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Short Communication

Efficacy of Fungicides against Sclerotial Blight of Tea Plant

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Tea, *Camellia sinensis* (L.) O. Kuntze is the most important hot beverage in the world today and one of the major cash crops of Nepal. Being a perennial, the tea plant possibly interacts with, more environmental problems than do most other plants. Sclerotial blight caused by *Sclerotium rolfsii* Sacc. is polyphagus fungal diseases which appears in the nursery grown tea seedlings. *S. rolfsii* occurs in diverse soils, has a very wide host range and worldwide distribution (Punja, 1985). Effective and efficient management of cash crop diseases is generally achieved by use of systemic fungicides. Therefore, in the present investtigation an attempt was made to test the efficacy of some fungicides against *S. rolfsii in vitro*.

Five systemic fungicides (Thiodan, Calixin, Captan, Carbendazim and Indofil M-45) were tested against the pathogen (*S. rolfsii*) *in vitro* to examine the inhibitory effect on mycelial growth and sclerotial germination. For evaluation of antifungal activities of systemic fungicides, desired concentrations of 0.1%, 0.05%, 0.025% and 0.0125% were obtained by adding appropriate amount of standard basic stock of systemic fungicides to Potato Dextrose Agar (PDA) in petriplates for each treatment. PDA without fungicides served as control. Each plate was inoculated with a 6 mm diameter mycelial disc taken from 5 days old culture of *S. rolfsii* grown on PDA. The inoculated plates were incubated at 25 ± 3^0C and radial mycelia growth and sclerotial germination of *S. rolfsii* were recorded after 6 days.

Results of *in vitro* tests revealed that the systemic fungicides (thiodan, calixin, captan, carbendazim and idofil M-45) were significantly superior over control in checking the mycelial growth of *S. rolfsii* (Tab. 1). However, thiodan and calixin completely arrested the growth of pathogen at concentration as low as 0.0125% concentration in *vitro*. Carbendazim (Bavistin), Captan and Indofil M-45 were less inhibitory at 0.1% concentration. Calixin also completely inhibited the germination of sclerotia of *S. rolfsii* in comparison to Captan, Carbendazim and Thiodan. These were compared with sterile distilled water control where 100% sclerotial germination was evident (Fig. 1).

Table 1. Efficacy of fungicides against mycelial growth (cm) of *S. rolfsii.*

Fungicides	Concentration							
	0.1%		0.05%		0.025%		0.0125%	
	MG	I	MG	I	MG	I	MG	I
Control	9.2	-	-	-	-	-	-	-
Thiodan	0	100	0	100	0	100	0	100
Calixin	0	100	0	100	0	100	0	100
Captan	3	67.3	4.0	54.3	5.2	43.4	7.2	21.7
Carbendazim	4	54.3	4.7	48.9	5.2	43.4	7.2	21.7
Indofil M-45	3.8	58.7	6.0	34.8	6.8	26.0	7	23.9

MG = Mycelial growth (cm), I = Inhibition (%)

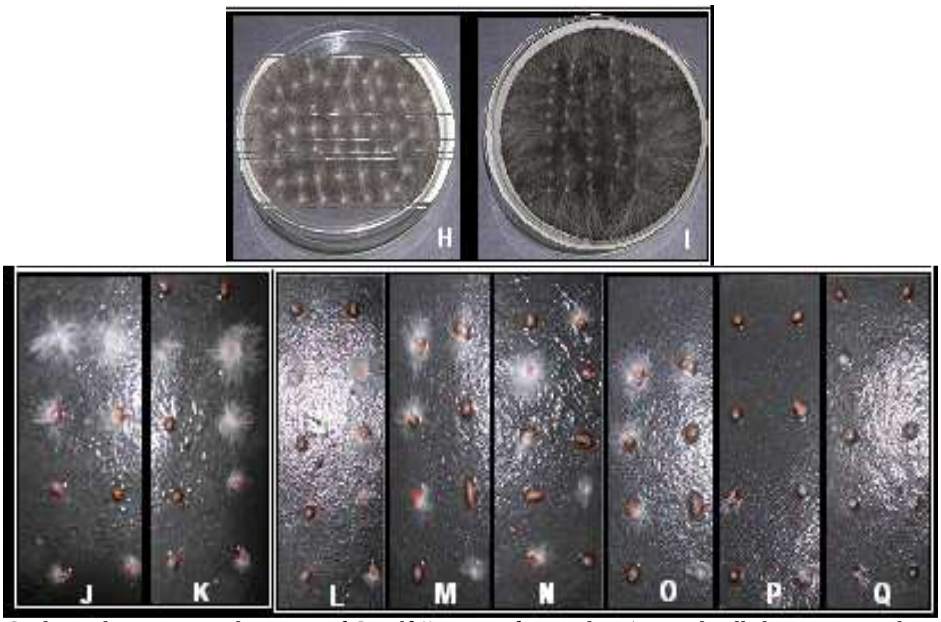

Figure 1. Seclerotial germination bioassay of *S. rolfsii* against fungicides. (H-I = distilled water control, J-K = Captan, L-M = Carbendazim, N-O = Thiodan, P-Q = Calixin)

There are several reports on the efficacy of fungicides that inhibit the growth of pathogen *in vitro* condition. Venkata Ram (1974) has reported Calixin, a systemic fungicide against blister blight (*Exobasidium vexans*) on tea plants. Carbendazium (0.10%), Tridemorph or Calixin (0.15%) were also found effective in completely inhabiting the growth and sporulation of *Alternaria brassicae*. Patel (1993) also recorded the inhibitory effect of Mancozeb against *Alternaria* sp. at 1000 ppm. The efficacy of different fungicides was studied by Tiwari and Sing (2004) against *Rhizoctonia solani, S. rolfsii,* seed mycoflora and their non-target effect on *T. harzianum* and *Rhizobium leguminosarum.* They found that fungicides *viz.*, Carboxin, Epoxiconasole, Hexaconazole, Propica-nazole and Triadimetox were highly

effective against *R. solani* and *S. rolfsii* and can be formulated as seed dresser either with Thiram or Mancozeb to control both collar rot or rot root as well as seed mycoflora effectively. They also advised to integrate *T. harzianum* and *R. legume-inosarum* with these fungicides for seed and seedling protection. Similarly, *in vitro* evaluation of fungicides against *S. rolfsii* was studied by Gupta and Sharma (2004).

Similarly *in vitro* evaluation of five systemic fungicides against *Alternaria burnsii* was studied by Vihel *et al*. (2009). They observed that all the five systemic fungicides at different concentrations were inhibitory to the fungal growth. It was observed by them that Penconazole, Hexaconazole, Propineb and Mancozeb inhibited mycelial growth of *S. rolfsii*. Propineb was found to be the most effective in reducing disease incidence on crown and pods. Among the biocontrol agents, *G. virens* and *T. viride* were also found to be the most effective against the pathogen. Evaluation of fungicides and plant extracts against *Fusarium solani* leaf blight in *Terminalia catappa* was reported by Mamatha and Rai (2004). Leaf extracts of *Lantana camara* followed by *Azadirachta indica* and *Acalypha indica* were found to be equally effective in inhibiting the growth of *F. solani in vitro*.

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