

Biocontrol of Cercospora Leaf Spot on *Trigonella foenum graecum* L. in Kota District Rajasthan

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Abstract: An extensive survey of Kota district resulted several fungal diseases occurring on *Trigonella* crop. Leaf spot caused by *Cercospora traversiana* was found to be more prominent and caused a great loss to the crop. To control the disease *Trichoderma* sps. viz. *Trichoderma viride*, *Trichoderma harzianum* were experimented in vitro.

Keywords: *Trigonella*, *Cercospora*, *Trichoderma*

1. Introduction

Fenugreek commonly known as "METHI" (*Trigonella foenum graecum* L.) Belongs to family Fabaceae, is an annual leguminous crop, which is extensively grown as a Rabi crop in the state of Rajasthan. Species of the genus *Trigonella* and particularly fenugreek are well known for their pungent aromatic, high nutritive and multi-therapeutical properties and serve culinary medicinal and industrial purposes. Various diseases on *Trigonella* has been noticed from Ethiopia (Rouk & Mangesha, 1963), UK (Anonymous, 1970), Morocco (Petropolous, 1973), Bulgaria (A.P. Margina & J. De.gryuter, 1996), Australia (Max Jongbloed), Pakistan (M.Mushtaq, M.A. Haq. and M.H. Hashmi, 1998) and also from India.

C. traversiana is the only species of the *Cercospora* infecting Fenugreek (Cook 1978, Ryhy 1989). The development of ecofriendly control strategies to reduce disease intensity, dependency on synthetic fungicides and developing resistant cultivar for sustainable management of plant diseases. Acharya et al (2007) suggested some biological control agents which are environment friendly and socially acceptable. *Trichoderma* species belongs to a class of free living fungi beneficial to plants that is common in the rhizosphere. They have been widely studied for their capacity to produce antibiotics, parasitize other fungi and compete with deleterious plant microorganisms (Harman et al 2004). Several strains of *Trichoderma* have been developed as biocontrol agents against fungal diseases of plant. Therefore present investigation has been undertaken to know the inhibiting effect of *Trichoderma* sps. against the Leaf spot pathogen *Cercospora traversiana* in vitro on *Trigonella* cultivar RMT-1.

2. Materials And Methods

Bio-agents obtained indigenously as well other viz. *Trichoderma viride*, *T. harzianum* were evaluated for their

efficacy under in vitro using dual culture technique against *Cercospora traversiana* fungus.

Twenty ml of sterilized and cooled potato dextrose agar was poured into sterile Petriplates and allowed to solidify. For evaluation of fungal biocontrol agents, mycelia disc of test fungus was inoculated at one end of the petriplate and antagonistic fungus was placed opposite to it on the other end. The plates were incubated at $27\pm 1^\circ\text{C}$ and zone of inhibition was recorded by measuring the clear distance between the margin of the test fungus and antagonistic organism. The colony diameter of pathogen in control plate was also recorded. The percent inhibition of growth of the pathogen was calculated by using the formula suggested by Vincet (1947).

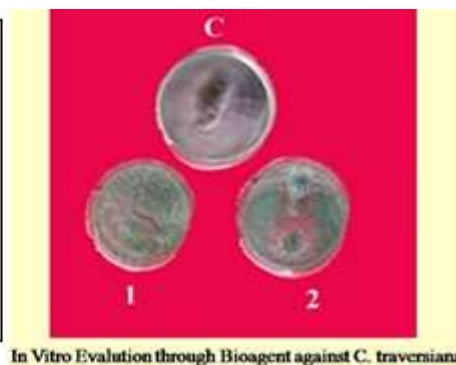
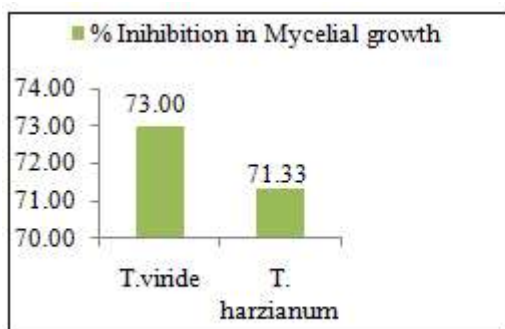
3. Results And Discussion

Two biocontrol agents' viz. *Trichoderma viride* and *Trichoderma harzianum* were evaluated against *C. traversiana* and the results are presented in Table-1, Fig-1 and Plate-1.

The results revealed that all the antagonists significantly reduced the growth of *C. traversiana*. After measuring the colony diameter of *C. traversiana*, it was noticed that maximum reduction in colony growth was observed in *Trichoderma viridae* (73.00%) which was significantly superior to *Trichoderma harzianum* (71.33%).

Table 1: Effect of Bioagents on % inhibition of mycelial growth of *C. traversiana*

S.No.	Bioagents	Percent inhibition of mycelia growth.
1	<i>Trichoderma viridae</i>	73
2	<i>Trichoderma harzianum</i>	71.33
	SEm±	0.39
	CD 5%	1.23
	CV	0.88



The results regarding the efficacy of *Trichoderma* species were in accordance with Faheem Amin et al (2010) who studied the ability of *Trichoderma* strains against *Rhizoctonia solani* (isolates from tomato), *Sclerotium rolfsii* (Causing collar rot of tomato) and *Sclerotinia sclerotium* (Causing web blight of beans) and found maximum inhibition of mycelial growth upto 71.41 percent in *T. viride*. Similar results were investigated by Y. Elad et al (1980) against *Sclerotium rolfsii* and *Rhizoctonia solani* by *Trichoderma harzianum* where significant disease reduction of 20% was found.

biocontrol agent, and soil organic matter quality. *Phytopathology* **96**, 186-189.

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