PRODUCTION (III)

Wednesday, February 25, 2015

Polycom from 1304 Fifield Hall to 15 host sites statewide

Vegetable grafting, 4R nutrient stewardship, and other new techniques have been developed for vegetable and fruit production. These new techniques from both Florida and other states can improve profitability of Florida's crop producers. Five extension specialists were invited for this IST training. **Dr. Steve Phillips** is North American Program Director for the International Plant Nutrition Institute (IPNI). IPNI is a not-for-profit, science-based organization dedicated to the responsible management of plant nutrients for the benefit of the human family with a focus on improving global food security. **Dr. Sanjun Gu** is the Extension Horticulture Specialist at North Carolina A&T State University. Gu's extension program focuses on vegetable grafting techniques for vegetable and small fruit production. The three IFAS extension specialists, **Dr. Joshua Freeman**, **Dr. Joseph Noling** and **Dr. Steve Sargent** are well recognized by Floridians for years. The objective of this IST was to enhance the productivity, profitability, and sustainability in commercial crop production and minimize negative impacts on the environment, this IST training and CEU roundup were conducted and polycommed from Gainesville to 15 host sites statewide. The instructors and topics in the event included:

Dr. Joshua Freeman, [Improved Plastic Mulch Technology and New Fumigant Chemistries for Soil-Borne Pest Management](#)

Dr. Joseph Noling, [New Technologies to study the Biology and Management of Plant Parasitic Nematodes](#)

Dr. Steve Phillips/International Plant Nutrition Institute, [4R Nutrient Stewardship for Florida Agriculture](#)

Dr. Sanjun Gu/North Carolina A&M State university, [Vegetable Grafting, an Emerging Practice for American Vegetable Growers](#)

Dr. Steve Sargent, [Postharvest Handling for Quality and Freshness](#)

Based on the comments of the trainees, the new techniques presented by the specialists are "great information" and "very educational and useful" for vegetable and fruit production. Dr. Joshua Freeman addressed 1) new mulch film technology, totally impermeable film (TIF), containing multiple polymer layers that change film permeability; 2) TIF increases fumigant concentration in the soil environment; 3) this increases the effective dose and protects bystanders from offsite fumigant movement and hence, allows for significant reductions in soil fumigant use rates while maintaining pest control efficacy; and 4) each of these adds significantly to the tools available to producers. Dr. Joseph Noling 1) summarized the current regulatory situation and requirements governing use of soil

fumigants in Florida; 2) discussed the research conducted to economically evaluate differences in pest control efficacy and crop yield of a diversity of soil fumigants in large, commercial scale, field demonstration trials and their recommendations for use in a variety of crops; 3) described new fumigant application, flow metering / distribution systems, and plastic mulch installation methodologies required for low rate fumigant applications; and 4) documented the importance of traffic pans (soil compacted zones) as impediments to downward movement of soil fumigants and as a contributing cause to pest control inconsistencies. Dr. Steve Phillips introduced 1) agricultural production strategies that best combine the economic, social, and environmental expectations of various stakeholder groups, so called “best management practices” (BMPs); 2) fertilizer use BMPs aptly described as the application of “4R Nutrient Stewardship”, which is applying the right fertilizer source at the right rate, right time, and in the right place; 3) these four “rights” comprehensively convey how fertilizer applications are managed; 4) determining what is “right”, however, depends on site-specific factors including soil, climate, crop, management system, and logistics.. Dr. Sanjun Gu discussed 1) vegetable grafting greatly enhances disease resistance, cold hardiness, and yield for extended production in greenhouses and high tunnels; 2) presented the practice of vegetable grafting in the United States; 3) stated as the decline in disease-free soil due to the phase-out of fumigant methyl bromide, vegetable grafting would provide a good option for protection from soil-borne pathogens; 4) briefly covered the history of grafting, grafting methods, grafting research updates in the United States, and the resources for vegetable grafting. Dr. Steve Sargent presented 1) fruit and vegetable growers and handlers often unnecessarily experienced significant losses during harvest and handling operations; 2) these losses were outright unmarketable, but more often and more subtly, they were losses in grade – still marketable, but fetching a lower price; 3) the principles behind practical methods for maintaining highest quality produce; 4) quality parameters, harvest maturity, field and consumer containers and cooling were all covered.

There were 16 registered off-sites including some of the counties in the five extension districts. Data were collected from 14 host sites because the other two host sites were not able to submit their data. There were 17 on-site participants in Gainesville. We had 102 attendees in total. A table of contents with a complete list of the topics and hyperlinks to those topics are also available online at <http://hos.ufl.edu/faculty/gdliu/service-training#IST30932>.

