

2018 Farm Call Summary

Disease	Crop	# fields
Fusarium wilt	Processing tomato	17
Fusarium crown and root rot	Processing tomato	2
	Watermelon for seed	1
Potyviruses (Watermelon mosaic, zucchini mosaic, etc.)	Honeydew	1
	Pumpkin	1
Squash mosaic virus	Cantaloupe	1
Verticillium wilt	Processing tomato	1
	Fresh-market tomato	1
Alfalfa mosaic virus	Processing tomato	1
Southern blight	Processing tomato	1
Bacterial canker	Processing tomato	1

Disease Highlight: Verticillium wilt, *Verticillium dahliae*

Verticillium wilt can be easily confused with Fusarium wilt (diagnosis can be confirmed by growing out the fungus in a lab) and occurs in all tomato growing regions. Severity of symptoms and impact on yield can vary between locations and year-to-year. The disease is favored by cool soil and air temperatures. Verticillium wilt rarely kills tomato plants but reduces vigor and yield. As the disease progresses, older leaves develop yellow, V-shaped/wedge-shaped lesions that narrow from the margin (top left photo), leaves turn brown and die (top right). Older and lower leaves are the most affected. A brown discoloration develops in the vascular tissue (bottom photo), near the base of the plant. Symptoms are most noticeable during fruit sizing. The fungus survives as microsclerotia in the soil. Once established in a field, it persists indefinitely and can cause disease whenever a susceptible crop is planted. Over 200 crops and weeds serve as hosts.



To manage Verticillium wilt, try to use resistant cultivars. Unfortunately, resistance is only available for Race 1 and there is no commercially available source of resistance for Race 2. Sanitation is key to help slow the spread of Race 2, especially washing equipment to prevent movement of infested soil. Removing and destroying plant debris may also reduce the level of Verticillium wilt in the soil. Rotation can be useful, but the fungus has a wide host range so options are limited. Planting small grains/corn and removing nightshades and other common weeds that serve as hosts may also reduce disease levels in the soil (Compendium of Tomato Diseases 1991; UC-IPM Pest Management Guidelines for Tomato; Photo credit: Jack Kelly Clark, UC Statewide IPM Program).

2018 Research Progress

- Healthy soils project
- Cucumber beetle trapping
- Southern blight monitoring

Multisite demonstration of conservation management practices for soil health and greenhouse gas emissions reduction

→ **SAVE THE DATE! COVER CROP AND SOIL HEALTH FIELD DAY DECEMBER 6, 2018! 9am-11am**



UCCE Agronomy Advisor, Sarah Light, and myself are wrapping up the first year of a 3-year statewide Healthy Soils Demonstration Project supported by CDFA. This project includes a cover crop demonstration and research site on a farm in Sutter County in addition to two other sites statewide (San Joaquin and Merced County). We are evaluating the impact of cover crops to soil health and annual production in the region. We have taken baseline soil samples at our site in Meridian, CA, which was previously planted to wheat. After compost application, we will plant a purple vetch cover crop. Our plots will consist of a control (no cover crop), a low seed rate of the vetch, and a high seed rate of the vetch. The next two years of the project will include a vetch cover crop between corn and tomato rotations. We will take soil samples each year in

addition to looking at pest pressure from diseases, insects, and weeds. Greenhouse gas emissions and infiltration are also being evaluated throughout the project, specifically before and after "events" such as rainfall, irrigations, fertilizations and tillage operations.

Our first of three field days is **December 6, 2018, 9am-11am!** Please save the date! Details, directions and an agenda will be sent out in November. We look forward to seeing you there! Contact Amber (acvinchesi@ucanr.edu) or Sarah (selight@ucanr.edu) with any questions.

Insecticide screening and cucumber beetle biology and movement in fresh-market melons

In the Sacramento Valley, both the western striped cucumber beetle, and the western spotted cucumber beetle have been serious pests of fresh-market melons since the 1980s. Because of direct damage to fruits, the western striped cucumber beetle is the most important species to growers and PCAs in the Sacramento Valley.

Attract-and-kill traps were set up in 8 fresh-market cantaloupe and honeydew fields in the Sacramento Valley in July 2018 (right photo). These traps were modeled after a successful cucumber beetle trapping study done by Lincoln University in Missouri. These gallon jug traps contained a floral-based lure to attract the beetles and an insecticide-treated net to kill them. Unfortunately, the traps have had poor success in catching cucumber beetles, even though beetle pressure was severe in the cantaloupe fields. This is likely due to the large scale of production in our area and not having enough traps in each field.





Emergence traps were placed in the fields prior to bloom and around plants with cucumber beetle feeding damage. These traps have a jar at the top to catch any insects that emerge from the soil (left photo). Unfortunately, these traps were also unsuccessful at capturing emerging cucumber beetles. The vines grew up into the jars and no beetles were captured emerging from the soil under the traps. We could only place these traps prior to bloom, so they did not prevent honey bees from pollinating the melon flowers.

New studies will be conducted on cucumber beetle life cycles, overwintering patterns, and trapping in 2019.

Monitoring southern blight prevalence in Colusa County

Southern blight is a destructive crown rot disease that rapidly kills tomato plants. The combination of late planting dates and record high temperatures in 2017 created unusually favorable conditions for the pathogen in the Sacramento Valley (C. Swett). The objective of this research was to quantify southern blight spread and impact in annual rotations in the region.

Nine fields in Colusa County were sampled in May 2018 to determine baseline southern blight levels in the soil. These fields were previously in tomato with confirmed southern blight in 2017. Rotational crops in 2018 were corn, sunflower, and cucurbits. Sunflowers and cucurbits (hosts for southern blight) were checked for symptoms every two weeks starting in June 2018 once the outside temperature reached 90°F for seven consecutive days. The fields were sampled again in August and September 2018 to determine if southern blight levels in the soil had increased. The end-of-season soil samples are currently being tested in the Swett lab for southern blight microsclerotia. The assay of the soil and white fungal growth can be seen in the photo to the right (photo credit: C. Swett). Final results will be shared in a future newsletter.



Southern blight has not proven to be a large issue in 2018 since environmental conditions were not ideal for disease development, though it still remains a concern in our area if future growing seasons resemble 2017 conditions.

Cassandra Swett, Field and Vegetable Crop Pathology Extension Specialist, and Agronomy Advisor, Sarah Light, are collaborators on this project.

Please feel free to contact me with any vegetable crop issues in the field, questions or comments, or to subscribe to this newsletter electronically.

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