

Evaluating Host Resistance to *Macrophomina* Crown Rot in Strawberry - 2021

Y. Wang, S. S. Hewavitharana, and G. J. Holmes

The fifth consecutive field trial to evaluate the host resistance to *Macrophomina* crown rot was conducted at field 35b at Cal Poly, San Luis Obispo in 2020. A total of 51 strawberry genotypes from four breeding programs (University of California Davis, Plant Sciences, Driscoll's, and Lassen Canyon) were included. The trial consisted of 20-plant plots replicated in four blocks, with a fifth non-inoculated block. Standard 64-inch beds with 4 rows of plants per bed and 3 lines of drip tape were used. In the four inoculated blocks, each plant received 5 grams of cornmeal-sand-*Macrophomina* inoculum (6,470 CFU/g) placed around the crown and root zone two weeks after planting. The non-inoculated block was bed-fumigated with Tri-Chlor EC (Chloropicrin 94%) at 240 lb/acre in fall 2020. Bare-root strawberry transplants were planted on 2 November 2020. Plants were irrigated and fertilized through drip tape. Drought stress was created by withholding irrigation for 3 consecutive days per week starting 1 June 2021. Presence of the pathogen in plants was confirmed by standard plating techniques. Plant mortality assessment was conducted every two weeks. Plants were considered dead when all foliage was necrotic.



Fig. 1. Aerial view of the *Macrophomina* host resistance trial located in field 35b on Cal Poly San Luis Obispo farm. Plants in the area outlined in red were inoculated; plants in the area outlined in yellow were not inoculated (control). (Photo taken on 14 July 2021)

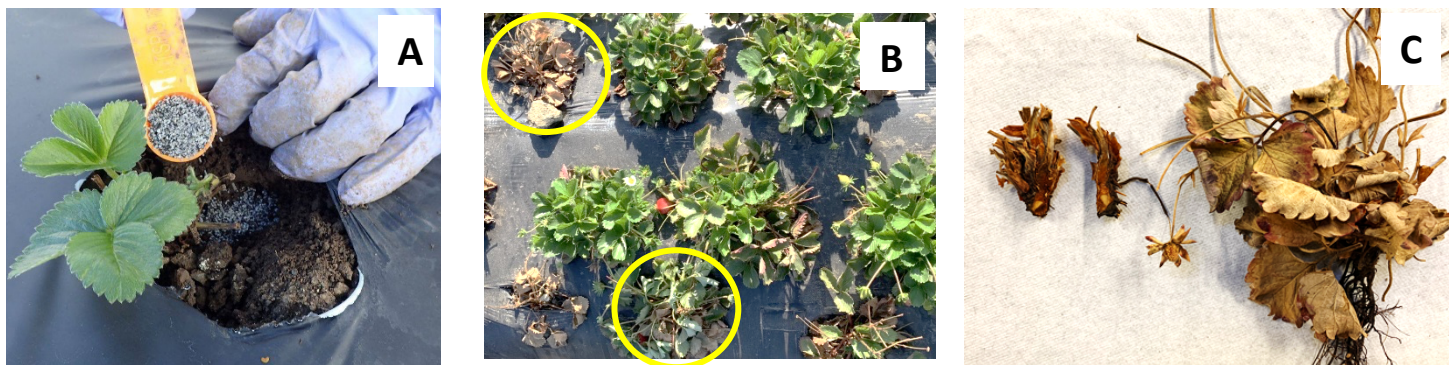


Fig. 2. A) Inoculating a transplant with *M. phaseolina* inoculum. B) Symptoms of *Macrophomina* crown rot: plant wilt and collapse (plant circled in yellow). C) A necrotic plant and cross section of a necrotic crown showing brown discoloration of the tissue due to *M. phaseolina*.



