Supplemental Table 1. Previously-published blueberry and cranberry microsatellite markers used for cranberry genetic map development

|  |  |  |
| --- | --- | --- |
| **Marker** | **Ta (°C)a** | **Reference** |
| *Blueberry microsatellites* | | |
| CA39R | 58 | Rowland et al. 2010 |
| CA421 | 60 | Boches et al. 2005 |
| CA794F | 54 | Boches et al. 2005 |
| CA855F | 54 | Boches et al. 2005 |
| NA800 | 60 | Boches et al. 2005 |
| NA824 | 60 | Boches et al. 2005 |
| NA1040 | 60 | Boches et al. 2005 |
| VCC\_B3 | 62 | Boches et al. 2005 |
| VCC\_J1 | 54 | Boches et al. 2005 |
| VCC\_J3 | 58 | Boches et al. 2005 |
| VCC\_J5 | 54 | Boches et al. 2005 |
| VCC\_J9 | 62 | Boches et al. 2005 |
| *Cranberry microsatellites* | | |
| scf2s | 52 | Georgi et al. 2012 |
| scf4b | 52 | Georgi et al. 2012 |
| scf5k | 52 | Georgi et al. 2012 |
| scf8l | 52 | Georgi et al. 2012 |
| scf12i | 52 | Georgi et al. 2012 |
| scf13a | 52 | Georgi et al. 2012 |
| scf14j | 52 | Georgi et al. 2012 |
| scf16i | 52 | Georgi et al. 2012 |
| scf22m | 52 | Georgi et al. 2012 |
| scf24k | 52 | Georgi et al. 2012 |
| scf25m | 52 | Georgi et al. 2012 |
| scf26r | 52 | Georgi et al. 2012 |
| scf27L | 52 | Georgi et al. 2012 |
| scf30g | 52 | Georgi et al. 2012 |
| scf34s | 52 | Georgi et al. 2012 |
| scf36l | 52 | Georgi et al. 2012 |
| scf37h | 52 | Georgi et al. 2012 |
| scf39e | 52 | Georgi et al. 2012 |
| scf41c | 52 | Georgi et al. 2012 |
| scf43g | 52 | Georgi et al. 2012 |
| scf44a | 52 | Georgi et al. 2012 |
| scf45d | 52 | Georgi et al. 2012 |
| scf46g | 52 | Georgi et al. 2012 |
| scf15903c | 52 | Georgi et al. 2012 |

a Annealing temperature

Supplemental Table 2. Summary information for parental and population genetic maps

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total length (cM) | Number of groups | Number of markers | Average no./group (range) | Average spacing (cM) | Average group length (range) | Largest gap (cM) | Estimated coveragea |
| Unified map | 879.9 | 14 | 138 | 9.9  (3-22) | 8.6 | 62.9  (2.8-111.2) | 27.7 | 82.2% |
| CNJ98-153 | 880.8 | 15 | 125 | 8.3  (2-21) | 8.0 | 58.7  (8.5-111.6) | 38.6 | 78.1% |
| US88-70 | 844.7 | 15 | 98 | 6.5  (2-14) | 10.2 | 56.3  (5.2-125.6) | 44.2 | 73.4% |
| Stevens | 817.6 | 15 | 112 | 7.5  (2-17) | 8.4 | 54.5  (5.1-126.4) | 53.1 | 76.5% |
| CNJ98-154 | 974.4 | 18 | 129 | 7.2  (3-19) | 8.8 | 54.1  (2.6-155.1) | 41.8 | 76.1% |
| US88-70 | 963.0 | 16 | 99 | 6.2  (3-14) | 11.6 | 60.2  (3.5-155.4) | 62.3 | 72.6% |
| US88-51 | 916.4 | 17 | 106 | 6.2  (2-15) | 10.3 | 53.9  (1.8-145.7) | 38.2 | 70.2% |
| CNJ98-164 | 733.1 | 21 | 118 | 5.6  (2-18) | 7.6 | 34.9  (2.3-104.6) | 27.9 | 67.8% |
| US88-81 | 635.2 | 19 | 92 | 4.8  (2-12) | 8.7 | 33.4  (2.2-78.8) | 40.3 | 64.0% |
| US88-1 | 639.5 | 17 | 89 | 5.2  (2-15) | 8.9 | 37.6  (4.4-77.5) | 32.4 | 68.5% |
| CNJ97-86 | 634.1 | 24 | 116 | 4.8  (2-14) | 6.9 | 26.4  (5.3-122.3) | 45.8 | 65.8% |
| US89-3 | 556.0 | 19 | 72 | 3.8  (2-10) | 10.5 | 29.3  (5.3-97.7) | 45.8 | 60.1% |
| Stevens | 545.3 | 23 | 108 | 4.7  (2-13) | 6.4 | 23.7  (0.3-147.0) | 60.2 | 64.1% |

aCalculated by method four of Chakravarti et al. (1991)

