J.Biol.Control, 5 (1), 61-62, 1991

Effect of Organic amendments and the Antagonist *Trichoderma viride* on the Biological control of 'Damping- off' Disease of Tomato caused by *Pythium indicum* Balakrishnan

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Application of organic amendments to manage damping-off disease in tomato has been reported by many workers (Papavizas and Lumsden,1980; Harry and Fahy, 1986). In the present investigation, effect of various organic amendments and the antagonist *Trichoderma viride* Pers. in the control of damping-off disease of tomato caused by *Pythium indicum* Balakrishnan was studied. Population levels of the antagonist and pathogen in the amended and unamended soils were also estimated and the results presented.

Farm yard manure, neemcake, sawdust and tamarind leaf compost were used as amendments at the rate of 4g per kg of sterile soil taken in pots. *T. viride* multiplied in wheat-bran peat soil medium (Sivan *et al.*, 1984) at the rate of 5g per kg of soil and pathogen inoculum multiplied in sand-maize medium (Muthusamy, 1972) at the rate of 1 part of the inoculum to 20 parts of the soil were mixed to the amended and unamended soils. After 1 week, the pots were sown with 50 tomato seeds, irrigated daily and their germination per cent was recorded. Cfu of *T. viride* and *Pythium* were estimated from the soil on 0,7,14 and 21 days after inoculation following the procedure of Stanghellini and Hancock (1970) and Elad and Chet (1983) respectively.

The results showed maximum seed emergence in neemcake amended pots (88.0%). Interestingly, in this treatment, cfu of *T. viride* was also much higher with a concomitant reduction in *Pythium* population (Table 1). Saw dust was found to be the second best amendment. The reason for the population decrease of *Pythium* may be that the decomposition products of neemcake and saw dust encouraged *T. viride* population in the soil. Due to the tremendous increase in the cfu of *T. viride,* the competitive saprophytic ability of the pathogen might have been reduced. In dual cultures, *T. viride* coiled *P. indicum*

Table 1. ***T. viride*** **and organic amendments in the control of 'damping-off' of tomato**

Treatment	Germination of seeds after 21 days (%)	cfu of *Pythium* x 10^2/g of soil		cfu of *T.viride* x 10^4/g of soil	
		At the time of inoculation*	21 DAT	At the time of inoculation*	21 DAT
Unamended soil	68.7^{d}	13.7	1.3^{d}	58.7	61.7^{e}
FYM	70.2^{d}	12.7	0.3^{c}	55.7	256.7^{d}
Neemcake	88.0^{a}	13.0	0.0^{a}	59.0	1560.0^{a}
Sawdust	78.4^{bc}	14.7	0.0^{a}	52.0	836.7^{b}
Tamarind leaf compost	73.3^{cd}	13.3	0.7^{b}	56.3	750.0^{c}

* Differences between the means not significant

In the column means followed by same letters do not differ significantly (P = 0.05) by D.M.R.T

hyphae and destroyed it. From the observations, it was found that even in the unamended soils, cfu of *Pythium* have been reduced to certain extent. But hereagain a slight increase in the population levels of *T. viride* could be noticed. Since *T. viride* had been applied to the soil along with wheat bran and peat soil, a temporary food base might have been available for its proliferation. Hence, it is concluded that inoculation of *T. viride* in neemcake and sawdust amended soil will increase the cfu of the antagonist and protect tomato seedlings from *Pythium* causing damping-off disease.

Key Words : Tomato. damping-off, biological control, *Trichoderma viride,* Neemcake

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