

## IN VITRO EVALUATION OF FUNGICIDES AGAINST COLLECTOTRICHUM GLOESPORIOIDES, THE ANTHRAENOSE OF KHASI MANDARIN

M. Srinivas Prasad, A.K. Singh and M.S. Lakshmi Prasad  
Division of Plant Pathology,  
ICAR research complex for NEH region,  
Barapani, Meghalaya - 793 103

Anthraenose of citrus caused by *Collectotrichum gloeosporioides* (Tassi) Goid has become important disease of Khasi mandarins (*Citrus reticulata* Blanco) in the recent times. This fungus causes leaf spot, twig blight and fruit rot. In Meghalaya it rains frequently during the shoot emergence, bloom or in the early stages of fruit development. This results in the early infection and premature fruit drop. Leaves show light green spots which turn brown on later stages. On leaves, the necrotic spots show acervuli arranged in concentric rings. The stem end infection of immature fruits results in fruit drop. In severe conditions, branches show die back. (Pathak, 1980). An attempt was made to compare the efficacy of five chemicals against *Collectotrichum gloeosporioides* isolated from Khasi mandarin *in vitro*, so that the most effective fungicide can be used against the disease.

The causal organism *Collectotrichum gloeosporioides* was isolated from the mandarin infected leaves. The conidia measured 12.20x3-6  $\mu$  m. on the rose bengal agar medium and the mycelium was white in colour.

Five chemicals viz. carbendazim ((Bavistin) (2-methoxy carbammoy) benzimidazole)}, Indofil M-45 (75% of coordinated product of zinc ion and manganese ethylene bis dithiocarbamate), Blitox (copper oxychloride), Captan (N-trichloromethyl Mercapto-4-cyclohexene-1-2-dicarboximide), Limonool (Azadirachtin-neem product) were used. The effect of these chemicals on the growth of the fungus *Collectotrichum gloeosporioides* was evaluated *in vitro* by poisoned food technique at 0.3, 0.5 and 1.0%. Required concentration of each chemical was added to an autoclaved rose bengal agar medium. The molten medium was poured in the petriplates and inoculated with 5mm mycelial discs of *Collectotrichum gloeosporioides*, in triplicate and incubated at  $25 \pm 1^\circ\text{C}$  for 7 days. After incubation, the radial growth of the fungus was measured and presented in the Table 1 All the five chemicals were effective in reducing the radial growth of the fungus, though Bavistin and Indofil M-45 completely stopped the radial growth. Blitox and Limonool were least effective. The radial growth of the fungus was significantly less (14.17 mm) than control when Captan was used. As Bavistin, Indofil M-45 and Captan was very effective at 0.3 concentration, they were again tested at lower concentrations viz. 0.025, 0.05 and 0.1%.

From the results (Table 2), it is evident that *C. gloeosporioides* was more sensitive to Bavistin and Indofil M-45 even at low concentrations used, as there was no growth of the fungus in petriplates. Maximum inhibition of growth (11.83 mm) was noticed in treatment of Captan at 0.05%, Anthracnose of *Robinson tangerines* was effectively controlled by ethephon

application during three seasons (Barmore and Brown, 1978). Rajjadhav (1977) reported that carbendazim 0.1%, copper oxychloride 0.3%, captafol 0.2% controlled the twig blight of sweet oranges in Maharashtra. *In vitro* studies revealed that Bavistin, Indofil M-45 and Captan can be used to manage the anthraenose disease of Khasi mandarin.

#### REFERENCES

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**Table 1. Effect of different fungicides on the growth of *C. gloesporioides in vitro***

Fungicides	Concentrations (%)			Mean
	1.0	0.5	0.3	
Bavistin	0.00	0.00	0.00	0.00
Indofil M-45	0.00	0.00	0.00	0.00
Captan	9.17	14.67	18.67	14.17
Blitox	58.67	71.00	71.00	66.89
Limonool	50.00	56.00	56.33	54.11
Control	95.00	95.00	95.00	95.00
Mean	35.64	39.61	40.33	

CD at 5% level=Fungicides (F): 2.71; Concentrations (C): 1.97  
 FxC=4.84

**Table 2. Effect of different fungicides on the growth of *C. gloesporioides in vitro***

Fungicides	Concentrations (%)			Mean
	0.1	0.05	0.025	
Bavistin	0.00	0.00	0.00	0.00
Indofil M-45	0.00	0.00	0.00	0.00
Captan	18.67	11.83	19.83	16.78
Control	95.00	95.00	95.00	95.00
Mean	28.67	26.96	28.96	

CD at 5% level=Fungicides (F): 5.54; Concentrations (C): 4.8  
 FxC=9.6