

In Vitro Effect of different Bioagents against Colletotrichum Truncatum Causing Pod Blight of Soybean

Chavan S.S.¹ and Rewale K. A.²

^{1,2}Department of Plant Pathology, Sau. K.S.K College of Agriculture, Beed, V.N.M.K.V., Parbhani
E-mail: ¹smeechavan4@gmail.com, ²smeechavan4@gmail.com

Abstract—*Colletotrichum truncatum*, is the most common species recorded on soybean. It cause considerable damage by reducing plant stand, seed quality, seed germination, seedling vigour and yield. Six fungal antagonists viz., *Trichoderma viride*, *T. harzianum*, *T. hamatum*, *T. longibrachiatum*, *T. koningii*, *T. virens* and one bacterial antagonist *Pseudomonas fluorescens* were evaluated in vitro against *C. truncatum*, applying Dual Culture Technique. Of the six fungal antagonists tested, *T. viride* was found most effective and recorded least linear mycelial growth (22.66 mm) with highest mycelial inhibition (74.80%) of the test pathogen over untreated control (90.00 mm and 00.00%), followed by *T. hamatum* (col. dia. 23.33 mm and inhibition 74.07%), *T. harzianum* (col. dia. 23.50 mm and inhibition 73.89%), *T. longibrachiatum* (col.dia. 28.33 mm and inhibition 66.51%). The fungal antagonist *T. virens* was found least effective (col.dia. 32.33 mm and inhibition 64.06%). The bacterial antagonists *P. fluorescens* was also found fungistatic and recorded 32.16 mm and 64.25 per cent linear mycelial growth and inhibition, respectively.

Keywords: *Colletotrichum truncatum*, *Trichoderma viride*, fungistatic and *P. fluorescens*.

1. INTRODUCTION

Soybean is the world's foremost provider of protein and oil. In Maharashtra, the area production and productivity of soybean were 32.13 lakh hectare, 39.95 lakh metric tonnes and 1243 kg/ha, respectively [1]. Soybean growing major states in the country are Madhya Pradesh, Maharashtra, Karnataka, Andhra Pradesh. Soybean plant health is a critical component of profitable soybean production. *Colletotrichum truncatum*, is the most common species recorded on soybean [11] and the crop soybean is susceptible to *C. truncatum* at all stages of development particularly from bloom to pod fill stage. It cause considerable damage by reducing plant stand, seed quality, seed germination, seedling vigor and yield [14]. Hence, *in vitro* evaluation of several bioagents against pod blight of soybean was carried to study the efficiency of these bioagents.

2. MATERIAL AND METHODS:

Six fungal antagonists viz., *Trichoderma viride*, *T. harzianum*, *T. hamatum*, *T. longibrachiatum*, *T. koningii*, *T. virens* and one bacterial antagonist *Pseudomonas fluorescens* were evaluated in vitro against *C. truncatum*, applying Dual Culture Technique given by Dennis and

Details of the experiment:	
Design	: CRD
Replications	: Three
Treatments	: Eight

Fungal antagonists	
T ₁	: <i>Trichoderma viride</i>
T ₂	: <i>T. harzianum</i>
T ₃	: <i>T. hamatum</i>
T ₄	: <i>T. longibrachiatum</i>
T ₅	: <i>T. Koningii</i>
T ₆	: <i>T. virens</i>

Bacterial antagonists	
T ₇	: <i>Pseudomonas fluorescens</i>
T ₈	: Control (untreated)

Webster, 1971[7]. Seven days old cultures of the test bioagents and test fungus (*C. truncatum*) grown on (PDA, NA) were used for the study. Discs (5 mm dia) of PDA along with culture growth of the test fungus and bioagents were cut out with sterilized cork borer. Then two culture discs, one each of the test fungus and bioagent were placed at equidistance and exactly opposite with each other on solidified PDA medium in Petri plates aseptically and plates were incubated at $27 \pm 2^{\circ}\text{C}$. PDA plates inoculated only with culture disc of the test fungus were maintained as untreated control.

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