

## ***In vitro* sensitivity of *Cercospora canescens* Ell. & Mar. causing leaf spot of mungbean (*Vigna radiata* [L.] Wilczek)**

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Among nine different systemic and non-systemic fungicides tested (*in vitro*) Bavistin, Benlate, Calixin, Emisan, Thiram and Captan were highly inhibitory to the pathogen and no growth was found in culture media amended with the fungicides. Blitox showed least toxicity followed by Dithane M-45 and Foltaf.

**Key words :** Leaf spot, mungbean, *Cercospora canescens*, efficacy, some fungicides

### **INTRODUCTION**

The leaf spot of mungbean caused by *Cercospora canescens* is an important disease of mungbean throughout the world (Poehlman, 1973). In India it is common in almost all the growing states and causes serious damage particularly during rainy season which may extent upto 30% loss of grain yield. In this study attempts have been made to assess sensitivity of some fungicides against the pathogen. Nine fungicides of different groups were taken for *in vitro* studies using carrot leaf extract oat meal agat medium (Kilpatrick and Johnson, 1956).

### **MATERIALS AND METHODS**

Nine widely used fungicides were tested against the test pathogen. The fungicides were Bavistin (0.10%), Banlate (0.10%), Blitox (0.4%), Calixin (0.10%), Captan (0.20%), Dithane M - 45 (0.25%), Emisan (0.10%), Foltaf (0.40%) and Thiram (0.25%). Carrot leaf decoction oat meal agar (COA) medium was used for this study. Carrot leaf extract 5% (by volume), oat meal filtrate 5% (by volume) and Difco agar 2% (by weight); where 50 g carrot leaf was boiled in 100 ml water till the volume reduced to 50 ml. Carrot leaf extract was mixed with boiled oat meal filtrate and finally agar was added. For each fungicide prepared 100 ml medium was taken in 250 ml

Erlenmayer flask. After sterilization the temperature of medium was cool downed to about 50°C, fungicides were added in required concentration to the sterilized medium and transferred to petri plates (20 ml per pertri plates). Ino culum (6 mm mycelial disc) was placed at the centre of each plate. For each treatment five replications were maintained. The inoculated plates were packed with polyethylene packet and was incubated at 27° ± 2° C. Data were obtained after 7 and 15 days of incubation as radial growth (mm) of the colony and spore density was estimated in 1 ml suspension where 1 cm diameter fungal disc collected from active spore producing zone was mixed with 5 ml water (Kilpatrick and Johnson, 1956).

### **RESULTS AND DISCUSSION**

Data recorded as radial growth in mm after 7 and 15 days incubation respectively, as are well as sporulation at 15 days after incubation are presented in Table 1. Bioassay of different systematic and non-systematic fungicides against the pathogen was done to get an idea regarding the sensitivity of the pathogen to these fungicides which would guide to select effective fungicide to reduce disease intensity and crop loss. It was found that Bavistin, Calixin, Captan, Thiram and Emisam - 6 completely inhibited growth

Table 1. *In vitro* sensitivity of *Cercospora. canescens* to different fungicides

Fungicides	Doses (%)	Radial growth in mm		Spore density <sup>2</sup>
		7 DAI	15 DAI	
Bavistin 50 WP	0.10	-	-	-
Benlate	0.10	-	-	-
Blitox-50	0.40	3.9	7.9	+
Calixin	0.10	-	-	-
Captan	0.20	-	-	-
Dithane M-45	0.25	2.0	3.8	-
Emisan-6	0.10	-	-	-
Foltaf-80 DS	0.40	2.3	4.6	++
Thiram	0.25	-	-	-
Control	-	23.8	43.6	+++
SEM ± =		0.24	0.24	
CD (P = 0.05)		0.74	0.52	

Data are the average of five replications

DAI<sup>1</sup>: Days after incubation

Spore density<sup>2</sup> scored as, -no sporulation, +, very few, (<10spores/ ml)

++ fair (10-100 spores/ml), +++ abundant (>100 spores/ml)

and sporulation of the test fungus in culture plates but Dithane M-45, Foltaf and Blitox partially inhibited the growth and sporulation of the pathogen.

Results of Grewal *et al.* (1980), Ahmed (1985), Khandar *et al.* (1986) and Gupta *et al.* (1989) were also corroborated the present findings. The highly toxic fungicides may be used for further testing in the field scale for evaluating their efficiency in controlling the leaf spot disease of mungbean and to select the best effective one.

## REFERENCES

- Grewal, J. S., Pal, M. and Kulastirertha, D. D. (1980). Control of *Cercospora* leaf spot of green gram by spraying bavistin. *Ind. J. Agr. Sci.* **50** : 707-711.
- Gupta, R. R., Singh, D. B and Katiyar, R. P. (1989). Field evaluation of fungicides for the control of *Cercospora* leaf spot of urd bean. *Pesticides*, **23** : 25-28.
- Khandar, R. R., Bhatnagar, M. K. and Rawal, P. P. (1986). Chemical control of Mungbean leaf spot incitant (*Cercospora canescens* Ell and Mar) under laboratory and green house conditions. *Pesticides*, **20** : 45-48.
- Kilpatrick, R. A. and Johnson, H. W. (1956). Sporulation of *Cercospora* spp. on carrot leaf decoction agar. *Phytopathology*, **46** : 180-181.
- Poehlman, J. M. (1991). The mungbean, Oxford and IBH Publishing Company Ltd pp 1-375.
- Ahmed, Quiser (1985). Fungicidal control of *Cercospora*. *Indian Phytopath* **38** : 418-422.

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