

Localization and Mapping of *Sw-7*, a Tomato spotted wilt virus Resistance Gene

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Tomato spotted wilt virus (TSWV), vectored by several thrips species, is the causal agent of devastating tomato crop losses in many areas of the world. Recently, field tests have demonstrated that there are TSWV isolates that overcome the resistance gene *Sw-5*, derived from *Lycopersicon peruvianum* L. However, *Sw-7*, a new source of TSWV resistance, has been introgressed from *L. chilense* Dun. This new gene has demonstrated field resistance to various isolates of this disease including greenhouse trials utilizing isolates that overcome *Sw-5*. In order to determine the genetic location of *Sw-7*, we screened over 200 SSR and InDel molecular markers from across the tomato genome. We used the homozygous (*Sw-7/Sw-7*) Ck12 line and one of the susceptible (*Sw-7+/ Sw-7+*) recurrent backcross parents (Fla 7482B) along with six BC1 and F2 plants segregating for *Sw-7*. The results of this screening suggested that *Sw-7* resided near SSR20 on chromosome 12. To confirm the linkage of *Sw-7* and SSR20 we tested this SSR marker and others on chromosome 12 using 94 BC1 and F2 progeny segregating for *Sw-7*. Additionally, we screened 47 lines segregating for *Sw-7* under high natural TSWV field pressure conditions in northern Florida. As a result of these studies we have narrowed the location of the *L. chilense*-derived DNA with *Sw-7*. This region resides between markers T1263 (45.0 cM) and SSR20 (58.2 cM), according to the "Tomato EXPEN-2000" map found on the Sol Genomics Network. Our efforts are now focused on determining the precise position of *Sw-7* in relationship with the markers available in this region and the AFLP markers previously reported.