T1329, 43 cM, Chromosome 7
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July 11, 2008

Introduction
The goal for this research was to develop a co-dominant CAPS or SCAR marker for the I3 gene, which corresponds to resistance to Fusarium oxysporum f. sp. lycopersici race 3. PCR primers for markers in the chromosomal region between the molecular markers TG183 (42 cM) and TG639 (43.3 cM) (Hemming et al., 2004) were evaluated on homozygous susceptible and homozygous resistant tomato inbred lines as well as heterozygous F1 hybrids obtained from J. W. Scott, University of Florida, R. Gardner, North Carolina State University or commercial hybrids.

Reference:

Primers
The sequence of T1329 (3,498 nt for SGN-U312610) was compared with sequences at GenBank. Putative exons were identified by the match with Vitis vinifera, AM439610, a forward and a reserve primers were designed from the putative exon regions to amplify a genomic region, which should include at least one intron. The primer pair listed below gave the strongest single PCR fragment and the best sequence.

Table 1. PCR primers on chromosome 7

<table>
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<tr>
<th>Primer Name</th>
<th>Primer Sequence (5’-3’)</th>
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<tr>
<td>P7-43AF2</td>
<td>GGTACTTTTCGCAATATCCGCTTTGTAAC</td>
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<tr>
<td>P7-43AR2</td>
<td>GTCAATCCAAGTGATCTGCATCTCTC</td>
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*PCR annealing temperature at 53°C (TGEN53), ~510-bp fragment.

Sequences
Purple Russian, i3/i3 (Partial Sequence); Purple Russian is a heritage tomato (OP) from Seed Savers Exchange, Decorah, Iowa

GENBANK ACCESSION NUMBER: EU920052

1  GGTACTTTTCG CCAATATCCG CTTGTAACAC AAGCTTAAAG AGCGGAGGCT TGGTCAAGAG
61  ACCGTCGACCAT TCCCTCTCTGC AGAAAAATCTATACGCTTGG ATGCTGCTAT GGTACTTTCC
121  TTCTCTGTGT TCTAACTGCT TCAATACCTG TTCTCATTAA AGATAAGAGT TTGCAATTCCG
181  CATTCTACCT TTGATCGGTAT ATGGTGAACAC TGGTTAAACCA CGTGTGCTGT TCGAGAATAC
241  AAATCCTGCT TCTAAGGAC TATATATCTG GGTGACGGCTG AATATGGAAG TGGGACGCTCC
301  CGAGATTGGG CTGCCAAGGG ACCAATGTTG TTGGTGGGTT TTCTTGTGCA TTTATTCTTA
361  ATTTGTTTGA TCTGTCGCTT TTCTTTTTTA CCCAGAAGAT CCGTAACTAC TAAAGACCAAA
NC EBR-8, I3/I3 (Partial Sequence), inbred from R. Gardner

GENBANK ACCESSION NUMBER: EU926650

Comparison of Purple Russian (top sequence) with NC EBR-8 (bottom sequence)

Identity = 98.72% (540/547)
Comments

Partial sequence was obtained for six tested samples. Purple Russian and NC EBR-8 sequences had 7 SNPs. The sequence for Purple Russian was identical to that for L40, a F2 from Llanero (i3/i3). The sequence for NC EBR-8 was identical to Fla7547 and NC-123S, both reported to be homozygous for I3. NC07196 was heterozygous as reported.

For the sequence of Purple Russian, there was 100% nt identity with BAC clone C07HBa0073N22 (28,687 nt) at GenBank (AC212624) and SGN sites. NC EBR-8 matched the same BAC clone with a 98% nt identity. The exons of the P7-43A sequence corresponded to the mRNA for *Solanum pennellii* aconitase (AY250115) and a putative aconitase from *Capsicum chinense* (AB372268) and *Solanum tuberosum* (X97012).