UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources

Vegetable Views

Stanislaus County

Fall 2025

2025 Vegetable Pest Updates

Processing Tomatoes

Viral and fungal pathogens

For the 2025 season, we observed a relatively higher incidence of beet curly top virus in processing tomatoes compared to the past two seasons. However, most fields had minor percentages of infection with mild symptoms, which were not supposed to impact yield. The earliest report of symptoms came in the first week of May, and more infested fields were observed through June and early July (Figure 1). Check the CDFA Beet Curly Top Virus Control Program https://www.cdfa.ca.gov/plant/ipc/curlytopvirus/ctv_hp.htm to view Grower Alert, monthly, and weekly reports. As the season progressed, we began to see symptoms of other pathogens on tomatoes, such as Fusarium wilt Race 3 on F2 cultivars and Fusarium stem rot and decline (FRD), which is a relatively new disease in processing tomatoes. From the latest PTAB (https://ptab.org/reports25.htm) report, over 70% of varieties grown in Stanislaus County are F3 cultivars, which should be resistant to Fusarium wilt Races 1-3. For FRD, symptomatic plants were sampled and submitted to the Swett Lab at UC Davis for diagnosis. See the next article from Dr. Brenna Aegerter about the introduction of FRD in processing tomatoes.

Parasitic weed - Broomrape

As the parasitic weed, Broomrape, continues threatening the California tomato production, the current control measurement is to avoid planting in the fields with known or suspected problems of this A-rated (state-regulated) weed (Figure 2). Although Stanislaus County is presently not an infested area for tomatoes, you may want to be aware of its damage, program compliance, and cutting-edge research on management practices conducted by UC Davis, CTRI, and CDFA, including herbicide tactics and host resistance, among other practices. Refer to the CTRI website for grower resources: https://tomatonet.org/grower-resources/broomrape-resources/. You can also contact me for a field visit. Without any regulatory role, I provide information and help with program compliance.

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Watermelons

Spider mites that were a big issue for watermelons in the last couple of seasons were much less detected in 2025. The main damage of spider mites is the destruction of chlorophyll by feeding (Figure 3). Larvae, nymph, and adults can all create foliar damage by sucking plant sap and chlorophyll from underside leaves. Non-chemical controls include dust and weed management in and at the edge of cucurbit fields, avoiding plant water and nutrient stress, and migration control – stop mowing weeds that are known for infestation with spider mites. Check UC IPM for more details of management strategies including pesticides (https://ipm.ucanr.edu/agriculture/cucurbits/spider-mites/#gsc.tab=0).

In July, we visited two grafted watermelon fields and saw plant symptoms of crown and root rot (Figure 4). Plants also had severe decline with leaf chlorosis and necrosis. Plants were sampled, and diagnosis is underway by the Swett Lab. More details will be provided in a future newsletter when diagnostic results are ready. It is noteworthy that although most cucurbit rootstocks have resistance to Fusarium wilt, very few can resist Fusarium crown and root rot, which is one of the possible causes in this case. One of the effective ways to know disease resistance of cucurbit rootstocks is to check the commercial cucurbit rootstock table, which is accessible after filling out information (http://www.vegetablegrafting.org/resources/rootstock-tables/cucurbit-rootstocks/).

Figure 1. Tomato plant infected by curly top virus (Photo taken on May 16, 2025).

Figure 2. Flowered parasitic Broomrape in tomato plants (Photo credit: Matthew Fatino; article link https://ucanr.edu/blog/uc-weed-science-weed-control-management-ecology-and-minutia/article/potential-threat-branched).

Figure 3. Spider mite feeding damage on watermelon leaf. Notice the discoloration caused by damage on chlorophyll (Photo taken in August 2024).

Figure 4. Symptoms of crown rot in grafted watermelon plants (Photo taken on July 17, 2025).

