Supplemental 1

**Summary of raw data showing the number of plants in each RIL that was rated as 2, 3, 6 or 9. (Expt. III)**

|  | Rep I | | | | | Rep II | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ID NO. | 2 | 3 | 6 | 9 | Mean | 2 | 3 | 6 | 9 | Mean |
| B11501 | 15 | 1 | 0 | 1 | 2.47 | 13 | 0 | 0 | 4 | 3.67 |
| B11502 | 12 | 0 | 0 | 6 | 4.33 | 18 | 0 | 0 | 0 | 2.00 |
| B11503 | 11 | 0 | 0 | 6 | 4.47 | 14 | 0 | 0 | 0 | 2.00 |
| B11504 | 12 | 3 | 1 | 1 | 2.89 | 13 | 3 | 0 | 1 | 2.72 |
| B11507 | 15 | 0 | 0 | 2 | 2.89 | 18 | 0 | 0 | 0 | 2.00 |
| B11508 | 13 | 0 | 0 | 5 | 3.94 | 14 | 2 | 0 | 2 | 2.89 |
| B11509 | 18 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |
| B11510 | 13 | 0 | 0 | 5 | 3.94 | 15 | 0 | 0 | 2 | 2.82 |
| B11511 | 15 | 2 | 0 | 1 | 2.50 | 2 | 9 | 0 | 6 | 4.94 |
| B11513 | 15 | 0 | 0 | 3 | 3.17 | 18 | 0 | 0 | 0 | 2.00 |
| B11514 | 15 | 0 | 0 | 1 | 2.44 | 16 | 1 | 0 | 1 | 2.44 |
| B11515 | 9 | 3 | 0 | 6 | 4.50 | 13 | 0 | 0 | 5 | 3.94 |
| B11516 | 6 | 0 | 0 | 11 | 6.39 | 11 | 0 | 0 | 7 | 4.72 |
| B11517 | 18 | 0 | 0 | 0 | 2.00 | 15 | 1 | 0 | 2 | 2.83 |
| B11518 | 12 | 2 | 0 | 1 | 2.83 | 18 | 0 | 0 | 0 | 2.00 |
| B11519 | 13 | 1 | 0 | 4 | 3.61 | 10 | 3 | 0 | 2 | 3.13 |
| B11520 | 15 | 0 | 1 | 2 | 3.00 | 11 | 3 | 0 | 4 | 3.72 |
| B11523 | 16 | 1 | 0 | 1 | 2.44 | 12 | 2 | 0 | 3 | 3.39 |
| B11524 | 10 | 0 | 0 | 1 | 2.64 | 17 | 1 | 0 | 0 | 2.06 |
| B11525 | 15 | 0 | 0 | 2 | 2.82 | 18 | 0 | 0 | 0 | 2.00 |
| B11526 | 14 | 0 | 0 | 3 | 3.50 | 14 | 0 | 0 | 2 | 2.94 |
| B11527 | 14 | 0 | 0 | 3 | 3.44 | 16 | 2 | 0 | 0 | 2.11 |
| B11528 | 17 | 0 | 0 | 1 | 2.39 | 18 | 0 | 0 | 0 | 2.00 |
| B11529 | 12 | 1 | 0 | 4 | 3.71 | 18 | 0 | 0 | 0 | 2.00 |
| B11531 | 15 | 0 | 0 | 3 | 3.17 | 13 | 1 | 0 | 2 | 3.00 |
| B11533 | 17 | 0 | 0 | 1 | 2.39 | 9 | 4 | 0 | 5 | 4.17 |
| B11534 | 10 | 1 | 0 | 7 | 4.78 | 18 | 0 | 0 | 0 | 2.00 |
| B11535 | 13 | 0 | 0 | 5 | 3.94 | 14 | 2 | 0 | 0 | 2.13 |
| B11536 | 18 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |
| B11537 | 15 | 0 | 0 | 1 | 2.44 | 15 | 2 | 0 | 1 | 2.50 |
| B11539 | 8 | 0 | 0 | 10 | 5.89 | 18 | 0 | 0 | 0 | 2.00 |
| B11540 | 6 | 0 | 1 | 7 | 5.83 | 18 | 0 | 0 | 0 | 2.00 |
| B11541 | 14 | 0 | 0 | 4 | 3.56 | 9 | 2 | 0 | 5 | 4.72 |
| B11542 | 14 | 1 | 0 | 3 | 3.22 | 18 | 0 | 0 | 0 | 2.00 |
