Efficacy of Fungicides against *Phytophthora colocasiae* under Laboratory Conditions

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Colocasia (*Colocasia* esculenta L. Schott) is an important tropical tuber crop grown in India and other south eastern countries (Chandra, 1984). Among fungal diseases, *Phytophthora* leaf blight, caused by *Phytophthora colocasiae* Raciborski appears regularly in severe form on this crop in Northern and Eastern states causing 25-50% yield loss (Misra & Chowdhury, 1997; Misra, 1997). Compared to other phytophthora diseases, very little informations are available on this disease. The efficacy of nine fungicides was evaluated *in vitro* conditions against *Phytopathora colocasiae* and the results are reported in this communication.

Phytopathora colocasiae was isolated on 2 % papaya dextgrose agar slants. Efficacy of different chemicals was tested under laboratory conditions following the poison food technique of Schmitz (1930). Different quantities of fungicides, viz., Bavistin, Blitox 50, Borax, Hill Copper, Indofil M-45, Kitazin, Ridomil MZ, Streptocycline and Topsin-M were incorporated into 50 ml of liquid Papaya dextrose medium (Misra & Chowdhury, 1997) to give the desired concentrations. The fungicide incorporated medium was poured into petri dishes of 9.0 cm size and inoculated with 5 mm circular disc of *P. colocasiae* and incubated at 24±1°C for 10 days. The diameter of the growth of the fungus on fungicide impregnated medium in comparison to the growth on papaya dextrose agar medium without fungicide was recorded. Each treatment had three replications. Growth inhibition percentage of the fungal colony was also recorded by using the following formula :

$$I = \frac{C - T}{T} \times 100$$

Where

I = Growth inhibition percentage of the colony
C = Average colony diameter in the control
T = Average colony diameter in the treatment

As evident from the results shown in Table 1, Ridomil MZ (Metalaxyl+Mancozeb), Indofil M-45 (Mancozeb), Blitox 50 and Hill Copper (Copper oxychloride) completely inhibited the growth of *P. colocasiae* and were found as the most effective. The remaining fungicides inhibited the growth of the fungus to varying degrees, but failed to exhibit complete inhibition. Amongst the partially effective chemicals, Kitazin caused the highest inhibition of growth and was statistically superior to the remaining ones. The rest of the fungicides in the descending order of efficacy were : Borax, Topsin M, Streptocycline and Bavistin.

Fungicidal efficacy for managing *Phytophthora* diseases were earlier reported by Aggarwal (1982) in case of *Phytophthora parasitica* var. *piperina* on betelvine, Aggarwal and Mehrotra (1988) in case of *P. colocasiae* on colocasia and Ramachandran *et al.* (1988) in case of *P. palmivora* on nut and cocoa. Metalaxyl, mencozeb and copper oxychloride fungicides were obviously most effective against *P. colocasiae* and other *Phytophthora* species.

Table 1

Inhibitory effect of fungicides on the growth of *Phytophthora colocasiae* under laboratory conditions

Fungicides	Conc. (%)	Average diameter of fungal colony (mm)	Inhibition over control (%)
Ridomil MZ (Metalaxyl+Mancozeb)	0.2	0.00	100.00
Indofil M-45 (Mancozeb)	0.2	0.00	100.00
Blitox 50 (Copper-oxychloride)	0.2	0.00	100.00
Hill copper (Copper oxychloride)	0.2	0.00	100.00
Kitazin	0.2	6.08	92.44
Borax	0.2	10.33	87.16
Topsin M (Thiophanate methyl)	0.2	44.23	45.05
Streptocycline	0.05	49.50	38.50
Bavistin (Carbendazim)	0.05	56.33	30.02
Control	-	80.50	-
C.D. (P=0.05)	13.71		

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