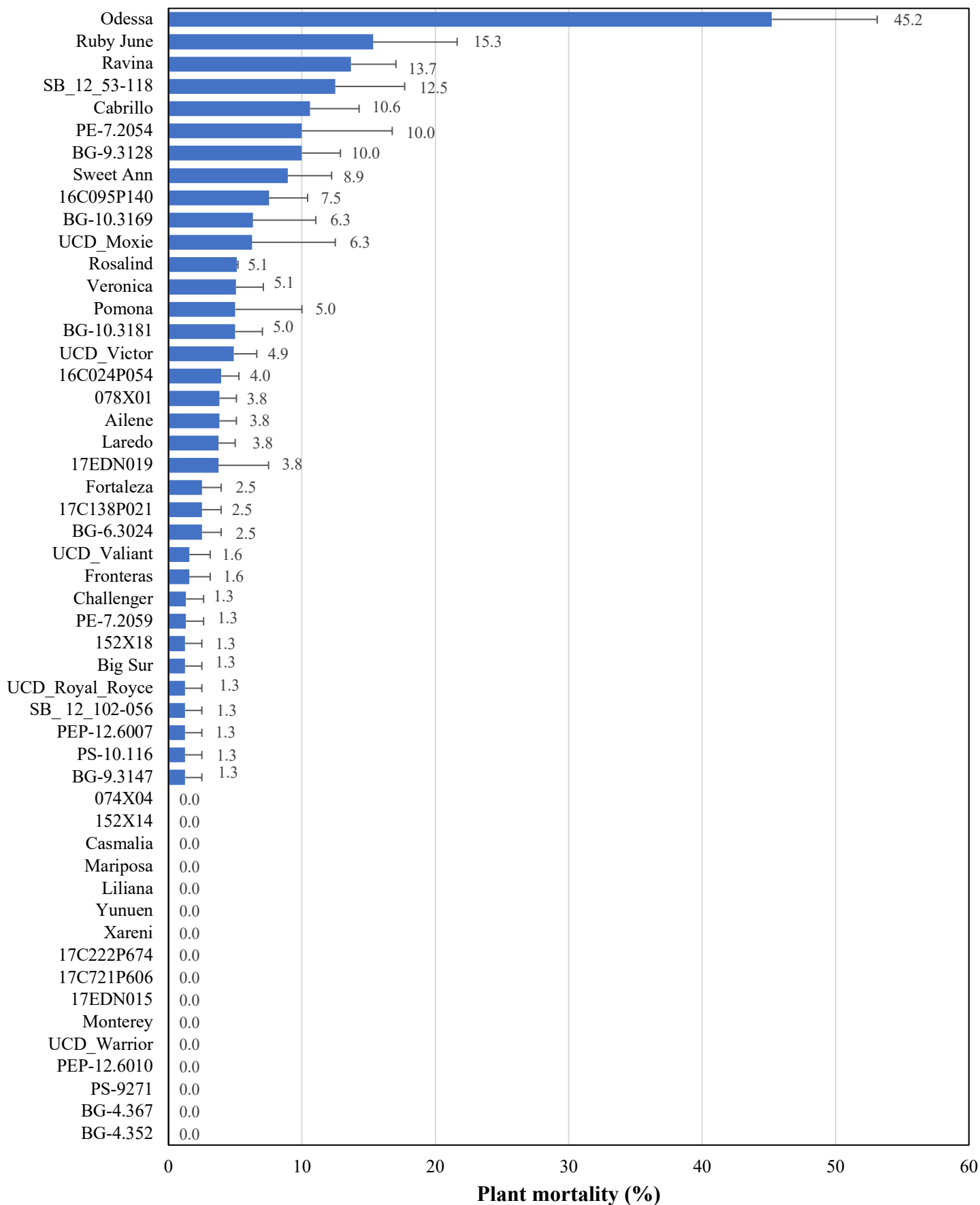


Fig. 3. Average percent of mortality due to *Macrophomina* crown rot on 12 July 2021.

