



Research Article

## Integrated management strategy for *Sclerotium rolfsii* causing wilt of potato

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### ARTICLE INFO

Article Chronicle :

Received : 19.12.2011

Revised : 24.12.2011

Accepted : 05.03.2012

Key words :

*Sclerotium rolfsii*,

Fungicides,

Bioagents,

Soil solarization

### ABSTRACT

Sclerotium wilt of potato caused by *Sclerotium rolfsii* Sacc. is one of the most important soil borne diseases of potato in Karnataka. Efficacy of five non-systemic and five systemic fungicides were evaluated at different concentrations by 'poisoned food technique'. Among the non-systemic fungicides, emisan, thiram and mancozeb at all concentrations and captan and zineb at 0.3 per cent inhibited the growth of *S. rolfsii* completely (cent per cent). This was followed by zineb at 0.2 per cent (94.00%) concentration. Systemic fungicides viz., carboxin, difenaconazole and hexaconazole at all concentrations and metalaxyl MZ @ 0.2 per cent concentration inhibited cent per cent growth of *S. rolfsii* and were found to be significantly superior over rest of the treatments tested. This was followed by metalaxyl MZ at 0.1 per cent (76.13%) concentration. Six biocontrol agents viz., *Trichoderma harzianum* Raifai, *Trichoderma koningii* Oudern, *Trichoderma virens* Miller, *Trichoderma viride* Pers. ex S. F. Gray, *Pseudomonas fluorescens* Migula and *Bacillus subtilis* Cohn Emend Pras were tested against *Sclerotium rolfsii* by dual culture technique. *T. harzianum* showed the maximum inhibition of *S. rolfsii* and it was found significantly superior over rest of the bioagents tested. This was followed by *T. viridae*, *T. koningii* and *T. virens*. However, they significantly differed with one another. Soil solarization in combination with carboxin + *T. harzianum* tuber treatment along with soil application of FYM and neem cake reduced the wilt incidence and increased yield of potato.

**How to view point the article :** Basamma and Naik, K.S. (2012). Integrated management strategy for *Sclerotium rolfsii* causing wilt of potato. *Internat. J. Plant Protec.*, 5(1) : 124-127.

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### INTRODUCTION

Potato (*Solanum tuberosum* L.) is one of the important commercial vegetable crops in India. It is the world's fourth important food crop owing to its great yield potential and high nutritive value and accounts for nearly half of the world's annual output of all root and tuber crops. It supplies at least 12 essential vitamins and minerals, including an extremely high density of vitamin C (Thortan and Sieczka, 1980). Many disease causing agents viz., viruses, fungi, bacteria, nematode, viroids and phytoplasmas are reported on potato. Among the fungal diseases, wilt caused by *Sclerotium rolfsii* Sacc. has attained the economic importance. In recent years, this disease is increasing and causing huge losses in potato (Paul Khurana, 1998). Kulkarni (2007) reported the maximum incidence of wilt of potato caused by *S. rolfsii* in Belgaum (7.25%) and least in Bidar (2.50%) districts. Sclerotium wilt of potato caused by *Sclerotium rolfsii* Sacc. is a soil borne pathogen and infects many host plants which are economically important. Hence,

management of this disease is necessary by using fungicides, bioagents in alone or in integration with soil solarization and organic amendments.

### MATERIALS AND METHODS

#### Chemicals:

The efficacy of five non-systemic fungicides (at the concentrations of 0.1, 0.2 and 0.3%) and five systemic fungicides (at the concentration of 0.05, 0.1, 0.2%) were assayed *in vitro*.

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 Petriplates. Mycelial discs of five mm size from actively growing zone of seven days old culture was cut out by a sterile cork borer and one such disc was placed at the centre of each agar plate. Control treatment was maintained without adding any