

## **Resistance to *M. Incognita* strain W-1 virulent on Mi-1 gene**

Liliana Stamova, California Tomato Research Institute, Davis, CA, listamova@yahoo.com

Root-knot nematodes (*M. incognita* spp) attack many crop species causing app. 5% of global crop loss. The damages on tomatoes diminish their yield and quality and reduce the resistance to other diseases. The most successful managing strategy for controlling the nematodes involves using resistant tomato cultivars. *Mi-1* gene, the only gene in use in all tomato breeding programs was overcome by new nematode strains detected more than ten years ago. Several genes derived from *S. peruvianum* have been found to control resistance. These genes have not been introgressed into commercial varieties due to the species incompatibility. During the last three years within a project funded by CTRI we screened sixty cultivated tomato lines for resistance to strain W-1. The lines represent late progenies of crosses between tomato and several green-fruited wild tomato species. Five week old plants were inoculated individually with 10,000 nematode eggs and then grown in plastic greenhouse with temperatures ranging from 25°C to 38°C. Eight weeks later the plants were evaluated based on number of egg masses per root system. Plants with 0-25 egg masses/plant were considered resistant. A high level of nematode reproduction (65-100 and more egg masses/plant) characterized the susceptible response of our control cultivar Glamour. VFNT Cherry (*Mi-1*) had smaller gales and produced less egg masses (40-60). *S. peruvianum* (*Mi-3*) showed resistance with 3-10 egg masses/plant. The lines under investigation showed different responses to strain W-1. The preliminary tests indicated that the majority of lines do not carry factors of resistance to strain W-1. A few lines segregated for resistance. Three series of lines – Namaste, Serenity and Fortara , showed very promising level of resistance. Best results were obtained with Namaste lines 47-2, 54-1 and 52-2-1 with number of egg masses/plant ranging respectively 2-15, 0-18 and 0-13 and averages of 6.14, 6.20 and 6.46 respectively. High level of resistance showed also line Serenity 15-1-1 with 2-14 egg masses/plant and an average of 6.06. Two Fortara lines (14-1 and 14-2) with a little higher number of egg masses (averages of 8.50 and 11.50 respectively) were considered resistant in comparison with the susceptible control Glamour with an average of 81.20 egg masses/plant. In order to characterize the nature of resistance in Namaste line we inoculated limited number of F1 and F2 populations. The data from the genetic test suggested that a dominant factor in Namaste confirms the resistance to strainW-1. The relationship of resistance in Namaste to Serenity and Fortara as well as to other reported genes is yet to be determined.