Evaluating host resistance to Macrophomina root rot in strawberry

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This fall growing season (2025-26) marks the 10th consecutive year of an ongoing field trial evaluating strawberry cultivar resistance to Macrophomina root rot. The trial is conducted in Field 35b on the California Polytechnic State University, San Luis Obispo campus (Fig. 1). This year's trial included 92 cultivar entries from six breeding programs: Driscoll's, Good Farms, Pinnacle Berry Genetics, Planasa, Plant Sciences, and UC Davis. Plots consisted of 20 bare-root transplants per genotype, with slight variation in some plots due to plant availability. Each genotype was replicated across four randomized blocks. Standard 64-inch beds were used, with four rows of plants per bed and two lines of drip tape for irrigation and fertigation. All genotypes were transplanted on 30 October 2025 except for the 11 genotypes from Good Farms which were planted on 4 November. On 24 November each plant was inoculated with 5 g of cornmeal-sand inoculum containing *Macrophomina phaseolina* at 3,840 CFU/g, applied around the crown and upper root zone (Fig. 2A). Plant mortality was assessed weekly and plants were recorded as dead when all above ground foliage was necrotic (Fig. 2B). *M. phaseolina* was confirmed in host tissue using standard plating techniques (Fig. 2C). Disease expression increased gradually throughout the 2025-26 growing season, especially beginning in June when irrigation was reduced by 25%. Plant mortality as of 23 June is shown in Figures 3 and 4.



Figure 1. Experimental plot layout for the strawberry cultivar field trial located in Field 35b at the Cal Poly Strawberry Center.

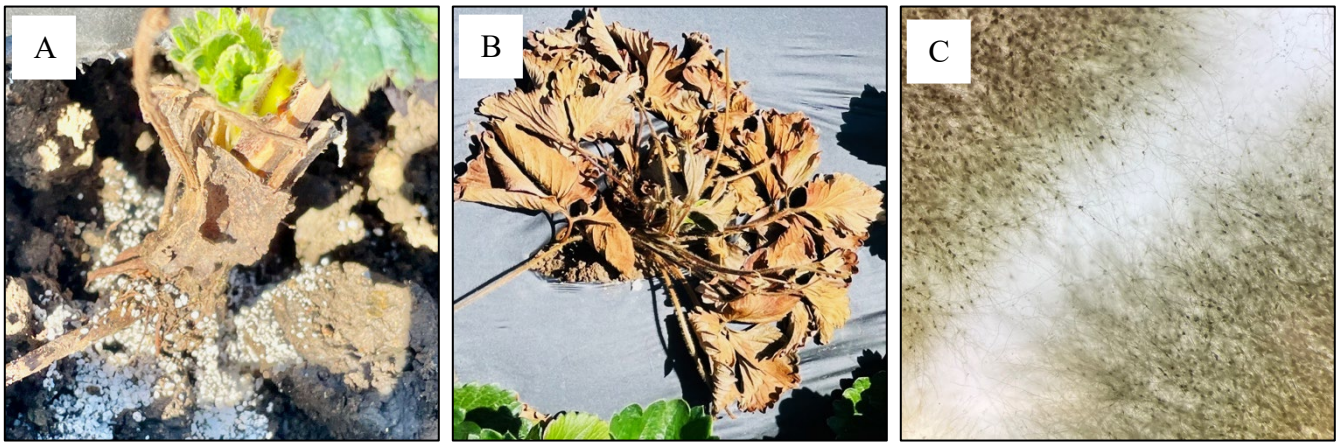


Figure 2. A) Transplant inoculation with *Macrophomina phaseolina*. B) Symptoms of Macrophomina root rot. C) Fungal identification of *Macrophomina phaseolina* on agar medium.

