

Resistance to Race 1 of *Pseudomonas syringae* pv. *tomato*

Liliana Stamova

California Tomato Research Institute, Davis, CA

Pseudomonas syringae pv. *tomato*, the causal agent of bacterial speck disease on tomato inflicts serious problems in many tomato production areas throughout the world. There are limited options to control the disease. As the cultural practices are not always effective, the use of resistant cultivars is the best managing strategy. For a long time race 0 of the pathogen has been successfully controlled by *Pto1* gene introgressed in some tomato cultivars. A race, detected in 1986 in Canada and designated race 1 broke the resistance of gene *Pto1*. There has been published some information about resistance to race 1 found in some wild species. Unfortunately for the present there are no tomato cultivars with resistance to race 1 available to tomato growers. In 2006 we screened 60 cultivated types tomato lines for resistance to California isolate A9 of race 1. Lines that have been uniformly resistant to European isolates were not among the best after challenging them with A9 isolate. High level of resistance was found in several cultivated type tomato lines coming from crosses with different wild species. Resistant lines and plants from segregating populations were saved for selection. In 2007 a second screening was carried out. All genetic materials selected as resistant to A9 isolate were inoculated separately with six California isolates. The evaluation of resistance was made based on scale of 1 to 5. Plants with scores 4 (41 – 60 bacterial lesions/plant) and 5 (more than 60 lesions/ plant) were considered susceptible. Disease severity index (DSI) was calculated. DSI of the best resistant lines varied according to the isolate – for line Rioli it ranged from 1.10 (isolate A9) to 1.66 (isolate 7) and for line Stella - from 1.5 to 1.63 respectively At the same time the susceptible controls Glamour (susceptible to race 0 and race 1) and ONT 7710 (*Pto1*) (resistant to race 0 and susceptible to race 1) had DSI of 5.00 and 4.90 respectively. Along with the screening for resistance a genetic test was carried out aiming to define the mode of inheritance and number of genes controlling resistance to race 1. The responses of the following lines and generations to inoculation with isolate A9 were evaluated: Rioli, Stella, Glamour, F1's and F2's. The level of resistance of F1 generations was a little lower compared with the level of the resistant lines. The results of the investigation lead to the following conclusion: high level of resistance to California isolates of P.s.t. race 1 was found in cultivated type tomato lines coming from crosses with different wilt species. The data from the genetic test suggest the dominance of a major factor for resistance to race 1 in the investigated lines.