| B11543 | 16 | 1 | 0 | 1 | 2.44 | 18 | 0 | 0 | 0 | 2.00 |
| B11544 | 13 | 0 | 0 | 1 | 2.50 | 13 | 1 | 0 | 4 | 3.61 |
| B11546 | 14 | 0 | 0 | 1 | 2.38 | 18 | 0 | 0 | 0 | 2.00 |
| B11547 | 17 | 0 | 0 | 1 | 2.39 | 18 | 0 | 0 | 0 | 2.00 |
| B11548 | 15 | 1 | 0 | 2 | 2.83 | 15 | 1 | 0 | 1 | 2.47 |
| B11549 | 12 | 2 | 0 | 4 | 3.67 | 13 | 0 | 0 | 0 | 2.00 |
| B11550 | 14 | 0 | 0 | 3 | 3.24 | 17 | 0 | 0 | 1 | 2.39 |
| B11551 | 10 | 1 | 0 | 6 | 4.72 | 13 | 1 | 0 | 4 | 3.61 |
| B11552 | 13 | 0 | 0 | 2 | 2.93 | 17 | 0 | 0 | 1 | 2.39 |
| B11553 | 15 | 0 | 0 | 3 | 3.17 | 18 | 0 | 0 | 0 | 2.00 |
| B11554 | 18 | 0 | 0 | 0 | 2.00 | 10 | 7 | 0 | 1 | 2.78 |
| B11555 | 13 | 0 | 0 | 5 | 3.94 | 11 | 0 | 0 | 7 | 4.72 |
| B11556 | 12 | 1 | 0 | 4 | 3.72 | 10 | 1 | 0 | 7 | 4.78 |
| B11557 | 15 | 0 | 0 | 3 | 3.17 | 10 | 2 | 2 | 2 | 3.39 |
| B11558 | 7 | 1 | 0 | 6 | 5.27 | 16 | 1 | 0 | 1 | 2.44 |
| B11559 | 11 | 0 | 0 | 6 | 4.47 | 18 | 0 | 0 | 0 | 2.00 |
| B11560 | 12 | 0 | 0 | 6 | 4.33 | 6 | 2 | 0 | 4 | 4.50 |
| B11561 | 13 | 1 | 0 | 3 | 3.33 | 7 | 3 | 0 | 5 | 4.44 |
| B11563 | 12 | 0 | 0 | 6 | 4.33 | 13 | 0 | 0 | 4 | 3.67 |
| B11565 | 17 | 0 | 0 | 1 | 2.39 | 16 | 1 | 0 | 1 | 2.44 |
| B11566 | 16 | 0 | 0 | 2 | 2.78 | 11 | 0 | 0 | 7 | 4.72 |
| B11567 | 18 | 0 | 0 | 0 | 2.00 | 8 | 9 | 0 | 0 | 2.61 |
| B11569 | 14 | 1 | 0 | 3 | 3.22 | 11 | 0 | 0 | 5 | 4.18 |
| B11571 | 6 | 0 | 0 | 10 | 6.33 | 9 | 0 | 0 | 1 | 2.70 |
| B11572 | 15 | 0 | 0 | 1 | 2.44 | 18 | 0 | 0 | 0 | 2.00 |
| B11573 | 11 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |
| B11574 | 14 | 1 | 0 | 3 | 3.22 | 13 | 3 | 0 | 2 | 2.94 |
| B11575 | 15 | 0 | 0 | 3 | 3.17 | 15 | 3 | 0 | 0 | 2.17 |
| B11576 | 12 | 1 | 0 | 4 | 3.72 | 16 | 0 | 0 | 2 | 2.78 |
| B11577 | 18 | 0 | 0 | 0 | 2.00 | 15 | 0 | 0 | 3 | 3.17 |
| B11578 | 7 | 0 | 0 | 10 | 6.12 | 18 | 0 | 0 | 0 | 2.00 |
| B11579 | 13 | 2 | 0 | 2 | 3.00 | 12 | 1 | 0 | 5 | 4.00 |
| B11580 | 17 | 0 | 0 | 1 | 2.39 | 18 | 0 | 0 | 0 | 2.00 |
| B11581 | 18 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |
| B11582 | 10 | 0 | 0 | 4 | 4.00 | 18 | 0 | 0 | 0 | 2.00 |
| B11583 | 16 | 0 | 0 | 2 | 2.78 | 18 | 0 | 0 | 0 | 2.00 |
| B11584 | 8 | 1 | 0 | 8 | 5.28 | 18 | 0 | 0 | 0 | 2.00 |
| B11585 | 17 | 1 | 0 | 0 | 2.06 | 14 | 1 | 0 | 3 | 3.22 |
| B11586 | 11 | 2 | 0 | 3 | 3.44 | 16 | 0 | 0 | 2 | 2.78 |
