

Research Paper :

Management of Root Rot of Sage (*Salvia officinallis*) Caused by *Fusarium solani* and *Rhizoctonia solani*

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International Journal of Plant Protection, Vol. 2 No. 2 : 261-264 (April to September, 2009)

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SUMMARY

An attempt was made to manage these pathogens in glasshouse and field conditions by using different fungicides, microbial antagonists, botanicals and organic amendments. Among the eight different fungicides tested *in vitro* mancozeb and carbendazim at all the concentrations completely inhibited the *F. solani* and *R. solani* where as propiconazole was effective only against *R. solani* at all concentrations tested. Baycor was found least effective against both the pathogens. Out of seven biocontrol agents tested under laboratory condition in dual culture, *Trichoderma viride* and *T. virens*, maximum inhibition of both the pathogens followed by *T. harzianum* and *T. hamatum*. Maximum inhibition of mycelial growth of both the pathogens was observed in 5 per cent neem leaf extract. Neem cake was found to be effective in reducing wilt incidence up to 18.75 and 31.25 per cent at 5 and 2 per cent, respectively. Application of carbendazim (0.1 %) mancozeb (0.2%) and neem cake followed by garlic bulb extract have effectively controlled the disease incidence. However, carbendazim treated plots were found highly effective in managing the disease of sage.

Key words :

Salvia officinallis,
Fusarium solani,
Rhizoctonia solani,
Fungicides,
Organic amendments.

Sage (*Salvia officinallis* Linn.) belonging to the family Lamiaceae is known as common sage, garden sage, dalmation sage; In Kannada, it is called as Sannakarpoorada gida. Sage is a native of Mediterranean countries viz., Southern France, Italy and Morocco. It is cultivated in the temperate zones of Europe, Yugoslavia in Dalmation Islands, adjacent coast of Adriatic Sea and Albania (Verghese, 1999).

Sage crop is cultivated in Sugandhavana, Division of Horticulture, GKVK, Bangalore. It is vulnerable to many diseases, of which root rot caused by *Fusarium solani* and *Rhizoctonia solani* were reported by Sunanda (2000). Root and crown rot of sage is caused by *Phytophthora cryptogea* L. Anonymous (2002). As it is a newly introduced crop on which the root rot is a serious malady that causes considerable loss and not much information is available regarding association of the pathogen(s) and their management. Hence, present investigation was undertaken to manage root rot disease with fungicides, microbial antagonists and organic amendments.

MATERIALS AND METHODS

The experiments on *Fusarium solani* and *Rhizoctonia solani* causing root rot of *Salvia officinallis* were conducted in the Department of Plant Pathology and at Sugandhavana,

Division of Horticulture, U.A.S., G.K.V.K, Bangalore during *khari* 2005. Preliminary investigations of the disease were initiated on various aspects with reference to pathogens, pathogenicity, symptomatology and survivability of the pathogen, host range studies, effect of organic amendments and management of the disease with fungicides, biocontrol agents and botanicals.

The earliest symptoms observed under field conditions were partial bleaching, drooping of lower leaves, pale yellowing and loss of turgidity. Further, browning and blighting of leaves led to shedding. Close observation of the infected plants at collar region showed water-soaked patches on the stem followed by brown discoloration. As and when the disease advances, entire stem showed sunken and dried up patches with girdling. From the infected stem, bark could be easily peeled off. The infected plants could be easily pulled up from the soil which reveal discoloration and rotting of roots.

The pathogens associated with sage root rot were isolated from different parts such as tertiary and secondary roots, root hairs and bark of the infected sage plants, collected from the Sugandhavana. Repeated isolations from the infected plant yielded *Fusarium* species and *Rhizoctonia* species. Further, early infected

Accepted :
September, 2009