Some of the registered county faculty members were not able to participate in the IST training due to time conflict. For their convenience, our IT professional, Mr. Dennis Brown, helped record this IST training and make it available online at <http://hos.ufl.edu/faculty/gdliu/service-training#IST30932>

Table 1 Summary of attendees in different host sites

#	Host Site	Location	Site Host	Attendee
1	Main Campus	1306 Fifield Hall	Guodong Liu	17
2	Citrus Research and Education Center	700 Experiment Station Rd., Lake Alfred, FL 33850	Anne Burrage	4
3	Duval Co. Ext.	1010 N. McDuff Ave., Jacksonville 32254	Terra Freeman	4
4	Flagler and Putnam County Extension	150 Sawgrass Rd, Bunnell, FL 32110-9503	Mark Warren	3
5	GCREC	14625 County Road 672, Wimauma, FL 33598	Crystal Snodgrass	2
6	MREC	2725 Binion Rd., Apopka, FL 32703	Katherine S Houben (Katherine)	3
7	NFREC	155 Research Road Quincy, Fl. 32351 (Gadsden County)	Donna M. Durgin-Fels	10
8	North Florida Research and Education Center	3925 Hwy 71, Marianna, FL 32446	Tina Gwin	9
9	Osceola Co. Ext.	1921 Kissimmee Valley Ln., Kissimmee 34744	Jessica Sullivan	2
10	Palm Beach Co. Ext.	559 N. Military Trail, West Palm Beach 33415	Frank Dowdle and Chris Miller	11
11	St. Johns Co. Ext.	3125 Agricultural Center Drive, St. Augustine 32092	Bonnie Wells	3
12	Sumter & Pasco Counties	7620 SR 471, Suite 2 Bushnell, FL 33513	Camille “Cami” E. Esmel McAvoy	6
13	Suwannee Co. Ext.	164 SW Mary Ethel Ln, Live Oak, FL 32064	Elena Toro	4
14	Tropical REC	Bldg. 8260, 18905 SW 280 St., Homestead 33031	Qingren Wang	5
15	UF/IFAS SWFREC	2685 SR 29 North, Immokalee, FL 34142	Julie A. Carson	18
16	Walton/Okaloosa Co. Ext.	732 N. 9th Street	Evan Anderson	1
	Total	102		

Analytical Methods for Knowledge Gain

Pre-and post-tests were matched by names and graded. Tests from either pre- or post-tests that had no match were not graded and discarded. No record of incomplete test pairs was kept. The same name or symbol was recorded, and both pre- and post-test grades were used to obtain means, median, and mode, standard errors, and percentage points of knowledge gain. A table (Table 2) is generated with the data.

Table 2. Statistics summary for the In-service Training event

Count of paired tests	71		Knowledge gain (percentage points)
Number of Questions	17		
Evaluation	Correct answers (%)		
	Pre-test	Post-test	
Mean	62	76	14
Median	65	76	11
Mode	76	82	6
Standard error	1.7	1.3	-

The survey result indicates that 86.6%, 94.3%, 97.2%, 69.8%, 97.2% and 92.0% of the participants are satisfied and very satisfied with time use, the topics, the presentations, the handouts, knowledge gain, and communication in this In-Service Training, respectively. The trainees estimated that the new technologies they

learned from this IST training were able to help vegetable producers save production cost of an average of \$88 per acre and increase productivity as much as \$221 per acre. Thus, the increase in total income per acre is \$309. The average acreage the trainees serve is 292 acres. The attendees also estimated that these new techniques can help them reduce water pollution issues: decrease 9 ppb nitrogen and 31 ppb phosphorus in water bodies.

Needs for potential In-service Training

The attendees are interested in future ISTs. Among the 24 topics listed on the survey for the next IST training, the participants' top two choices are:

- Disease control
- Interaction of nutrients with each other and with soil moisture, pH

The following three topics are as below:

- Soil pH management
- Pest control in organic vegetable production
- Cover crops and nematode control

Other topics in which the trainees are interested include

- Overview of commonly used commercial fertilizer blends
- Fertigation
- Fertilizer basics

Photos taken during the IST:



Photo 1. Dr. Steve Phillips is presenting at 1304 Fifield Hall.

