

Compatibility of imidacloprid with plant pathogenic antagonistic microorganisms, *Trichoderma viride* (Pers) and *Pseudomonas fluorescens* (Migula) in cotton

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In cotton, the compatibility of imidacloprid as seed treatment was evaluated with plant pathogenic antagonistic microorganisms, *Trichoderma viride* (Pers) and *Pseudomonas fluorescens* (Migula). The radial growth of *T. viride* was less at higher concentration of 7000 ppm (12.5mm) compared to the untreated check (15.1mm) at 24 h. The radial growth was less in treatments compared to untreated check at 48 and 72 h of incubation. Similarly the spore yield was less in treatments compared to untreated check. Regarding the bioefficacy of *T. viride*, the radial growth of the pathogen, *Macrophomina phaseolina* was 20 mm in the treatment of *T. viride* alone while it was 38 and 40 mm in the combination treatments of imidacloprid 70 WS at 7 g and 5 g kg⁻¹ with *T. viride* 4 g kg⁻¹ while in the untreated check it was 45 mm. In the pot culture studies, it was found that the population of *T. viride* was higher in the treatment of *T. viride* 4 g kg⁻¹ alone compared to the combination treatment of imidacloprid 70 WS and *T. viride*. Similar trend was also observed in case of *P. fluorescens*. It was concluded that imidacloprid was having lesser impact on *T. viride* and significant inhibitory effect on *P. fluorescens*.

Key words: Cotton, *Trichoderma viride*, *Pseudomonas fluorescens*, imidacloprid

INTRODUCTION

Cotton is one of the most important cash crops of India, which accounts for about 50 per cent of the total fibre consumption of the world. The sucking pests, aphids, jassids, thrips, whiteflies and the bollworm complex are considered to be the key pests causing severe damage leading to loss in yield of seed cotton. A new insecticide molecule imidacloprid 1-(6-chloro-3-pyridinyl) methyl 4, 5-dihydro-N-nitro-) H-imidazole-2-amine was developed by Nihon Bayer Ltd. and it belongs to the chloronicotinyl group. It has a superior performance against sucking pests. To combat the seed and soil borne diseases, the antagonistic microorganisms *Trichoderma viride* (Pers.) and *Pseudomonas fluorescens* (Migula) were reported to be effective (Mirhuta -Grim and Rose, 1986; Vidyasekaran and Muthamilan, 1995). The present study was undertaken to evaluate the compatibility of imidacloprid with *T. viride* and *P. fluorescens* in cotton.

MATERIALS AND METHODS

Effect of imidacloprid on the growth of Trichoderma viride (Pers) :

A laboratory experiment was conducted to study the effect of imidacloprid on the growth of *T. viride*, a potential biocontrol agent used against root rot causing organism, *Macrophomina phaseolina* (TassiGoid) under *invitro* conditions. The treatments were imidacloprid 70 WS at 3000, 5000 and 7000 ppm and an untreated check. There were five replications.

To the 100 ml of sterilized Potato Dextrose Agar medium (PDA) 3, 5 and 7 ml of imidacloprid 70 WS 1,00,000 ppm (of the formulation) was added and mixed thoroughly under aseptic condition and imidacloprid unamended PDA medium served as control. The amended and unamended media were poured to the sterilized Petridishes under aseptic condition and allowed to solidify. After solidification, an 8 mm circular disc of 5 day old *T. viride* was transferred to the centre of the plate using inoculation needle under aseptic condition and the plates

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