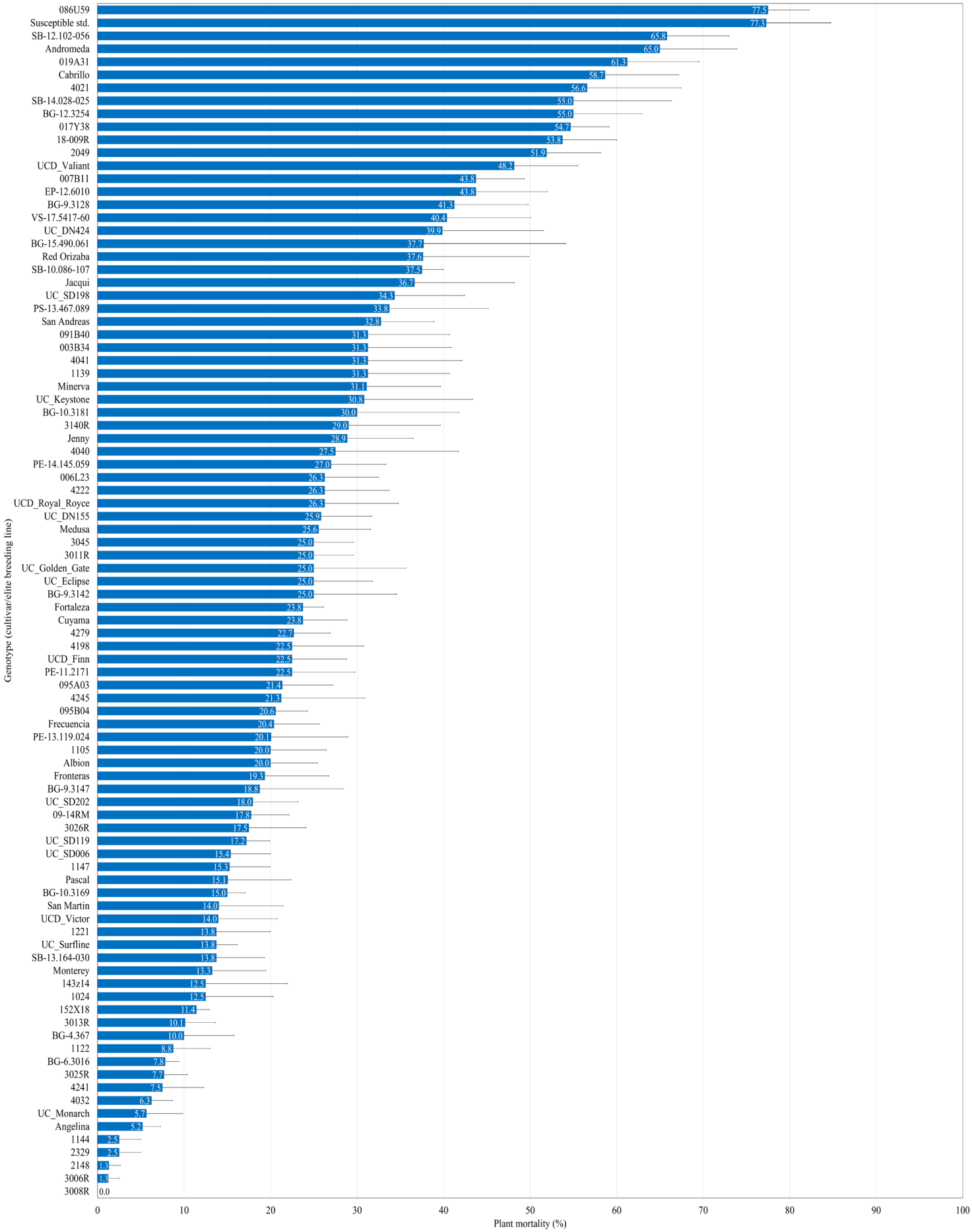


Figure 3. Average percent plant mortality due to Macrophomina root rot as of 23 June 2026. Error bars represent standard error from four replicates per genotype (n=4).