Fusarium Stem Rot and Decline (FRD) in Processing Tomatoes

By Brenna Aegerter, Vegetable Crops Advisor, UCCE San Joaquin County

Fusarium stem rot and decline (FRD), which has also been called Fusarium falciforme, is a relatively new problem in processing tomatoes in California. It can be caused by two different Fusarium pathogens Fusarium noneumartii and Fusarium martii (both are in the Fusarium falciforme group, which we used to call Fusarium solani). These pathogens are quite different from the Fusarium that causes Fusarium wilt, both in terms of the symptoms it causes and its host range. However, there are some similarities between Fusarium wilt and FRD – both pathogens can carry over in the soil and can be spread anyway that soil or infected tomato debris moves between fields.

Symptoms

Aboveground symptoms can vary but may include foliar chlorosis, necrosis and small leaves (Figures 1 and 2). Belowground, the fungus is often found to be causing a rot of the below-ground stem, which can extend up the stem as it progresses. There may also be lesions on the root, but often there are still healthy roots as well. Some of the foliar symptoms are thought to be due to a toxin produced by the fungus, with the toxin moving systemically throughout the plant. The disease often progresses slowly and is not apparent until the fruit ripening period, when foliar symptoms appear and vines may begin to die. By the time vines are dying, it can be hard to do a field diagnosis and separate it from other causes of vine death (Fusarium wilt, Southern blight and others). For this reason, a laboratory-based diagnosis, ideally done from plants that are not yet dead, can be very useful information to guide future management decisions. The UC Farm Advisors can help you get a laboratory-based diagnosis via UC Davis.

Management

Equipment sanitation. Try to prevent disease spread between infested and clean fields by cleaning equipment of soil and crop debris and consider the use of a sanitizer on high-risk equipment such as harvester. For more information on equipment sanitation, see https://tomatonet.org/wp-content/uploads/2025/07/Field-Equipment-Sanitation-Best-Management-Guidelines.pdf (this sanitation guidance is for broomrape seed spread, but also helps with spread of soil-borne disease inoculum).

Crop rotation. Rotation out of host crops can reduce disease pressure over time. Aside from tomato, other hosts include potato, safflower, sunflower, carrot, cilantro, pumpkin and beans. Not all these crops are impacted by the disease, but they can support the reproduction of the fungus and therefore perpetuate the problem and increase the risk to future tomato crops. Growing non-host crops (e.g. corn, alfalfa, wheat, garlic, onion, or melon) for a year or more allows time for the fungal survival structures in the soil to die off. The longer time out of host crops, the lower the disease pressure should be, with the caveat that some weeds can support reproduction of the pathogen – so crop rotation is not always as effective as we might hope.

Minimizing other stress factors. To some extent, stress is impossible to avoid when it is due to hot weather or soil factors not under your control. In fields with foliar symptoms of FRD, you can help the vines reach the finish line by avoiding additional stresses such as severe irrigation cutoffs or high rates of ethephon. If fruit are exposed due to vine decline, sunburning and black mold can set in on fruit.

Variety selection. Many of our commercial processing tomato varieties have resistance to Fusarium wilt race 3 and a few varieties have resistance to Fusarium crown rot (e.g. HM varieties 0371, 5522, 5511, 8237 & 8507; SVTM varieties 9018, 9021, 9025 & 9032 and H varieties 2354, 2355, 2365 & 2476). However, neither of these resistance traits seem to help with this newer Fusarium disease. However, we do see a range of susceptibility to the disease - some varieties seem to yield well despite being infected. This yield tolerance is in part due to resistance to the fungus and part due to having the extended field holding trait – if vines decline late in the season but the fruit resist mold and breakdown. The results below are from a project in collaboration with Patricia Lazicki, Farm Advisor in Yolo, Solano and Sacramento counties, and the seed retailer AgSeeds. We have been evaluating commercial and pre-commercial varieties for susceptibility to FRD vine decline and machine harvested yield. We acknowledge the generous cooperation of AgSeeds, the grower-cooperators, and the Swett lab at UC Davis.

