

EFFECT OF FUNGICIDES ON GERMINATION OF CONIDIA
OF *ALTERNARIA SOLANI* (ELL & MART)
JONES AND GROUT.

BY

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Nine fungicides including five systemic and four non-systemic contact (benlate, bavistin, vitavax, panoptine, demosan are systemic and alisan, sanspor, macuprax are non-systemic contact) fungicides were tested on the germination of conidia of *Alternaria solani* at the different concentration (500 ppm, 250 ppm, 125 ppm and 62.5 ppm) in each case. In the present invitro-study, all the systemic fungicides showed maximum inhibition of spore germination than non-systemic contact fungicides.

INTRODUCTION

Large number of fungicides are being formulated and marketed by different commercial fungicide manufacturing companies time to time as systemic and non-systemic contact fungicides. Various fungicides has been recommended for controlling *Alternaria* leaf spot of various crop plants. Zineb, Ziram, Copper-fungicides, dithiocarbamates are generally recommended for these purposes. But, now-a-days, various other fungicides like sanspor, panoc-tine, alisan, macuprax are being marketed. These fungicides are taken into investigation to know the efficacy on *Alternaria solani* causing leaf spot of chilli. Various workers have done this type of work in vivo and in vitro conditions and the study is gaining importance now-a-days (Mukherjee, 1974 ; Mackenrie *et al.*, 1974 ; Brewer *et al.*, 1977 ; Kulkarni and Sharma 1976 ;

Khanna and Chandra, 1977 ; Kodmelwar *et al.*, 1977 ; Mukherjee and Kundu, 1973 ; Jonnaids *et al.*, 1973 ; Lukens and Harsfall, 1973 ; Sen and Maity, 1971 ; Roy and Sen, 1970 ; Prasad *et al.*, 1973). In the present invitro study, *Alternaria solani* was tested against five systemic and four non-systemic contact fungicides.

MATERIALS AND METHODS

The fungus *Alternaria solani* (Ell and Mart) Jones and Grout. was isolated from infected Chilli leaf. The infected and surrounding healthy leaves were cut into pieces, dipped in 0.1 percent mercuric chloried solution for one minute and washed in sterile distilled water then transferred in potato dextrose agar slants and incubated at $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ in B.O.D. incubator for consecutively five days for sporulation. The pathogenicity of the fungus was tested with chilli leaves to ensure about the causal agent of the chilli leaf spot disease. The fungus was maintained in potato carrot agar (potato 20 gms, carrot 20 gms and distilled water 1 (one) litre) medium. The fuugicides tested in vivo conditions are :

Vitavax 80— 2-3 dihydro-6-methyl -5 phenyl carbamoyl 1-4 oxathin.

Panocrine— Guanidated 9 aza-1, 17 diamion hepladecane acetate.

Sanspor 50—(Cis N (1,1,2,2—tetra chloro ethyl) thio) —4-cyclo hexene—1,2—dicarboximide)

Demosan 50—1-4 dichloro —2,5-dimethoxy benzene.

Ziram —Zn dimethyl dithiocarbamate.

Macuprax—(73% basic cupric sulphate and 7% ethylene —bis-dithiocarbamate complex of Zinc, manganese, copper and iron)

Alisan 50 2,6—dichloro-4 mitro aniline.

Different concentrations were made considering its active ingrediants in sterile distilled water at 500 ppm, 250 ppm, 125 ppm, 62.5 ppm and a single drop of fungicide suspension were placed in the groove slide. One drop of spore suspension was kept on the fungicidal drop in the slide. In each case three replications were taken into account. Simultaneously a control with sterile distilled water was run. All the slides were kept in moist chamber, and were incubated at $27^{\circ}\text{C} \pm 1^{\circ}\text{C}$ for 36 hours. The germinated spores were fixed in

lactophenol and stained with cotton blue and examined under low power objective of the microscope. Total 500 number of spores were counted and inhibition to conidial germination was expressed in percentage basis.

RESULTS & DISCUSSION

Table 1. *Effect of fungicides on germination of conidia of Alternaria solani* (Ell & Mart) Jones and Grout.

Fungicides	Percent inhibition in germinations)*			
	Concentrations in ppm.			
	500	250	125	62.5
Bavistin	100	100	77	44
Benlate	67	47	20	10
Panocline	100	60	40	40
Sanspor	100	100	100	77
Vitavax	100	100	57	17
Ziram	100	87	67	67
Alisan	100	80	80	40
Demosan	37	30	20	20
Macuprax	60	40	40	40
Control	0.0			

(Average of three replications)

From the Table 1 it is clear that systemic fungicides like bavistin, panocline, sanspor, vitavax showed maximum inhibition to spore germination at very low concentration (62.5 ppm) and non-systemic fungicides like Ziram, Alisan, also showed similar evidence—than benlate as a systemic and demosan and macuprax as non-systemic fungicides. The non-systemic fungicides demosan and macuprax showed poor inhibitory action in higher concentration (500 ppm) and systemic fungicides benlate is more or less similar to demosan and macuprax. These findings are also suggested by conducting a experiment on *Aspergillus niger* in dithiocarbamate fungicide (Kodmelwar et al. 1977). Mukherjee and Kundu (1973) showed some antifungal activities of some phenolics and related compounds. Lukens and Horsfall (1973) suggested that *A. solani* conidia are inhibited by some metabolic inhibitors. Sen and Maity (1971) and Roy & Sen (1970) showed that metal ions and various organic substances inhibited spore germination of *H. oryzae*.

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