REPORT

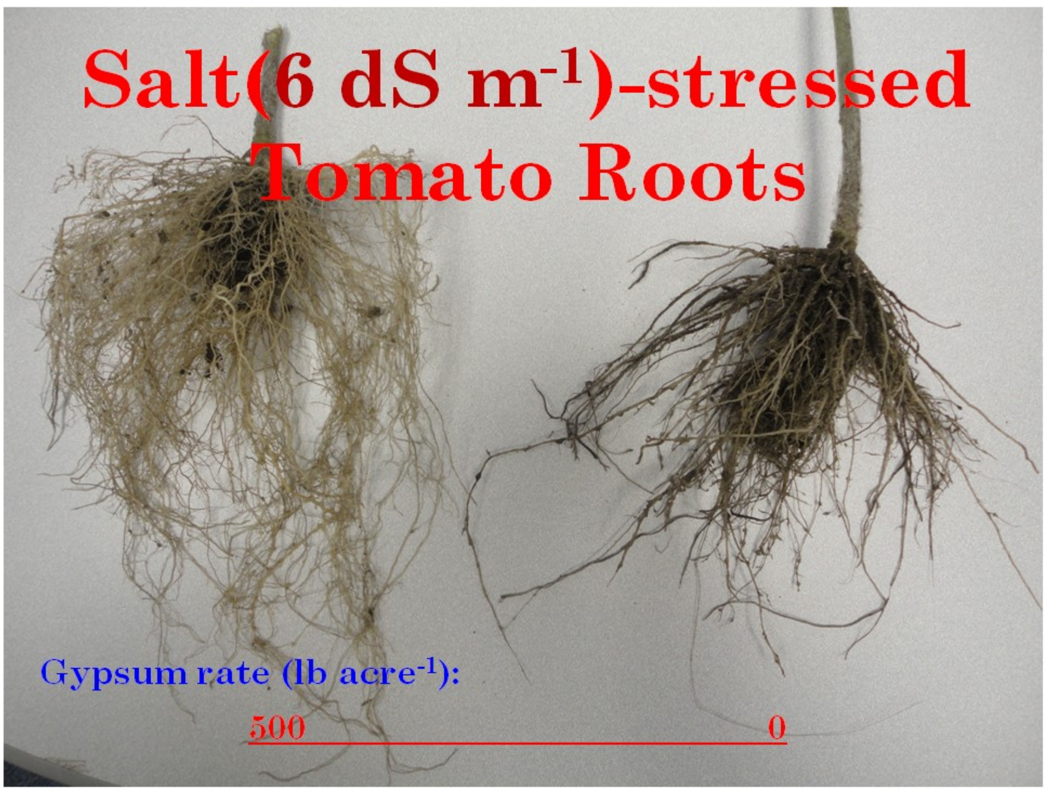
of

In-Service Training (IST#: 30688)

Strategies for Minimizing Salinity Problems and Optimizing Crop Production

Tuesday, March 26, 2013

Polycom from 595 E. St. Johns Avenue, Hastings to six host sites statewide



Reported
by

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Tuesday, April 16, 2013

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Strategies for Minimizing Salinity Problems and Optimizing Crop Production

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Polycom (Conference ID: 7832000) from 595 E. St. Johns Avenue, Hastings to six host sites statewide

In 2012, vegetable and fruit producers suffered from economic loss caused by salinity problems. Vegetable yields were reduced by 50% due to salinity in some production fields in the Hastings area. The average potato tuber yield loss was approximately $900 per acre of farm gate value. Additionally, reports of losses in broccoli, cucumber, and blueberries ranged from some yield loss in annual crops to loss of not only yield, but in the case of blueberry, entire shrubs were lost due to salinity stress. To minimize any further economic loss, we invited a salinity specialist, Dr. Stephen Grattan from the University of California at Davis and four UF-IFAS extension specialists to share their expertise in alleviating salinity problems in an In-service Training. The training was conducted in Hastings.

The instructors and topics in the IST training--Strategies for Minimizing Salinity Problems and Optimizing Crop Production included:

- Dr. Jeff Ullman – Soil Salinity in Agricultural Systems: The Basics
- Dr. Mark Clark – Sources of Salinity in Irrigation Water and Strategies to Minimize
- Dr. Lincoln Zotarelli – Fertilizer as a Source of Salinity on Potato Production
- Dr. Stephan Grattan (UC-Davis) –Strategies to Minimize Crop Loss under Saline Conditions
- Dr. Brian Boman – Managing Salinity in Florida Citrus

The new techniques presented by the specialists are helpful for growers to optimize vegetable and fruit production under saline stresses. Crops vary in their tolerance to salinity. Generally, crops are more sensitive to salinity during early vegetative growth and crop's tolerance progressively increases as the crop matures. It is imperative to monitor irrigation water salinity and soil moisture status during irrigation season. Yield loss increases with salinity level. Yield loss is approximately 10% for an increase of every 1000 parts per million (ppm) in total dissolved solids (TDS). Irrigation well depth and pumping volume can influence the degree of saltwater entrainment. Backfilling to wells and reduced pumping volumes can mitigate salinity stress. Nutrient balancing is critical to minimize salinity problems. Calcium (gypsum) can increase calcium uptake and reduce salinity issues to some extent but gypsum itself can also increase electrical conductivity (EC) and probably exacerbate saline stress if too much gypsum is applied. Growers need careful irrigation, fertilization and cropping management to deal with salinity issues.

This In-Service Training was held with polycom and video-recording at UF/IFAS Hastings Research Facility at 595 E. St. Johns Ave., Hastings, FL. There were 20 on-site participants. There were five registered off-sites including 1085 Pratt Blvd, Labelle, Hendry County Extension and 12520 Ulmerton Road, Largo, Pinellas County Extension. Two of the five off-sites reported. There were 5 off-site trainees who submitted their pre- and post-tests data. Based on the collected sign-in sheets, the trainees of this IST training covered 7 counties including Alachua County, Flagler County, Hendry County, Putnam County, Pinellas County, and St. Johns County, Volusia County. Some of the county faculty members, e.g., Gene McAvoy, had time conflicts. To help those who were interested but had time conflict to learn from this event, this IST training was video recorded by Mr. Benjamin Beach and is available online at:
http://hos.ufl.edu/faculty/gdliu/service-training#IST30688. A table of contents with a complete listing of the topics and hyperlinks to those topics are also available online.

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 total number of pairs was not compared with registration information. 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 of knowledge gain. A table (Table 1) is generated with the data.

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

Count of paired tests	11		Knowledge gain (%)
Number of Questions	11		
Evaluation	Correct answers (%)		
	Pre-test	Post test	
Mean	36	64	28
Median	36	63	27
Mode	36	63	27
Standard error	3.0	4.5	-

The survey result indicates that 93% of the participants are satisfied and very satisfied with the topics, time use, presentations, knowledge gain, 85% with communication; and 90% with the handouts in this In-Service Training. The trainees estimated that the new technologies they learned from this IST training was able to help vegetable producers save production cost as much as $50.5 per acre and increase productivity as much as $138.0 per acre.

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 three choices are:

- Interaction of nutrient with each other and with soil moisture, pH
- Importance of timing and placement of fertilizers for vegetables
- Optimization of fertilization

The following three topics have got an identical preference:

- Overview of commonly used commercial fertilizer blends
- Fertilizer basics
- Water quality and salinity control

Photos taken in the In-service Training

Photo 1. Trainees are concentrating in the IST training.

Photo 2. Dr. Steve Grattan is presenting.