

**SCREENING OF TOMATO (*Lycopersicon esculentum*) AGAINST
BACTERIAL WILT (*Ralstonia solanaciarum*) AND
STUDY OF GENETIC OF RESISTANCE**

**P.N. Deniyegedara¹, H.M. Ariyaratna², R.G.A.F. Rajapaksha² and
D.M.D. Dissanayaka¹**

¹*Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.*

²*Horticultural Crop Research and Development Institute, Gannoruwa, Peradeniya, Sri Lanka.*

This experiment was conducted under greenhouse condition at Horticultural Crop Research and Development Institute, Gannoruwa from October 2008 to April 2009. It consisted with three steps such as selection of parental materials, crossing between selected parental materials and screening of F₁ hybrids against bacterial wilt. During this research, three Chinese tomato varieties (ZHONGZA 105, ZHONGZA No 101, and ZHONGZA No 09) and four cultivated varieties (T-245, Katugasthota Wilt Resistance (KWR), Marglobe and Thilina) were used. In the first step, resistant and susceptible varieties were selected by screening of them against bacterial wilt. In the second step, all other tomato varieties were crossed with KWR variety. In the third step, F₁ generations of Marglobe x KWR, ZHONGZA No 09 x KWR and ZHONGZA 105 x KWR crosses and their parents were screened against bacterial wilt. In the first and third steps, the experimental design was RCBD. In the first step three inoculation methods such as stem inoculation, root inoculation and soil inoculation were used whereas another set was maintained as a control. Each inoculation method consisted with ten replicates. In the third step, only stem inoculation, which was identified as the best inoculation method, was used and the experiment consisted with seven replicates. Each treatment consisted with five plants per replicate.

Parental screening results showed that KWR was resistant to bacterial wilt and T-245 and ZHONGZA No 101 were moderately resistant whereas Thilina, ZHONGZA 105, and ZHONGZA No 09 were moderately susceptible. Marglobe was highly susceptible to bacterial wilt. F₁ screening results revealed that all three F₁ generations were resistant to the disease. Therefore, incorporation of resistant gene from local germplasms to other germplasms is an efficient remedy to improve susceptible cultivars of tomato.

Key words: Bacterial wilt, Inoculation method, Tomato