Research Paper

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Effect of bio-control agents on the growth and spore germination of *Alternaria porri*

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ABSTRACT : The result revealed that *Trichoderma viride* (88.65%) and *Trichoderma harzianum* (86.85%) were highly effective in inhibiting the growth of *Alternaria porri in vitro* followed by *Trichoderma koningii* (76.58%) and *Pseudomonas fluorescens* (72.55%). Least inhibition (68.50%) was noticed with *Trichoderma resei.* Similarly highest reduction in spore germination was observed by *Trichoderma viride* (81.65%) which was significantly superior to all other bio-control agents tested. Next best was *Trichoderma harzianum* (76.72%) followed by *Trichoderma koningii* (68.50%) and *Pseudomonas fluorescens* (57.33%). Least inhibition (41.50%) was noticed with *Trichoderma reesei.*

Key Words : Bio control agents, Growth, Spore germination

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Onion (*Allium cepa* L.) is an important bulb crop of India belonging to the family Alliaceae. In India, the onion crop occupies an area of 0.4546 million hectares with a total production of 6034.25 million tones. In Andhra Pradesh, it is grown over an area of about 0.022 million hectares with an annual production of 197 million tonnes (Anonymous, 2005-06). In Guntur district of Andhra Pradesh it is cultivated in an area of 0.001239 million hectares with an annual production of 0.019680 million tonnes (Anonymous, 2006). Several factors contribute to the low productivity of onion. Diseases like purple blotch, downy mildew, Stemphylium blight, basal rot and storage rot are known to be more significant in reducing the production of the crop. Of these, purple blotch is the most destructive disease, prevalent in almost all onion growing areas of the world causing heavy losses under field conditions. In Guntur district the disease has become prevalent causing heavy losses to onion farmers in recent times. The present investigation was carried out to assess the efficacy of biocontrol agents.

Research Procedure

Different species of *Trichoderma viz.*, *Trichoderma harzianum*, *T. viride, T. resei*, *T. koningii* and *Pseudomonas fluorescens* available in the Department of Plant Pathology, Agricultural College, Bapatla were tested *in vitro* against *Alternaria porri* by using dual culture technique (Dhingra and Sinclair, 1993).

Twenty ml of sterilized Potato dextrose agar medium melted and cooled at 45^{0}C was poured aseptically into sterilized Petri dishes of 9 cm diameter. Mycelial discs of 3 mm diameter cut from the edge of actively growing three day-old-culture of pathogen and mycelial discs (3 mm) of *Trichoderma* spp. cut from actively growing colony of the respective fungal species with the help of a sterilized cork borer were placed on the periphery about one cm from the edge of the Petri dish at opposite sides.

In the case of bacterial antagonist evaluation, the bacterium was streaked at the centre of the agar plate and two mycelial discs of the pathogen were placed on either side of the plate. The Petri dish containing Potato dextrose agar medium inoculated with the pathogen alone served as control. All the treatments were replicated four times and were incubated at room temperature (28 $\pm$ 1^{0}C). After incubation when the growth of the pathogen was complete in the control, colony diameter of the pathogen was measured in each treatment and the per cent inhibition of the pathogen over control was calculated by using the following formula as suggested by Nene and Thapliyal (1982).