

from differential virus resistance in tomato rootstocks and scions was reported in Japan. This has not been of significant concern in the US where interest in grafting is relatively new. In most cases, commercial tomato scions are resistant hybrids and have ToMV resistance. The problem has arisen when ToMV-resistant rootstocks (having allele combinations of Tm-2/Tm-2 and Tm-2a/Tm-2a) are grafted with susceptible (Tm-1 or tm) scions. In the case of the field trial using grafted 'heirloom' tomatoes where the rapid wilt occurred, scions were homozygous susceptible and the rootstocks were homozygous resistant with Tm-2/Tm-2 genotype. Recent work has confirmed that, particularly with grafting of 'heirloom' tomato scions to commercially-available tomato rootstocks, it is important to select a rootstock that has the same resistance alleles as the scion, or has the Tm-1 gene, which appears to prevent the wilt regardless of the scion resistance status. The wilt only occurs when plants become infected with the virus. It has become standard practice in the Japanese market to provide ToMV compatibility information, but this has not been the case in the United States, where the grafted tomato market is just beginning to grow.

3:05–3:25 PM

Toward More Effective Selection of Tomato Rootstock and Scion Varieties for Use in U.S. Soil-Based Production, Including Organic

Bizhen Hu

The Ohio State University

Jennifer B. Moysenko

The Ohio State University

Stephanie Short

The Ohio State University

Sonia D. Walker

The Ohio State University

*Matthew D. Kleinhenz

The Ohio State University

North American propagators and fruit growers look ever more often to preparing and using grafted tomato plants to enhance income potential. Selecting rootstock (RS) and scion (Sc) variety combinations is the first step in that process. Scientists also gain from choosing varieties reliably. The technical and lay literature, however, currently satisfy neither community. Our goal has been to develop decision aids through rigorous documentation beginning at seeding and concluding with post-harvest fruit quality assessment. Our most recent effort involves 18 RS and 5 Sc varieties (90 combinations). Seedling growth rate, graft success, grafted plant vigor and fruit yield are being recorded at OARDC and by grower-cooperators in thirteen states. Varieties were chosen based on grower input, market type and reported traits. Seedling growth and grafted plant vigor are monitored directly and indirectly using destructive and non-destructive measures. Graft success and grafted plant yield are assessed using standard protocols. Data are analyzed to account for variation assigned to variety combination, grafter and date of grafting, location of yield test and other sources. Narrowly, the data will help identify

combinations among the ninety tested that: a) can be grafted most effectively, b) resume growth most quickly after grafting and c) maximize fruit yield. More widely, the effort will also help establish protocols for high-throughput assessment of the large and growing number of possible RS-Sc variety combinations on farms and within research-extension programs.

3:25–3:45 PM

Grafted Tomato Production Under Different Planting Densities

*Xin Zhao

University of Florida

Zack Black

University of Florida

Jason Neumann

University of Florida

Given the improved vigor of grafted vegetable plants, reducing plant population in field production has been proposed to lower the cost of using grafted plants. In this study, grafted tomato trials were performed during Fall 2013 and Spring 2014 in certified organic field in Citra, FL, under five in-row spacing treatments including 0.46, 0.61, 0.76, 0.91, and 1.07 m, with a constant between-row spacing of 1.83 m. Determinate tomato scion 'Tribute' was grafted onto two commercial tomato rootstocks 'Multifort' and 'RST-04-106-T', respectively. Non-grafted 'Tribute' was included as the control. The experiments were arranged in a split-plot design with plant spacing as the whole-plot factor and grafting as the subplot factor. In addition to fruit yields, root-knot nematode (RKN) galling was evaluated due to the natural RKN infestation in the field. Results from this two-season study will be discussed to explore the feasibility of modifying the planting density in field production of grafted tomatoes for improving economic returns.

Tuesday, July 29

1:45–3:45 PM

Nuts and Bolts of Postharvest Shipping Around the World

Sponsor: Postharvest (PH) Working Group

Moderator/Coordinator: John C. Beaulieu, John.Beaulieu@ars.usda.gov

Today, consumers demand fresh, local, regional, national, tropical, and exotic produce to be on the grocer's shelf, 365 days a year. Local and national sourcing of "in-season" produce is often simple and uncomplicated in comparison to importation of peak production of high quality produce, aligned with low domestic production. There are several important aspects regarding the successful acquisition of imported perishables arriving safely and in optimum quality to the grocer's display case. In this workshop we will present a logistical overview of the intricacies and postharvest problems often encountered with international cargo shipments of fresh produce. Focus will be on ship and air freight of containers routinely moved in/out and through international ports. Four speakers will discuss strategies and

An asterisk (*) in front of a name indicates the presenting author.