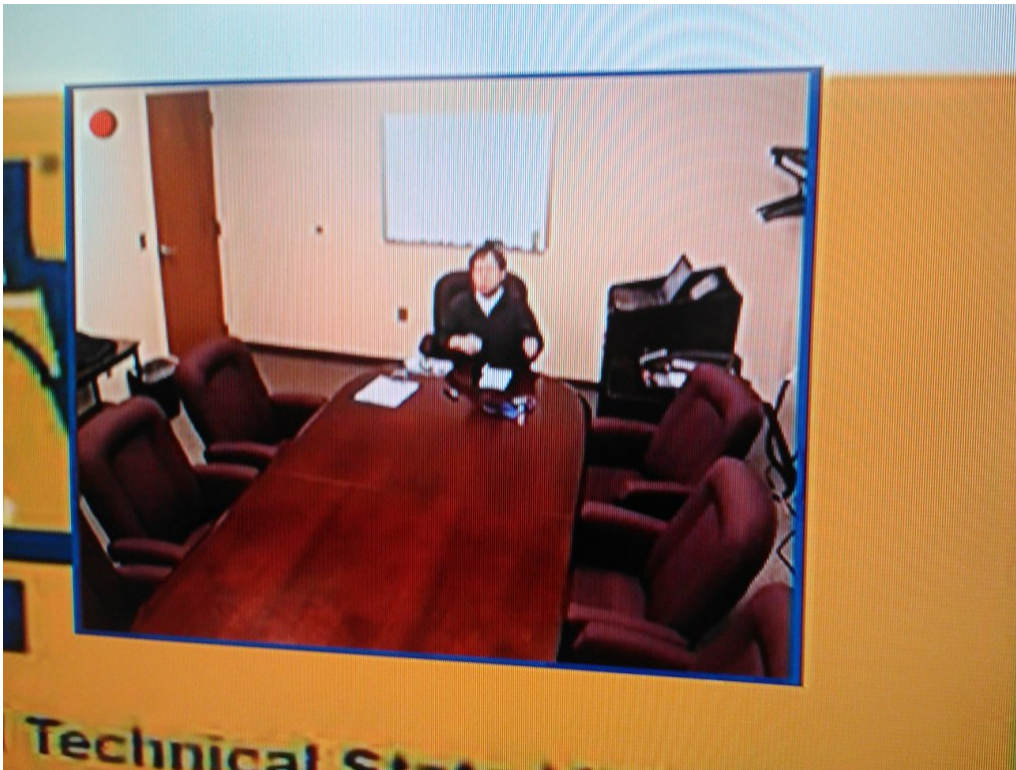


Photo 2. Dr. Sanjun Gu is presenting from North Carolina A&T State University



Photo 3. Dr. Joshua Freeman is presenting at 1304 Fifield Hall.

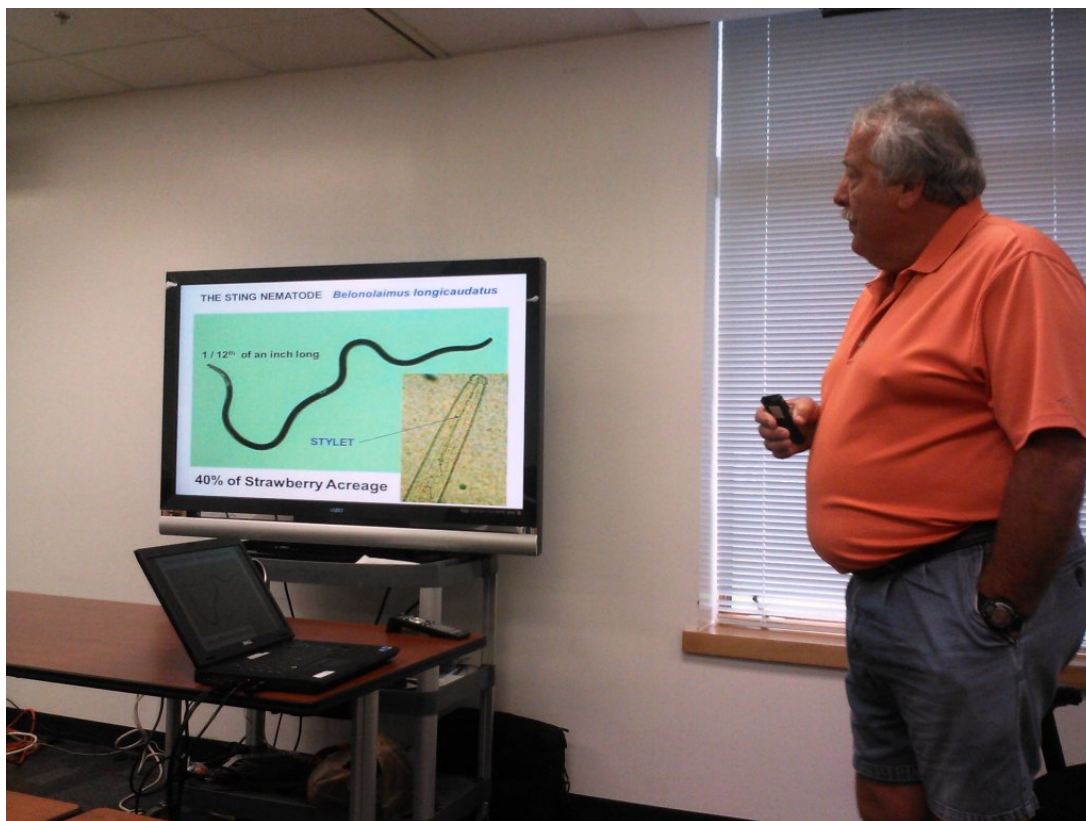


Photo 4. Dr. Joseph Noling is presenting at 1304 Fifield Hall



Photo 5. Dr. Steve Sargent is presenting at 1304 Fifield Hall.



Photo 6. The audience at 1304 Fifield Hall.