



REGULAR ARTICLE

COMPARATIVE ANTAGONISTIC PROFILING OF DIFFERENT TRICHODERMA SPECIES AGAINST *DRECHSLERA TETRAMERA*, PATHOGENIC TO *CAPSICUM FRUTESCENS*

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SUMMARY

Integrated Pest Management (IPM) is much popular among farmers in combating diseases of the crop. Being eco-friendly, safe and effective disease control agents, biological agents are being used widely by farmers in combating diseases and pests. Two isolates of Biological Control Agents viz. *Trichoderma viride* and *Trichoderma harzianum* were evaluated in vitro for their antagonistic profiling against *Drechslera tetramera* isolated from *Capsicum frutescens*. Both species of *Trichoderma* were almost equally effective against the pathogen growth in vitro. *Trichoderma* was found to be a potent bioagent in controlling the growth of *Drechslera tetramera*.

Key words: *Trichoderma* spp., *Drechslera tetramera*, Biocontrol, Antagonism, *Capsicum frutescens*

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1. Introduction

India is the second largest producer of vegetables in the world next only to china. Vegetables are important as protective food providing vitamins and minerals. *Capsicum frutescens* commonly called as Shimla Chilli is an important vegetable crop in India. It is widely grown in Bareilly and in most part of the northern India and directly marketed through various outlets. Shimla Chilli is highly susceptible to a number of fungal diseases and chemical control of diseases has no longer been effective. It is therefore necessary to manage the disease through IPM especially by the use of Biocontrol agents. Diseases are responsible for about 25-30% reduction in crop yield thus causing severe economic losses.

Drechslera though showing necrotic symptoms on epigeal parts is a localized as well as soil borne pathogen and fungicides are found to be ineffective if applied as leaf spray. The present work, was therefore designed to deal with integrated management of *Drechslera tetramera* especially through biocontrol agents, *Trichoderma harzianum* and *Trichoderma viride*.

2. Materials and Methods

Pure cultures of *Drechslera tetramera* from diseased plant parts were collected from Bareilly region in India. Host fungus as well as Two Bio Control agents (BCAs) were grown on Potato dextrose agar (PDA) petri dishes for a week at 28±2 °C. Approximately 20 ml PDA was poured into each petri dish. After solidification one disc of *Drechslera tetramera* and BCA was placed in the petridishes on the surface of PDA at a distance of 4 cm from each other. Now the dishes are incubated at room temperature and kept under observation for 10 days. Growth was observed after 5th, 7th and 10th days after incubation. Each experiment was conducted with control plates. All results were analyzed statistically.

3. Results and Discussion

Results indicated that both species i.e. *Trichoderma harzianum* and *Trichoderma viride* have reduced the growth of *Drechslera tetramera*. Both spp. successfully controlled the growth of *Drechslera tetramera*. Both spp. of BCAs were mycoparasite on *Drechslera*

tetramera and their hyphae grew over the hyphae of *Drechslera tetramera*. Their antibiosis is due to some diffusible antifungal substance.

Results revealed that *Trichoderma harzianum* caused 69.23% inhibition of *Drechslera tetramera* after 10 days of

incubation, while inhibition of *Drechslera tetramera* upto 66.23 was recorded by using *Trichoderma viride*. It is evident (Table 1) that growth inhibition was started after 5th day of incubation and maximum inhibition was found after 10 days of incubation. All results were found to be significant at 5% level.

Table 1. Testing of two biocontrol agents against *Drechslera tetramera*.

Bio Control Agents	Colony diameter(cm)		
	5 th Day	7 th Day	10 th Day
Control	5	6.8	7.8
<i>T. harzianum</i>	1.9	2.2	2.4
CD (5%)	0.0246	0.0334	0.1035
growth inhibition	62.00%	67.65%	69.23%
Control	4.8	6.6	7.7
<i>T. viride</i>	1.8	2.4	2.6
CD (5%)	0.0222	0.0207	0.0565
growth inhibition	62.50%	63.70%	66.23%

- average of three replicates
- radial growth is taken in cm
- all values are significant at 5% level

Indira and Muthusubramaniam (2004) worked on enhancing germination and seedling vigor of mold infected sorghum seeds using bioagents. Mold (caused by many pathogens including *Fusarium*, *Alternaria*, *Bipolaris*, *Curvularia*, *Drechslera* etc.) infected *Sorghum bicolor* cv. *Esv. II* seeds were tested to evaluate the effect of biological control agents on germination and seedling vigor of mold infected seeds. Bhavaneswari and Rao (2001) have shown the effect of *Trichoderma viride* to post-harvest pathogens on mango. Bunker and Mathur (2001). Discussed the Integration of Biocontrol agents and fungicide for suppression of dry root rot of *Capsicum frutescens*. Deshmukh et al. (1994) worked on the Effect of *Trichoderma* species and fungicides on fungi sorghum (*Sorghum bicolor*). Dennis and Webster (1971) have shown the antagonistic properties of species grouping *Trichoderma*. present paper has shown similarities with the work of Indira and Muthusubramaniam.

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