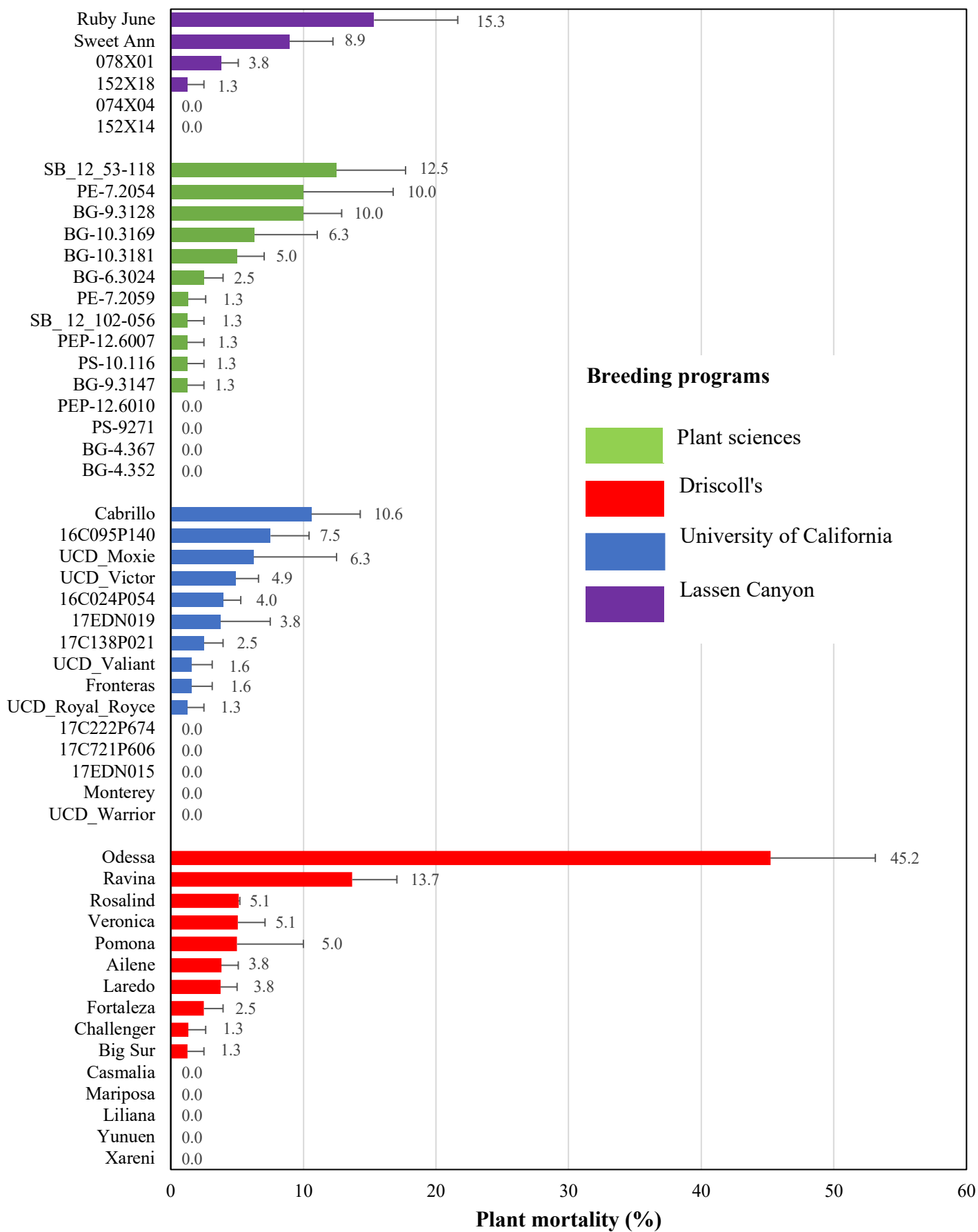


Fig.4. Average percent mortality due to *Macrophomina* crown rot (sorted by breeding program) on 12 July 2021.