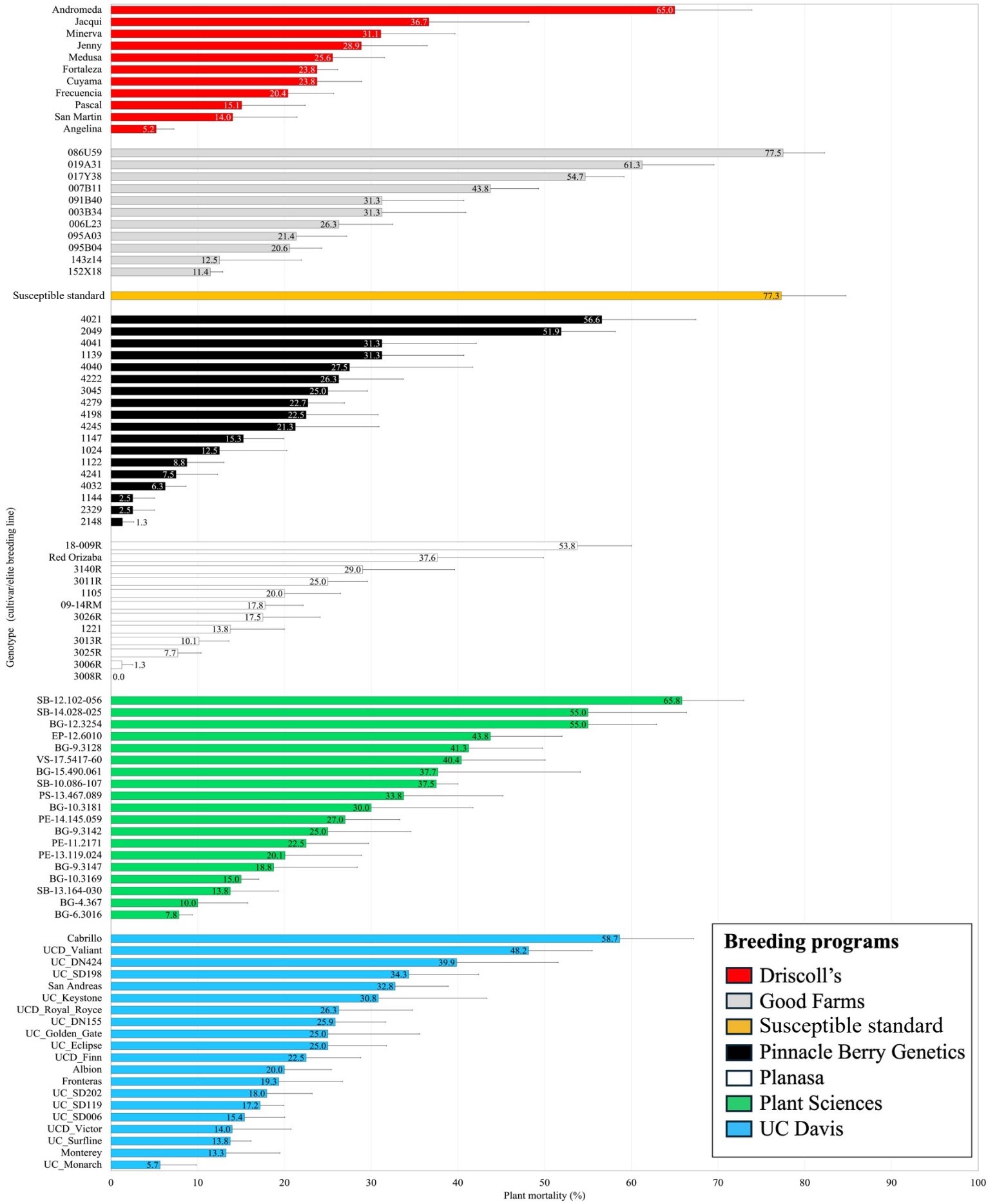


Figure 4. Average percent plant mortality due to Macrophomina root rot (sorted by breeding program) as of 23 June 2026. Error bars represent standard error from four replicates per genotype (n=4).