

Processing tomato variety evaluation in fields with Fusarium stem rot and decline (FRD)

Adapted from May 2025 UCANR San Joaquin County, *Notes From the Field*, Brenna Aegerter

Most commercial processing tomato varieties carry resistance to Fusarium wilt race 3, and some (e.g. HM varieties 0371, 5522, 5511, 8237 & 8507; SVTM varieties 9018, 9021, 9025 & 9032 and H varieties 2354, 2355, 2365 & 2476) are resistant to Fusarium crown rot. However, there is currently no known resistance to Fusarium stem rot and decline (FRD) among commercial lines. That said, varieties differ in susceptibility - some maintain good yields despite infection, thanks to partial resistance and traits like extended field holding, which helps fruit resist breakdown even as vines decline late season.

The results below come from ongoing evaluations of commercial and pre-commercial varieties for FRD tolerance and machine-harvested yield, conducted in collaboration with Patricia Lazicki (UCCE), AgSeeds, local growers, and the Swett Lab at UC Davis.

AgSeeds conducted replicated field trials in commercial fields across Yolo, Colusa, Sutter, and San Joaquin counties using 60" single-row beds with subsurface drip irrigation. Plots (75–100 ft) were replicated three times per entry. The main disease measure was advanced vine decline (% of plants dead or nearly dead at harvest). Symptomatic plants were collected near harvest and diagnosed by the Swett lab. Yield plots were machine harvested following standard grower practices. Of eight varieties evaluated, six are shown here; two were excluded due to interference from other diseases.

Figure 1 summarizes results from 24 common entries across six trials, ranked by average yield. HM 8237, LS 0681, and SVTM 9040 had the lowest levels of advanced vine decline. Top-yielding varieties generally showed low decline, though some - like SVTM 9041 and HM 58841 - yielded well despite moderate decline, likely due to their extended field holding (EFH) trait. Varieties with the highest decline consistently had lower yields, even if they perform well in disease-free conditions.

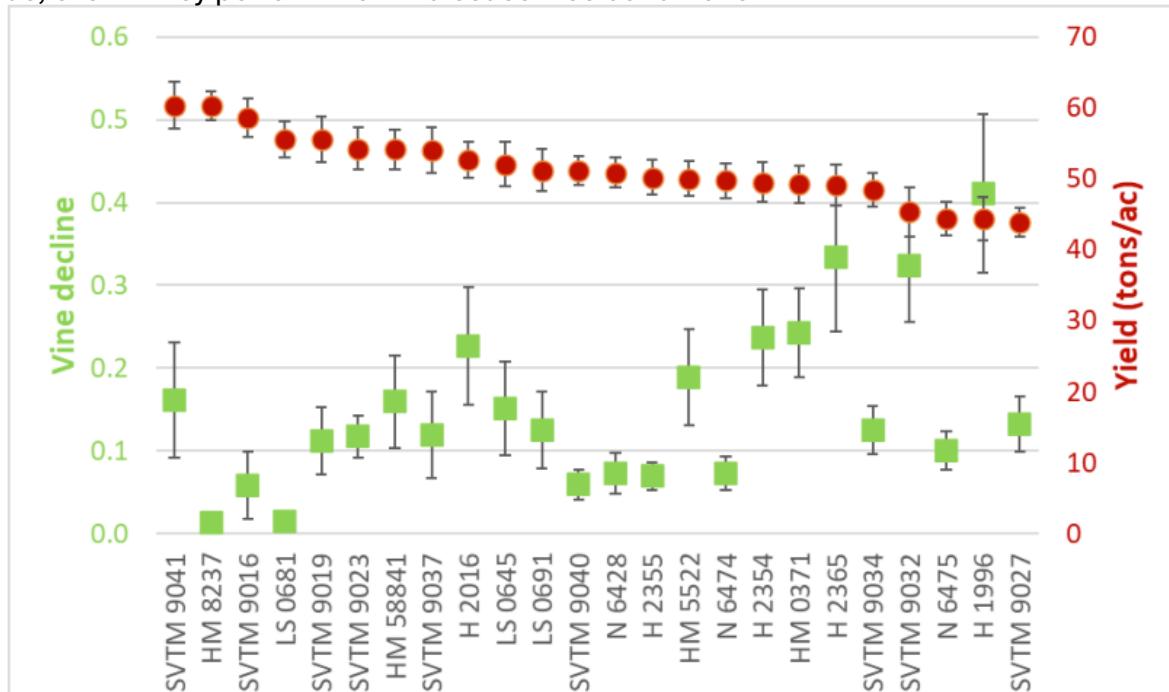


Figure 1. Mean of six locations of AgSeeds processing tomato variety trials in commercial fields with disease pressure from Fusarium stem rot and decline (FRD). Other diseases also present at some locations. Error bars represent the standard errors of 18 observations (3 replicates x 6 locations).