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NOTICE:

- ✓ Upcoming field day:
- ✓ Grafted plants
- ✓ New varieties
- ✓ Deficit irrigation trial
- ✓ F3 and TSWV notes

UC Cooperative Extension Merced County Fresh Market Tomato Field Day

Tuesday, Aug 8, 2017

9:00 am - noon

Le Grand Rd and Burchell Ave

(take field road south of Le Grand road about ¼ mile)
Le Grand, California

Lunch provided for the first 30 participants. Refreshments and shade for all.

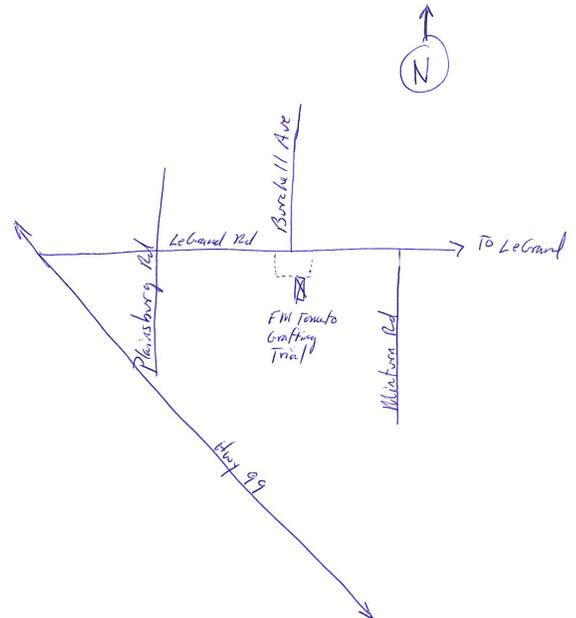
A field day to view a CDPR sponsored fresh market tomato grafting trial with 3 rootstocks and 4 scions (QualiT-27, QualiT-47, QualiT-99, and HM1794). Additionally, there is a CDFA fresh market tomato deficit irrigation trial to look at and observe the impact of late season irrigation stress. This is an "open" field day for you to drop by if you have the chance. Hope to see you there.

Special Thanks:

Live Oak Farms
Growers Transplanting Inc.
CA DPR
UC Davis
UCCE San Joaquin Co.

Scott Stoddard
Farm Advisor

Happy Harvesting



July, 2017

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Fusarium and TSWV

Scott Stoddard and Tom Turini, University of California Cooperative Extension Advisors in Merced and Fresno Counties

Fusarium diseases in tomatoes are becoming more common in Central California. Fusarium wilt race 3, or just F3 as it commonly called, has become especially problematic since 2014. The pathogen was probably introduced to these fields on infested soil and/or infected plant material prior to 2014. There are three main types of Fusarium that attack tomatoes, Fusarium Wilt, Fusarium Crown and Root Rot, and Fusarium Foot Rot, however, F3 has caused the most problems.

Fusarium wilt of tomato caused by *Fusarium oxysporum f.sp. lycopersici*

Fusarium wilt of tomato is not new to Merced County, but genetic resistance to Fusarium wilt Race 1 and 2 in most processing and fresh market tomato varieties protected the crop for decades. However, Race 3, which had previously been documented in Florida and in Northern California, was found in 2008 in one field, and has increased annually ever since. It is now in all areas of the county where tomatoes are produced. Race 3 has two forms that are genetically distinct: a Florida strain and a California strain. Both cause the characteristic Fusarium wilt symptoms of vascular discoloration in stems, leaf yellowing, plant collapse and death. Symptoms are initially observed about 50 to 60 days after transplanting.

Fresh market cultivars have been impacted less by F3 than processing tomatoes, mainly because fresh market tomatoes are typically harvested in 80 - 90 days and are picked before the disease causes significant problems. However, in high pressure fields, symptoms can occur as soon as 30 days after transplanting, which will reduce yield and

significantly increase sunburn. There are currently no F3 resistant semi-determinant fresh market varieties available for the California market.



Limit spread of the fungus

The Fusarium pathogen is a soil-borne fungus that survives on the roots of many plants and weeds in the absence of tomatoes. It also produces survival spores that can rest in the soil for years until a susceptible variety is planted. Any movement of soil off an infested field by equipment can then move into another field and may result in the contamination of that field. Furthermore, if shoots or stems that are colonized by the Fusarium wilt pathogen are moved into a field, the risk is even greater since the concentration of inoculum in these infected stems is much higher than in the soil. These spores are then spread throughout the field with tillage practices. With F3, it can take as little as 3 years for the disease to cause significant reduction in yield. Cleaning equipment between fields, especially harvesters and trailers, may help reduce the introduction and spread of this disease to new fields. Once F3 has been introduced to a field, however, variety resistance is the best method to control this disease.

Tomato Spotted Wilt in TSWV resistant cultivars

We continue to find TSWV infected plants in resistant varieties in both Merced and Fresno Counties. Last year this occurred only in fresh market varieties, but in 2017 it is occurring in both fresh market and processing fields. Any amount greater than 2% is cause for concern, as it suggests the virus may be developing resistance to the Sw-5 gene. Testing by UC Davis Plant Pathology Specialist Robert Gilbertson has shown a molecular difference between a resistant and wild-type strain: of 66 samples from Fresno County, 73% were found to be resistant-breaking.

Resistant varieties are still an effective way to manage this disease, and there is no indication that resistance has become widespread or poses a huge threat to the industry. Along with variety selection, thrips management continues to be an important component of TSWV management. Foliar programs are most effective when applied during the 2nd and 3rd generation of thrips, which typically occurs in May and June in the Merced area. See http://ipm.ucanr.edu/PDF/PMG/Tomato_Spotted_Wilt_Print.pdf, and http://ucanr.edu/sites/TSWVfieldriskindex/Thrips_Population_Projections/Merced/ for more information.