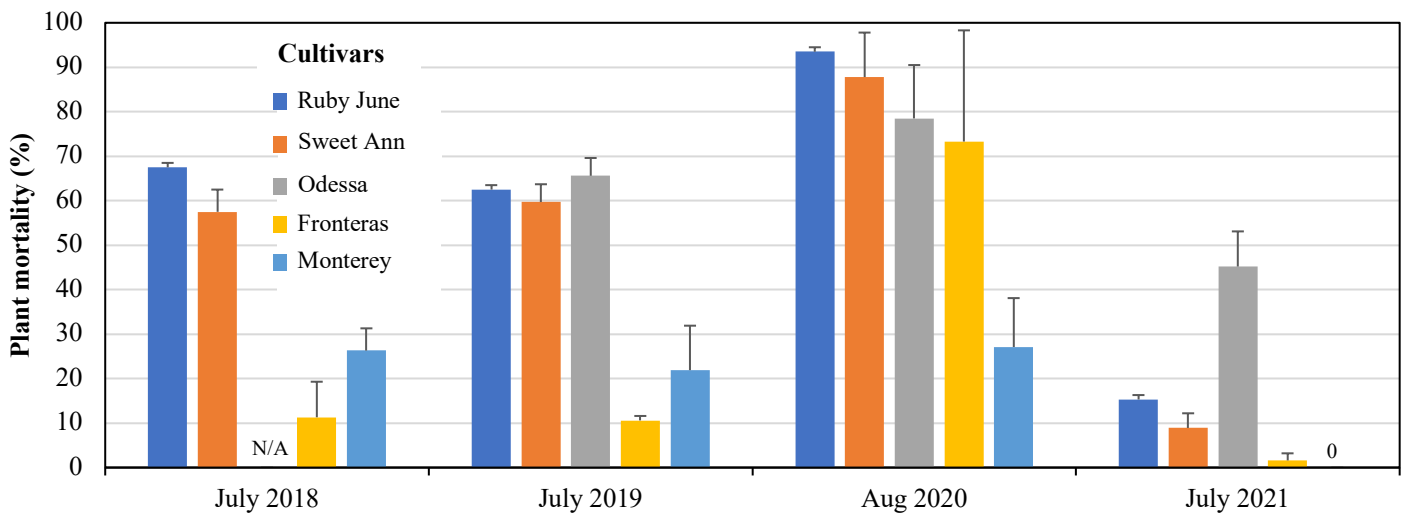


Fig. 5. Macrophomina crown rot percent mortality of ‘Ruby June’, ‘Sweet Ann’, ‘Odessa’, ‘Fronteras’, and ‘Monterey’ in 2018-2021.

