

RESEARCH ARTICLE

In vitro evaluation of the different bioagents against *Rhizoctonia solani* in soybean

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ABSTRACT

Samples were collected and isolation was made from the root rot infected soybean plant which yielded a fungal species. That was identified as *Rhizoctonia solani* Kuhn. The infected plants showed browning and rotting of collar region and brown discoloration of infected tissues with easy uprooting and root decay. In the present investigation, it was observed that bio agent, *Trichoderma harzianum*, *Trichoderma viride*, *Trichoderma hamatum* and *Bacillus subtilis* were effective in controlling the growth of the pathogen up to 82.15, 70.22, 67.97 and 55.98 per cent, respectively *in vitro*.

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INTRODUCTION

Soybean [*Glycine max* (L.) Merrill] belongs to family fabaceae. It is originated from provinces of China and Manchuria and further spread to Korea, Taiwan, Japan, Australia and South Africa. It has become miracle crop of the 21st century due to its multifaced advantages. On the global scale soybean has come to the top of the list of oilseed crops and contributes over one third of the total supply of the vegetable oil over pool. The crop is suffered by many fungal diseases of which root rot caused by *Rhizoctonia solani* is the most destructive disease which occurs at pre-emergence or post-emergence stage of seedlings and causes significant losses in yield. It is soil borne disease and creates great problem in its management. Apart from soybean, *R. solani* is reported to cause sheath blight of rice, collar rot of passion fruit, banded sclerotial disease of maize, rhizoctonia leaf blight of sunflower and rhizoctonia rot of carrot, etc.

Now-a-days use of fungicides in plant protection is widely used because fungicides help to reduce disease incidence and thus, boost up the crop yield that meets the hunger of exploded population. However, fungicides are not a long term solution to maintain crop health. Applications of

the synthetic chemicals have many ill effects on eco-system. Besides, their non-targeted effects and hazardous nature, petroleum based fungicides are more expensive and some loose their effectiveness because of development of resistant strains of pathogens. In this context, use of bio-agents and breeding for resistance, to control plant diseases is fully justified. During past several years, some noticeable success of disease control was achieved by using bio-agents, as they are economical and eco-friendly. These are the distinct possibilities for future and can be successfully exploited in the modern agriculture, especially within the framework of Integrated Disease Management System (IDMS).

MATERIALS AND METHODS

Soybean root rot samples were collected from experimental fields of College of Agriculture, Pune during Kharif season, 2009.

Bio-agents used for experiment :

- *Trichoderma viride*
- *Trichoderma harzianum*
- *Trichoderma hamatum*