| B11587 | 17 | 1 | 0 | 0 | 2.06 | 17 | 0 | 0 | 1 | 2.39 |
| B11588 | 18 | 0 | 0 | 0 | 2.00 | 17 | 1 | 0 | 0 | 2.06 |
| B11589 | 14 | 1 | 0 | 2 | 3.17 | 7 | 2 | 0 | 8 | 5.33 |
| B11590 | 15 | 0 | 0 | 3 | 3.17 | 15 | 0 | 0 | 3 | 3.17 |
| B11592 | 9 | 1 | 0 | 5 | 4.78 | 8 | 1 | 0 | 8 | 5.28 |
| B11 624 | 14 | 0 | 0 | 4 | 3.56 | 15 | 1 | 0 | 2 | 2.83 |
| B11626 | 16 | 1 | 0 | 0 | 2.17 | 15 | 0 | 0 | 3 | 3.17 |
| B 11593 | 15 | 1 | 0 | 1 | 2.56 | 15 | 0 | 0 | 3 | 3.17 |
| B 11596 | 13 | 0 | 0 | 5 | 3.94 | 15 | 0 | 0 | 3 | 3.17 |
| B 11598 | 4 | 3 | 0 | 11 | 6.44 | 11 | 0 | 0 | 7 | 4.72 |
| B 11599 | 16 | 0 | 0 | 2 | 2.78 | 8 | 2 | 0 | 8 | 5.22 |
| B 11600 | 5 | 1 | 0 | 11 | 6.44 | 15 | 0 | 0 | 3 | 3.17 |
| B 11601 | 18 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |
| B 11602 | 16 | 0 | 0 | 1 | 2.41 | 13 | 0 | 0 | 5 | 3.94 |
| B 11604 | 14 | 0 | 0 | 3 | 3.24 | 16 | 1 | 0 | 0 | 2.39 |
| B 11605 | 16 | 0 | 0 | 2 | 2.78 | 17 | 0 | 0 | 1 | 2.39 |
| B 11606 | 13 | 1 | 0 | 3 | 3.29 | 2 | 2 | 0 | 12 | 7.38 |
| B 11607 | 13 | 0 | 0 | 5 | 3.94 | 14 | 0 | 0 | 0 | 2.00 |
| B 11608 | 11 | 2 | 0 | 5 | 4.06 | 10 | 3 | 0 | 2 | 3.28 |
| B 11609 | 15 | 0 | 0 | 3 | 3.17 | 9 | 1 | 0 | 7 | 4.89 |
| B 11610 | 12 | 2 | 0 | 4 | 3.67 | 11 | 2 | 0 | 3 | 3.78 |
| B 11611 | 10 | 2 | 0 | 5 | 4.17 | 14 | 2 | 0 | 2 | 2.89 |
| B 11612 | 13 | 0 | 0 | 5 | 3.94 | 12 | 0 | 0 | 6 | 4.33 |
| B 11613 | 14 | 0 | 0 | 3 | 3.28 | 11 | 0 | 0 | 7 | 4.72 |
| B 11614 | 14 | 1 | 0 | 3 | 3.22 | 18 | 0 | 0 | 0 | 2.00 |
| B 11615 | 14 | 0 | 0 | 4 | 3.56 | 6 | 6 | 0 | 5 | 4.44 |
| B 11616 | 13 | 1 | 0 | 2 | 2.94 | 10 | 1 | 0 | 7 | 4.78 |
| B 11617 | 13 | 0 | 0 | 5 | 3.94 | 18 | 0 | 0 | 0 | 2.00 |
| B 11625 | 15 | 0 | 0 | 3 | 3.17 | 15 | 1 | 0 | 1 | 2.56 |
| B 11619 | 14 | 1 | 0 | 3 | 3.22 | 5 | 3 | 0 | 10 | 6.06 |
| B 11620 | 8 | 4 | 0 | 3 | 3.72 | 15 | 0 | 0 | 3 | 3.17 |
| B 11621 | 14 | 1 | 0 | 3 | 3.22 | 17 | 0 | 0 | 1 | 2.39 |
| B 11622 | 16 | 0 | 0 | 2 | 2.78 | 11 | 0 | 0 | 7 | 4.72 |
| B 11623 | 14 | 0 | 0 | 4 | 3.56 | 3 | 6 | 0 | 8 | 5.56 |
| Zorro (parent) | 12 | 2 | 0 | 4 | 3.67 | 8 | 10 | 0 | 0 | 2.56 |
| Puebla 152 (parent) | 13 | 2 | 2 | 0 | 2.75 | 18 | 0 | 0 | 0 | 2.00 |
| Cal 96 (Susceptible Check) | 0 | 0 | 0 | 14 | 8.61 | 0 | 0 | 0 | 15 | 8.72 |
| MLB-49 (Resistant check) | 18 | 0 | 0 | 0 | 2.00 | 18 | 0 | 0 | 0 | 2.00 |