Replicated field trials were established by Ag Seeds in commercial production fields in the southern Sacramento Valley (Yolo, Colusa and Sutter counties) and the northern San Joaquin Valley (San Joaquin County). All fields were 60" single row bed configuration and sub-surface buried drip irrigation. Plot length varied by the trial, but was generally 75 to 100 ft, with three replicates of each entry. The primary disease metric that we are using is advanced decline (percentage of plant dead or nearly dead) just prior to harvest. Symptomatic plants were sampled near harvest and submitted to the Swett lab for laboratory diagnosis. For the yield trials, plots were machine harvested using standard grower practices. From the eight evaluated, six are presented here - two were eliminated because there was too much disease pressure from other diseases in the trial.

Figure 3 combines the results on performance of the 24 common entries in the six trials, with the entries listed in order of average yield in these trials. Varieties exhibiting the fewest plants with advanced vine decline include HM 8237, LS 0681 and SVTM 9040. The highest yielding varieties often had low vine decline, but there were some exceptions such as SVTM 9041 and HM 58841 which yielded well despite moderate levels of vine decline (both have EFH trait). The varieties with the highest rates of vine decline were always associated with lower yield, although several of these varieties are known to be high yielding in the absence of disease.

Figure 1. Chlorosis in vine at left due to FRD (Photo credit: Brenna Aegerter).

Figure 2. Leaf symptoms (chlorosis, small leaflets, curling, and necrotic speckling) (Photo credit: Brenna Aegerter).

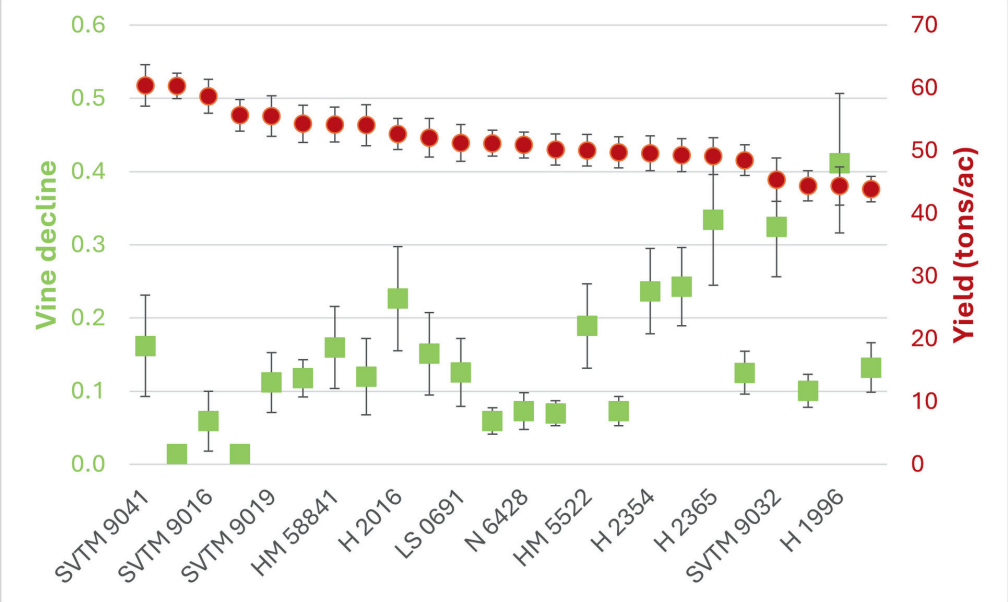

Figure 3. 2024 machine harvested yield trials conducted by AgSeeds. Mean of six variety trials in commercial fields with disease pressure from Fusarium stem rot and decline (FRD). Other diseases were also present at some locations. Error bars represent the standard errors of 18 observations (3 replicates in each trial x 6 locations).

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