Supplemental Table 3. Marker-trait associations: Kruskal-Wallis statistic significant at the 0.005 level, and showing a gradient in the test statistic along the linkage group toward the marker (mapped markers)

|  |  |  |
| --- | --- | --- |
| **Trait and mapping population** | **Locus** | **KW test statistic (degrees of freedom)** |
| **Field fruit rot** |  |  |
| 30 Aug 2005 rot rating |  |  |
| CNJ98-153 | Vm11: scf6341b | 10.030 (1) |
| CNJ98-154 | Vm3: scf5k  U: scf2253dchs444 | 13.826 (3)  8.632 (1) |
| CNJ98-164 | Vm8: scf41c  Vm10: scf9e  U: vccj1-256 | 8.680 (1)  9.383 (1)  10.381 (1) |
| 6 Oct 2005 rot rating |  |  |
| CNJ98-154 | U: scf2253dchs444 | 9.234 (1) |
| 21 Aug 2006 rot rating |  |  |
| CNJ98-153 | Vm11: scf6341b  U: scf2253chs447 | 10.259 (1)  9.132 (1) |
| 12 Sept 2006 rot rating |  |  |
| CNJ98-153 | Vm11: scf6341b  Vm11: scf3072b | 8.762 (1)  15.475 (3) |
| CNJ98-154 | Vm5: scf27L  Vm5: NA824  Vm7: NA172  Vm9: scf8l  U: scf2253dchs444 | 8.833 (1)  8.479 (1)  8.353 (1)  8.405 (1)  8.302 (1) |
| 20 Aug 2007 rot rating |  |  |
| CNJ98-154 | Vm1: scf275d | 17.213 (3) |
| Mean Aug 2005-07 |  |  |
| CNJ98-164 | Vm8: scf25m  U: scf300f-103 | 13.737 (3)  10.082 (1) |
| Mean Aug-Sept 2005-07&2009 rot rating |  |  |
| CNJ98-153 | Vm11: scf6341b  Vm11: scf3072b | 14.019 (1)  16.958 (3) |
| CNJ98-154 | Vm1: Ig1296a  Vm1: scf6i  Vm1: scf275d  Vm7: scf2253dchs  U: scf2253dchs444 | 9.226 (1)  8.571 (1)  14.133 (3)  13.107 (3)  12.970 (1) |
| 17 Sept 2011 rot rating |  |  |
| CNJ98-154 | Vm12: scf4b | 13.284 (3) |
| Mean 2004 & 2011 rot ratinga |  |  |
| CNJ98-153 | Vm1: scf45d  Vm11: scf6341b | 13.113 (3)  9.463 (1) |
| **Bloom date** |  |  |
| First bloom 2008 (Julian date) |  |  |
| CNJ98-153 | Vm6: scf37h | 12.961 (3) |
| Last bloom 2008 (Julian date) |  |  |
| CNJ98-154 | Vm7: NA172  Vm7: scf2253dchs  U: scf2253dchs444 | 8.172 (1)  14.463 (3)  9.803 (1) |
| **Fruit yield and quality** |  |  |
| 13 Sept 2010 total yield (g/0.09m2) |  |  |
| CNJ98-154 | Vm7: scf10688TDR  Vm7: scf142e  Vm7: scf5304 | 8.955 (1)  9.876 (1)  7.941 (1) |
| 13 Sept 2010 sound fruit yield (g/0.09m2) |  |  |
| CNJ98-154 | Vm3: scf31h  Vm7: scf10688TDR  Vm7: scf142e  Vm7: scf5304 | 12.869 (3)  9.046 (1)  9.970 (1)  7.941 (1) |
| 13 Sept 2010 Total Anthocyanin (mg/100 g fruit) |  |  |
| CNJ98-153 | Vm7: scf142e | 8.047 (1) |
| CNJ98-154 | U: SCAR0910 | 11.189 (2) |
| 13 Sept 2010 % Titratable Acid |  |  |
| CNJ98-153 | Vm3: scf2s  Vm12: vccj1d | 8.643 (1)  10.359 (1) |
| CNJ98-154 | Vm11: vccj1a | 9.185 (1) |
| 13 Sept 2010 Proanthocyanidin |  |  |
| CNJ98-154 | Vm2: NA1713  Vm9: scf262a  Vm9: scf72c | 8.009 (1)  17.828 (3)  12.668 (2) |
| 13 Sept 2010 fruit weight (g/berry) |  |  |
| CNJ98-153 | Vm1: scf13a  Vm5: 2ms2a02  Vm7: ctg480  Vm10: CA421 | 13.849 (3)  15.613 (3)  9.337 (1)  14.142 (3) |
| 4 Aug 2011 fruit weight (g/berry) |  |  |
| CNJ98-153 | Vm1: scf13a | 16.990 (3) |
| 12 Sept 2011 fruit weight (g/berry) |  |  |
| CNJ98-153 | Vm1: scf13a  Vm5: 2ms2a02 | 13.271 (3)  16.465 (3) |
| CNJ98-154 | Vm5: scf17d  Vm5: ctg428 | 14.997 (3)  9.057 (1) |
| Mean Sept 2010-11 fruit weight (g/berry) |  |  |
| CNJ98-153 | Vm1: scf13a  Vm5: 2ms2a02 | 15.353 (3)  20.263 (3) |
| **Inoculation studies** |  |  |
| 2011 berry diameter |  |  |
| CNJ98-154 | U: Ig16780a | 10.075 (1) |
| Mean 2010-11 percent rot |  |  |
| CNJ98-154 | Vm5: scf112c | 9.653 (1) |
| Mean 2010-11 berry diameter |  |  |
| CNJ98-154 | Vm12: scf2882  U: Ig16780a | 10.987 (2)  9.144 (1) |

aWith fungicide applications