

**Evaluation of strawberry cultivars and advanced breeding selections for resistance to *Colletotrichum* crown rot caused by *Colletotrichum gloeosporioides*, 2019-2020.**

Thirteen commercial cultivars from FL and CA and thirteen advanced selections from the UF-GCREC strawberry breeding program were evaluated for resistance to *Colletotrichum* crown rot caused by *Colletotrichum gloeosporioides*. Bare-root, green-top strawberry plants were transplanted on 14 Oct 2019 into Telone C35 (300 lbs/A) fumigated, raised beds (28-in wide, on 4-ft centers) covered with black totally impermeable film. Transplants were planted in two staggered rows per bed with 15-in spacing between rows and 15-in between plants within each row. Four plots of each cultivar containing ten plants per plot were arranged in a randomized complete block design (2-ft between plots), with each replication in a separate bed. Transplants were overhead irrigated during the day to facilitate establishment for approximately 10 days and then irrigated and fertilized through single drip tape throughout the season. Plants were inoculated immediately following 1-hr of overhead irrigation, just before sunset, on 21 Nov 2019 with a directed spray aimed at the crown using a manual pump sprayer (approximately 7 ml per plant). Inoculum was a  $2 \times 10^5$  conidia/ml mixture of four *Colletotrichum gloeosporioides* isolates. Plants were monitored for development of typical *Colletotrichum* crown rot symptoms, wilt and mortality, weekly for three months. Isolations from symptomatic tissues were performed to confirm the causal agent. The area under disease progress curve (AUDPC) was calculated using percent weekly wilt and mortality. An analysis of variance was performed on the AUDPC final percent wilt and final percent mortality using the proc /GLM procedure in SAS. Percent data were arcsine transformed for analysis. Multiple mean comparisons were made by the Fisher Protected LSD test ( $\alpha = 0.05$ ).

Cultivars Monterey, Petaluma, and Cabrillo, all from CA, as well as advanced breeding selections 17.27-80, 17.15-127, 16.33-8, 17.17-22, 17.15-86, and 17.40-150 were classified as highly susceptible (HS), having the highest levels of disease in at least two of the three measures evaluated. 'Florida Elyana' did not develop any symptoms during the three-month evaluation period and was therefore classified as resistant (R). Sensation® 'Florida127' and 16.78-55 had levels of wilt, mortality and AUDPC that were not significantly different from 'Florida Elyana' and were also considered R. 'Florida Beauty', 'Fronteras', 'Treasure', WinterStar™ 'FL 05-107', 16.78-109, 16.69-1, 16.74-68, and 17.14-250 had low AUDPC's, which were not significantly different from 'Florida Elyana' indicating slow disease development, but had a final wilt and/or mortality incidence that was significantly higher and were classified as moderately resistant (MR). Disease in MR cultivars developed primarily near the end of the season as temperatures increased. The remaining cultivars and selections, including 'Florida Brilliance', 'San Andreas', 'Strawberry Festival' and 'Florida Radiance' had intermediate levels of disease in at least two of three measures analyzed and were classified as susceptible (S).

| Cultivar/<br>Advanced Breeding Selection | % Wilt*<br>(2/27/20) |      | % Mortality*<br>(2/27/20) |      | AUDPC*<br>(Wilt) |      | Susceptibility**<br>Category |
|--|----------------------|------|---------------------------|------|------------------|------|------------------------------|
| 17.27-80                                 | 97.5                 | ab   | 97.5                      | a    | 550              | a    | HS                           |
| Monterey                                 | 97.5                 | ab   | 92.5                      | ab   | 496              | ab   | HS                           |
| 17.15-127                                | 92.5                 | abc  | 85.0                      | abc  | 434              | abc  | HS                           |
| 16.33-8                                  | 85.0                 | abcd | 70.0                      | bcd  | 384              | bcd  | HS                           |
| 17.17-22                                 | 92.5                 | abc  | 77.5                      | bcd  | 374              | cd   | HS                           |
| 17.15-86                                 | 100.0                | a    | 80.0                      | bcd  | 346              | cde  | HS                           |
| Petaluma                                 | 92.5                 | abc  | 80.0                      | bcd  | 333              | cd   | HS                           |
| 17.40-150                                | 92.5                 | abc  | 75.0                      | bcd  | 310              | def  | HS                           |
| Cabrillo                                 | 85.0                 | abcd | 70.0                      | cde  | 326              | cde  | HS                           |
| Florida Brilliance                       | 87.5                 | abcd | 62.5                      | cdef | 235              | efg  | S                            |
| 16.30-128                                | 80.0                 | bcd  | 62.5                      | cdef | 312              | def  | S                            |
| San Andreas                              | 77.5                 | cde  | 62.5                      | cdef | 276              | def  | S                            |
| Strawberry Festival                      | 60.0                 | def  | 52.5                      | def  | 231              | efgh | S                            |
| 17.17-127                                | 82.5                 | bcd  | 62.5                      | cde  | 199              | fghi | S                            |
| Florida Radiance                         | 70.0                 | def  | 42.5                      | efg  | 137              | ghij | S                            |
| Florida Beauty                           | 65.0                 | def  | 32.5                      | fgh  | 111              | hijk | MR                           |
| 16.74-68                                 | 52.5                 | efg  | 25.0                      | gh   | 107              | ijk  | MR                           |
| 17.14-250                                | 50.0                 | fg   | 25.0                      | gh   | 82               | ijk  | MR                           |
| 16.69-1                                  | 52.5                 | efg  | 0.0                       | j    | 41               | jk   | MR                           |
| Fronteras                                | 45.0                 | fgh  | 5.0                       | ij   | 24               | jk   | MR                           |
| Treasure                                 | 45.0                 | fgh  | 17.5                      | ghi  | 70               | jk   | MR                           |
| 16.78-109                                | 27.5                 | ghi  | 15.0                      | hij  | 60               | jk   | MR                           |
| WinterStar™ 'FL 05-107'                  | 20.0                 | hij  | 2.5                       | j    | 12               | k    | MR                           |
| Sensation® 'Florida127'                  | 5.3                  | jk   | 2.8                       | j    | 14               | k    | R                            |
| 16.78-55                                 | 10.0                 | ijk  | 0.0                       | j    | 4                | k    | R                            |
| Florida Elyana                           | 0.0                  | k    | 0.0                       | j    | 0                | k    | R                            |

\* Means in a column followed by the same letter are not significantly different by Fisher's protected LSD test ( $\alpha = 0.05$ ).

\*\* Highly Susceptible (HS), Susceptible (S), Moderately Resistant (MR), Resistant (R)