**1** FRR disease severityratings done according to Abawi and Pastor- Corrales, (1990) where 2-3 is resistant and 7-9 is susceptible.

2 Ratings of 4,5,7 and 8 not included in the Table due to a low frequency of individuals with these ratings.

3In cases where the total number of individual plants rated does is not 18, plants that rated as either 4,5,7 or 8 make up the difference.

Supplemental 2

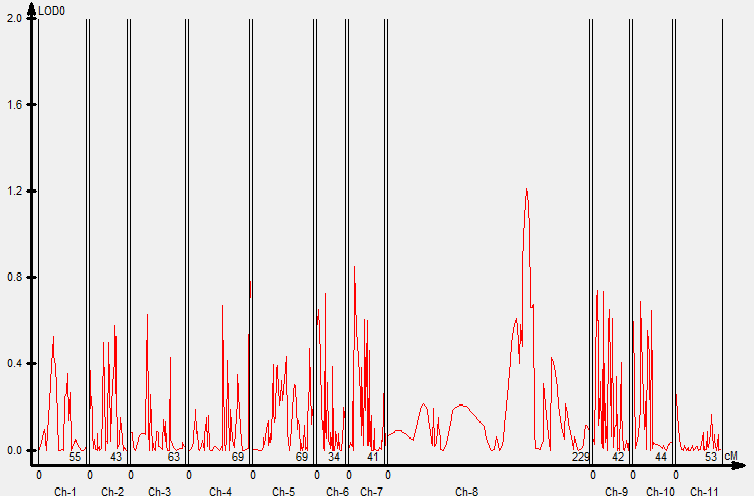
Genetic map of Puebla X Zorro RIL population.









Supplemental 3

LOD graph of total root weight (Expt. II) from Composite Interval Mapping (CIM) of the Puebla 152 x Zorro RIL population.

Supplemental 4

LOD graph of total biomass (Expt. II) from Composite Interval Mapping (CIM) of the Puebla 152 x Zorro RIL population.

