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Evaluation of soil Amended with Bio-Agents and Compost Alone or in Combination for Controlling Citrus nematode *Tylenchulus semipenetrans* and Fusarium Dry root rot on Volkamer lime Under Greenhouse Conditions

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Abstract : The efficiency of soil amended with bio-agents and/or compost to control Fusarium dry root rot disease and citrus slow decline of Volkamer lime seedlings under greenhouse conditions was investigated. All tested bioagents reduced *Tylenchulus semipenetrans* population densities and the linear growth of *Fusarium solani*. The most effective treatment against *F. solani* was compost + mixture of *Trichoderma harzianum* + *T. viride* which reduced disease incidence and severity by 83.3 and 87.5%, respectively. The highest reduction was obtained with compost + T. *harzianum* or *T. viride* which reduced disease incidence and severity by 66.7 and 75% respectively. Infested soil treated with compost + *T. harzianum* or *T. viride* resulted in reducing total count of *F. solani* more than 61.2%. The highest increase in enzyme activities was obtained with mixture of compost and *T. harzianum*, *T. viride*, *Bacillus subtilis* or (*T. harzianum* + *T. viride*) which increased the peroxidase, polyphenol oxidase and chitinase activities by more than 65.2%. The compost with each of *B. subtilis*, *T. harzianum* or *T. viride* could reduce the rate of nematode build-up to 0.38, 0.40, and 0.42; respectively. In the presence of both pathogens *T. semipenetrans* and *F. solani*, treatment with compost alone could increase ($P \leq 0.05$) shoot length of Volkamer lime over that treated with *T. viride*. Other treatments were less effective.

Key words: Dry root rot disease, citrus trees, *Fusarium solani*, *Tylenchulus semipenetrans*, bio-agents, ompost, Volkamer lime, greenhouse.

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