



Biological Soil Treatment to Control *Fusarium solani* and *Tylenchulus semipenetrans* on Sour Orange Seedlings Under Greenhouse Conditions

Riad S.R. El-Mohamedy; Mostafa M. A. Hammam; Farid Abd-El-Kareem
and Mahfouz M. M. Abd-Elgawad

Plant Pathology Department, National Research Centre, Dokki 12622, Giza, Egypt.

Abstract : Dry root rot and slow decline diseases of citrus caused by *Fusarium solani* and *Tylenchulus semipenetrans*, respectively, are serious diseases attacking many groves in Egypt. We evaluated the efficiency of soil amended with bio-agents and compost alone or in combination to control both diseases simultaneously on sour orange (*Citrus aurantium*) seedlings under greenhouse conditions. All tested bioagents reduced *T. semipenetrans* population densities and the linear growth of *F. solani*. Complete inhibition of the linear growth was obtained with *Trichoderma viride*, *T. harzianum* isolate no 3 and *Bacillus subtilis* isolate no 4. The compost with each of *Bacillus subtilis*, *Trichoderma harzianum* or *T. viride* could reduce the rate of nematode build-up to 0.35, 0.38, and 0.41; respectively. The most effective treatment against *F. solani* was compost + mixture of *T. harzianum* + *T. viride* which reduced disease incidence and severity by 87.5%. The highest reduction in total count of *F. solani* was obtained with compost + mixture of *T. harzianum* + *T. viride* which reduced total count by 82.1%. Treatment with compost alone could increase ($P \leq 0.05$) fresh weight of sour orange roots over that treated with *F. solani* and/or *T. semipenetrans*. Other treatments were less effective. The highest increase in enzyme activities was obtained with combined treatments of compost and *T. harzianum*, *T. viride*, *B. subtilis* (or *T. harzianum* + *T. viride*) which increased the peroxidase, polyphenol oxidase and chitinase activities 300, 72.2 and 109.9%, respectively.

Key words: Keywords: Biocontrol, compost, *Fusarium solani*, greenhouse, sour orange, *Tylenchulus semipenetrans*.