

**Project Title** : Investigations on Tomato Pith Necrosis Caused by Bacterial Pathogens in Greenhouses of Aegian Region

**Start /End Date** : 1997-1999

**Supporting Body** : GDAR

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**Summary** : The prevalence and disease incidence of tomato pith necrosis in greenhouses of Aegian Region, causal agents and the effect of nitrogen (N), potassium (K), high relative humidity, low night temperature and combination of these factors on the disease severity in greenhouse pot experiments were investigated.

Survey results showed that the disease distributed at the rate of 20.89 %, 27.45 % and 28.57% and the disease incidence was 1.53 %, 1.33 % and 2.55 % in 1997, 1998 and 1999, respectively.

The isolates obtained from diseased parts of plants were identified as *Pseudomonas cichorii*, *Pseudomonas viridiflava*, *Pseudomonas corrugata*, *Pseudomonas* sp. and soft rot *Erwinia* sp. on the basis of biochemical, physiological and pathogenic characters.

In greenhouse experiments, one month old tomato plants grown in pots were artificially inoculated with  $10^8$  cfu/ml bacterial suspension of *PC 4*, *PV 3* and *EC 2*. Evaluation based on the length of pith necrosis was made one month after inoculation. N applied as nitrate and ammonium at 0, 150, 300 and 450 ppm levels affected the plant growth, but caused phytotoxicity effect at high levels. All nitrate and 150 ppm ammonium N levels increased *PV 3* and *EC 2* infections, but the others ammonium levels did not have any effect. N significantly decreased disease severity of *PC 4*. K applications (0, 200, 400, 600 ppm) reduced disease by the pathogens and negative correlation was found. High relative humidity increased the length of necrosis, caused by *PC 4*, *PV 3* and *EC 2* at the rate of 22.17 %, 23.33 % and 42.59 %, respectively. Low night temperature enhanced infection by *PC 4* and *EC 2* (15.17 % for *PC 4* and 37.44 % for *EC 2*), but not influenced *PV 3* significantly ( $P = 0.05$ ). High relative humidity in combination with low night temperature increased disease severity by *PC 4* and *EC 2* (42.52 % and 42.38 %, respectively), but not affected *PV 3* infection. N level, causing highest disease severity, K deficiency, high relative humidity and low night temperature in combination increased length of necrosis by *PC 4*, *PV 3* and *EC 2* 53.89 %, 54.65 % and 48.99 %, respectively.