



RESEARCH ARTICLE

# Screening of new molecules of fungicides against *Sclerotium rolfsii*, *Rhizoctonia bataicola* and *Fusarium* sp. causing root rot/wilt complex of soybean

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## ABSTRACT

The root rot/ wilt complex of soybean has become a major production constraint in Karnataka. The associated pathogens causing the root rot/ wilt are identified as *Sclerotium rolfsii*, *Rhizoctonia bataicola* and *Fusarium* sp. in northern Karnataka, either in combination of two or more than two pathogens. *In vitro* screening of fungicides, bioagents and botanicals was taken up to identify an effective molecule against all the three pathogens. *In vitro* studies revealed that Mancozeb, Carbendazim, Thiophanate methyl, Hexaconazole, Propiconazole, Carbendazim + Mancozeb and Carboxin + Mancozeb were more effective in inhibiting the mycelial growth of all the three pathogens.

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## INTRODUCTION

Soybean [*Glycine max* (L.) Merrill] is a protein rich oilseed crop. It is considered as a golden bean, miracle bean and wonder crop of the 20<sup>th</sup> century because of its characters and usage. In India, losses due to various diseases are estimated as 12 per cent of total production. The root rot/wilt complex has become a major production constraint in Karnataka. Soybean is being attacked by more than 100 pathogens (Sinclair and Shurtleff, 1975). Plant pathogens exhibit variations in their morphological, biological and pathogenic characters. Although wilt complex disease has assumed economic importance in India and Karnataka, so far there is very limited information on identification of new molecules against more than pathogenic agent. Looking into the magnitude of severity of this complex disease in Northern Karnataka, studies were conducted on the effectiveness of new molecules against associated pathogens.

## MATERIALS AND METHODS

In order to know the effective chemical and bioagent against wilt/root complex involving three pathogens (Sangeetha, 2011), a large scale screening of these molecules was taken up in laboratory at Department of Plant Pathology, University of Agricultural Sciences, Dharwad.

### ***In vitro* evaluation of chemicals against *S. rolfsii*, *Rhizoctonia* sp. and *Fusarium* sp.**

The efficacy of non-systemic fungicides (at the concentration of 0.15, 0.2, 0.25 and 0.3%), four systemic fungicides (at the concentration of 0.05, 0.1 and 0.15 %) and four combiproducs (at the concentration of 0.05, 0.1 and 0.15%) were assayed *in vitro* against *S. rolfsii*, *Rhizoctonia* sp. and *Fusarium* sp. The fungicides used are given hereunder:

Required quantity of individual fungicide was added separately into sterilized molten and cooled Potato dextrose agar so as to get the desired concentration of the fungicides. Later, 20 ml of the poisoned medium was poured into sterilized