Evaluation of strawberry host resistance to Fusarium wilt, Guadalupe, CA, summer 2025

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The trial was conducted in Guadalupe, CA, in an organically farmed commercial strawberry field. It was conducted as a pilot study to determine the feasibility of evaluating host plant resistance to *Fusarium oxysporum* f. sp. *fragariae* race 1 (*Fof*), the causal agent of Fusarium wilt. The field consists of naturally infested sandy soil with a history of Fusarium wilt. The field was managed by the grower using standard industry-growing practices for the Santa Maria growing district. Bare-root transplants were planted in raised beds on 31 May 2025. A limited number of cultivars with known levels of resistance to Fusarium wilt were included: five cultivars considered to be Fusarium wilt-resistant (Portola, Eclipse, San Andreas, Artesia, and Alturas) and three Fusarium wilt-susceptible cultivars (Monterey, Cabrillo, and Sweet Ann). Plants were arranged in 65-ft sections across eleven beds. Within each 65-ft section, a 17-ft section, containing 50 plants, was selected to assess plant mortality and disease severity. Beds were 64 in. between row centers with four lines of plants and three lines of drip tape per bed. Plots were replicated four times in a randomized complete block design. Disease severity and plant mortality were recorded every two weeks, from 11 June to 12 November. In September, 10 plants were collected and diagnosed using molecular methods, confirming *Fof* as the causal pathogen. For plant mortality counts, plants were considered "dead" once 100% of the foliage was necrotic. For disease severity, a 1 to 5 scale (1=healthy and 5=dead) was used (data not shown). Data were analyzed using Fisher's LSD mean separation test and analysis of variance using ARM version 2026.0.

Differences in susceptibility to Fusarium wilt were observed among cultivars and were consistent whether measured as disease severity or final plant mortality. 'Eclipse', 'Artesia', 'San Andreas', and 'Alturas' displayed the lowest disease severity and mortality (Fig. 1). 'Portola' and 'Cabrillo' showed intermediate mortality percentages. Portola is often considered a resistant cultivar, and Cabrillo is considered susceptible. In this trial, they performed similarly in mortality, but differed significantly in disease severity, with Portola showing lower susceptibility (1.4/5) to Fusarium wilt than Cabrillo (2.1/5).

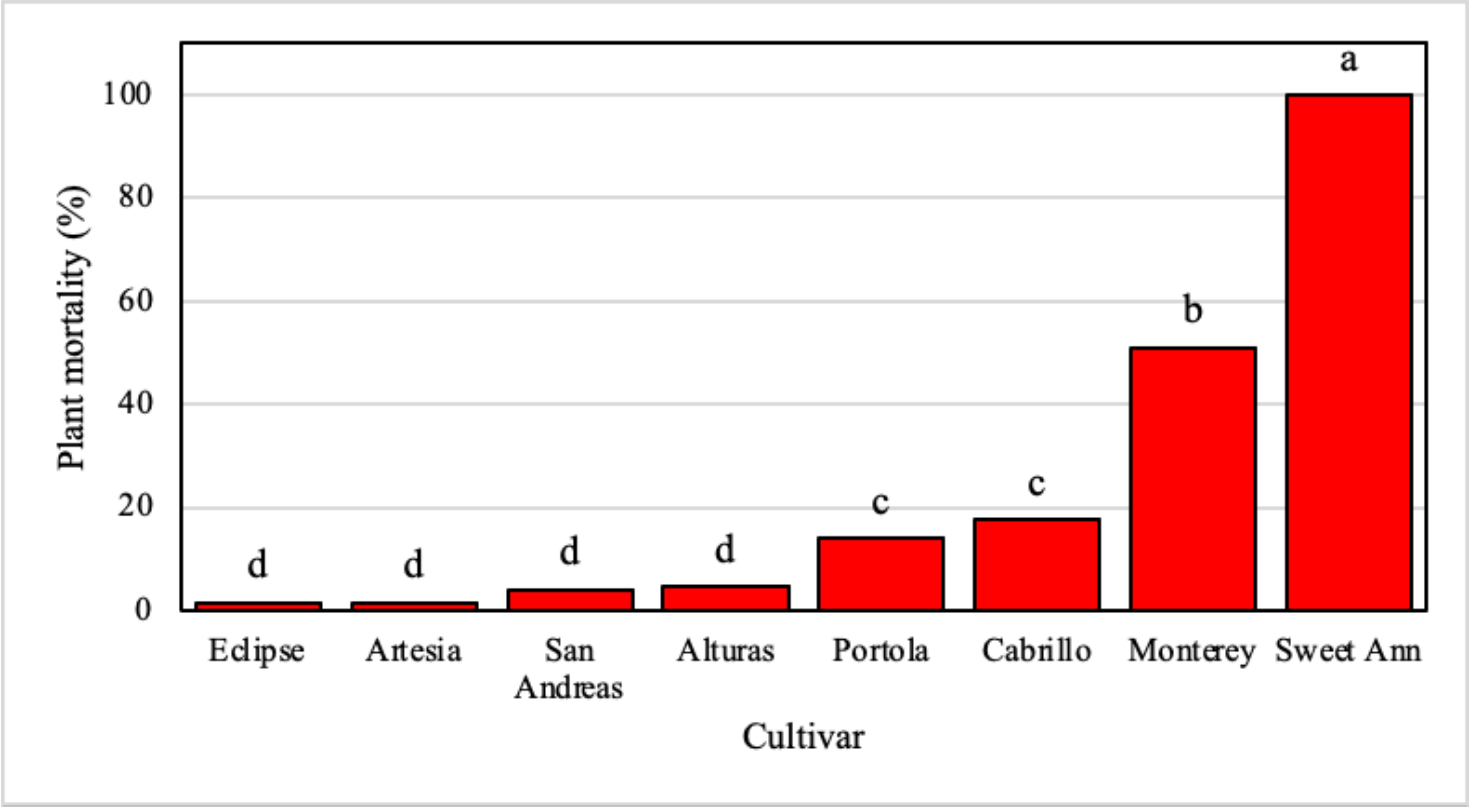


Figure 1. Mean plant mortality for each cultivar as of 12 November 2025. Cultivars with different letters are statistically significant according to Fisher's least significant difference (LSD) mean separation test ($\alpha = 0.05$, n=4).