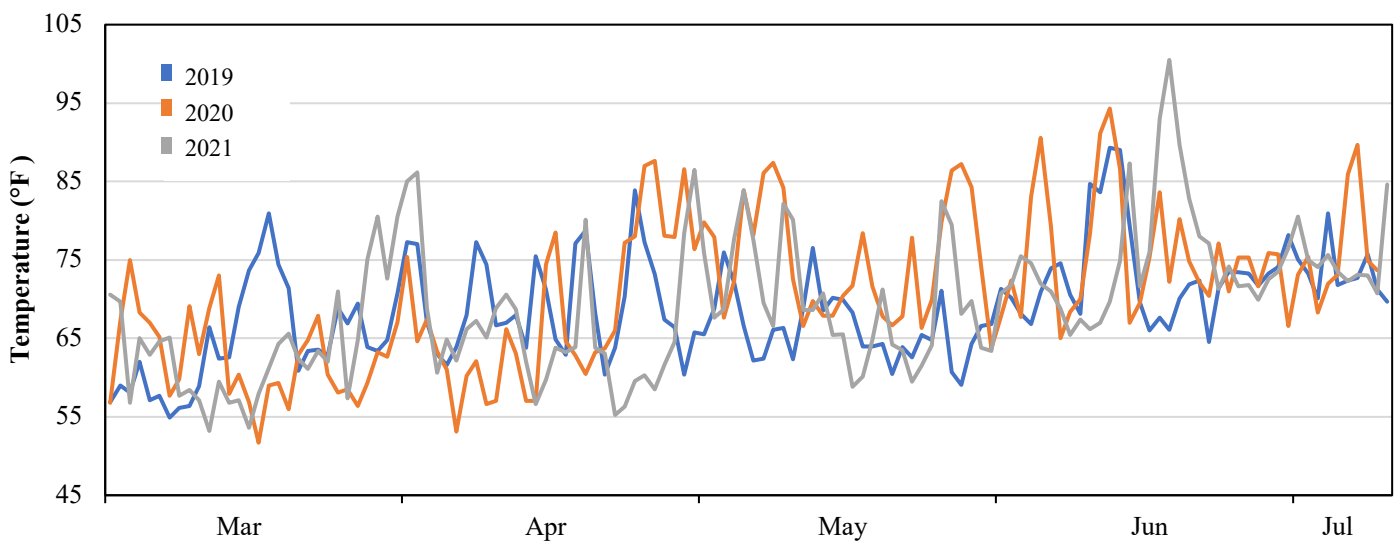


Fig. 6. Daily maximum temperature (°F) for March to July in 2019, 2020 and 2021.

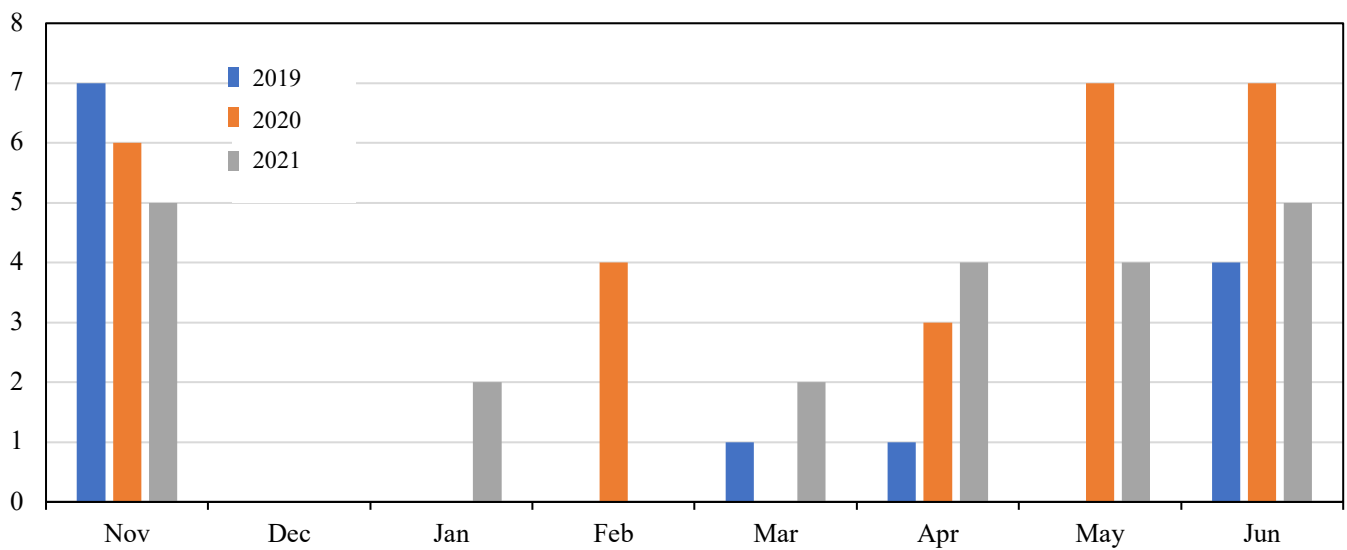


Fig. 7. Number of days above 80°F November to June in three years.

