# Evaluation of strawberry host plant resistance to powdery mildew in 21 genotypes under greenhouse conditions

S.Z. Simard , K.A. Blauer, and G.J. Holmes

The trial was conducted in a greenhouse at the Cal Poly Crops Unit in San Luis Obispo, CA. Bareroot transplants were planted directly in a greenhouse on 10 Dec 2024 where powdery mildew-infected strawberry plants were present with high levels of sporulation. Transplants were planted in 1-gal plastic nursery pots containing a soilless potting mix with 10 g of Osmocote Plus added to the surface of each pot 28 days after planting (7 Jan). Treatments were replicated four times with each replicate consisting of 3 plants (1 plant/pot), arranged in a randomized complete block design. Disease severity was based on the percent of the upper and lower leaf surfaces covered by visible mycelial growth of each fully emerged trifoliate leaf. Disease incidence was assessed as the percent of trifoliate leaves with at least one powdery mildew lesion. The disease index was calculated by multiplying disease incidence and disease severity for each replicate. Stolons (runners), and flowers were removed from plants once per week.

The first visual symptoms of infection were detected on 24 Dec, 14 days after planting transplants in the greenhouse. Overall, powdery mildew pressure was high, reaching 79.6% incidence and 23.2% severity in 'Golden Gate, the most suspectable cultivar in the trial (Table 1). '088W02' was the most resistant cultivar in the trial with 5.0% disease incidence and 0.3% disease severity. These results show the dramatic difference in susceptibility to powdery mildew among strawberry genotypes.

**Table 1**. Cultivars sorted in ascending order by powdery mildew disease index.

| | | | Powdery mildew (%) on 23 Jan [y] | |
|---|---|---|---|---|
| **Cultivar** | **Breeding program** | **Disease index [z]** | **Severity** | **Incidence [x]** |
| 088W02 | Good Farms | 0.03 f | 0.3 g | 5.0 g |
| 24-414R | Planasa | 0.11 f | 0.6 g | 8.3 g |
| 24-410R | Planasa | 0.28 ef | 1.2 fg | 14.9 fg |
| 24-407R | Planasa | 0.51 ef | 1.6 fg | 23.9 efg |
| HW026.029 | Driscoll's | 0.69 ef | 1.8 efg | 27.3 d-g |
| PE-16.4092.013 | Plant Sciences, Inc. | 0.74 ef | 2.8 efg | 25.6 d-g |
| SB_13_164-030 | Plant Sciences, Inc. | 0.75 ef | 2.5 efg | 27.8 d-g |
| 24-415R | Planasa | 0.81 ef | 2.4 efg | 26.5 d-g |
| PEP-15.1890.010 | Plant Sciences, Inc. | 1.37 def | 3.4 d-g | 36.3 c-f |
| Angelina | Driscoll's | 1.95 c-f | 4.7 c-g | 40.5 cde |
| 152X15 | Good Farms | 3.26 c-f | 6.3 c-f | 58.3 abc |
| 152X18 | Good Farms | 3.62 c-f | 5.4 c-g | 47.4 b-e |
| PS-13.467.089 | Plant Sciences, Inc. | 4.13 c-f | 6.6 b-f | 46.0 b-e |
| Monterey | University of California, Davis | 4.51 c-f | 7.4 b-e | 47.6 bcd |
| 24-413R | Planasa | 4.56 c-f | 6.6 b-f | 38.0 c-f |
| 122X08 | Good Farms | 4.87 c-f | 7.2 b-f | 44.7 b-e |
| UCD_Royal Royce | University of California, Davis | 5.21 cde | 8.8 bcd | 55.8 bc |
| 060z12 | Good Farms | 6.27 bcd | 9.4 bc | 58.6 abc |
| SB_14_028-025 | Plant Sciences, Inc. | 6.55 bc | 7.5 b-e | 54.8 bc |
| Cuyama | Driscoll's | 8.26 bc | 11.9 b | 67.9 ab |
| UCD_Golden Gate | University of California, Davis | 18.71 a | 23.2 a | 79.6 a |
| LSD P=0.05 | | 5.08 | 5.6 | 23.7 |

[y] This disease assessment was made 44 days after planting.
[z] Disease index calculated by multiplying disease incidence by disease severity for each plot.
[x] Cultivars that do not share a letter are significantly different according to Fisher's LSD mean separation test (α=0.05) calculated using ARM version 2024.2 (Gylling Data Management, Brookings, SD).