

# Efficacy of Some Selected Fungicides, Antibiotics and Sulphadruugs on the Radial Growth of *Cercospora traversiana* Sacc. Causing Leaf Spot/blight of Fenugreek (*Trigonella foenum graecum* linn.)

Chandra Pal Singh<sup>1\*</sup>, U.S. Mishra<sup>1</sup> and Nishant Mishra<sup>2</sup>

<sup>1</sup>Phytopathology Lab, Department of Botany, Bareilly College Bareilly U.P. (India)

<sup>2</sup>Department of Chemistry, Rakashpal Bahadur College of Engineering & Technology, Bareilly U.P. (India)

Article Info	Summary
<p><b>Article History</b></p> <p>Received : 19-02-2011 Revised : 04-04-2011 Accepted : 04-04-2011</p> <p><b>*Corresponding Author</b></p> <p>Tel : +91-9412451631</p> <p>Email: singh.chandra18@gmail.com</p> <p>©ScholarJournals, SSR</p>	<p><i>Cercospora traversiana</i> Sacc. was isolated from the leaves and pods of fenugreek (<i>Trigonella foenum graecum</i> Linn.). Five fungicides viz. Thiram, Dithane-M-45, Bavistin, Blitox and Vitavax, two antibiotics viz. Griseofulvin and Streptocycline and one sulphadruug viz. Sulphamethoxazole were studied <i>in vitro</i> against <i>Cercospora traversiana</i>. It was observed that the radial growth of pathogenic fungus was highly affected (95-100%) by Bavistin while other tested fungicides, antibiotics and sulphadruugs were moderately inhibited the radial growth of <i>Cercospora traversiana</i>. It is recommended that the leaf spot/blight of fenugreek can be controlled successfully by the use of Bavistin (100ppm) as seed dressing system.</p> <p><b>Key Words:</b> Fenugreek, <i>Cercospora traversiana</i>, In vitro inhibition, Fungicides, Antibiotics and Sulphadruugs</p>

## Introduction

Fenugreek (*Trigonella foenum-graecum* Linn.), an important spice crop, is extensively cultivated all over the India [1]. Bareilly is one of the chief production centre of this crop. Fenugreek leaves and tender pods are widely used as vegetables and the seeds are used as condiments. Fenugreek crop are affected by the pathogenic fungus *Cercospora traversiana* causing leaf spot/blight disease. The disease was found prevalent in all experimental localities of Bareilly during the last week of November to second week of March. *Cercospora traversiana* is a major seed borne pathogen of fenugreek which was studied by various workers [2, 3, 4, 5, 6, 7]. It significantly reduces the economic value of leafy vegetables and seeds. A review of literature reveals that *C. traversiana* pose major threat to the cultivation of fenugreek crop. However, no work has been done to control the disease successfully. Therefore, the present study was conducted *in vitro* to find out the efficacy of fungicides, antibiotics and sulphadruugs in inhibition of radial growth of this pathogenic fungus in order to control the disease in field.

## Materials and Methods

The disease survey was made in five cultivated zones of different agroclimatic conditions in Bareilly and experimental work was conducted in phytopathology lab, Botany department, Bareilly College, Bareilly on *Cercospora traversiana* which caused leaf spot/blight of fenugreek. To find out appropriate management and control procedure of this pathogenic fungus five selected fungicides, viz. Thiram, Dithane-M-45, Bavistin, Blitox and Vitavax, two antibiotics viz. Griseofulvin and Streptocycline and one sulphadruugs i.e. Sulphamethoxazole were assayed *in vitro* for their inhibitory

effect on radial growth of fungus. Five concentrations (50, 100, 250, 500 and 1000 ppm) were employed. For the test the radial growth of pathogen was measured on potato dextrose agar medium amended with said concentrations of test compounds [8]. Only 20 ml of the medium was poured in each Petri-dish. Inoculation was done with 5mm disc cut from 6 day old culture of test pathogen. Proper replicates and control were prepared for the test pathogen treatment. The Petri-dishes were incubated at 25±2°C. Percentage inhibition was calculated after 6 days using the formula of Vincent (1947).

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

Where

I = Percent inhibition

C = Radial growth in control set (mm)

T = Radial growth in control treated (mm)

The efficacy of tested therapeutants was compared by calculating the amount of material required for the 50% inhibition in radial growth of *Cercospora traversiana* (ED-50).

## Result and Discussion

The result of percent inhibition in radial growth of fungus by selected therapeutants are recorded in Table-1 and Plate-1. A perusal of data revealed that all the tested therapeutants inhibited effectively the radial growth of *Cercospora traversiana* at 50, 100, 250, 500 and 1000 ppm concentration. However the range of inhibition markedly varied with different therapeutants and concentrations. Maximum inhibition (90.5%) in radial growth of *C. traversiana* was exhibited by Bavistin at 50ppm concentration followed by Vitavax (78.2%), Thiram (72.2%),

Griseofulvin (58.5%), Dithane m-45 (41.5%), Blitox (41.3%), Sulphamethoxazole (35.8%) and Streptomycin (24.4%). The inhibition of 100% in radial growth of *C. traversiana* was exhibited by Bavistin, (100ppm), Vitavax (250ppm), Griseofulvin (500ppm), Thiram (1000ppm) and Dithane M-45 (1000ppm). These fungicides, antibiotics and sulphadugs are easily available in market. The treatment of seeds with these

therapeutants before sowing will reduce the on set of leaf spot/blight in the crop. Identical reports are also available in which the leaf spot diseases of several other crops are controlled by seed treatment [10, 11]. It is therefore concluded that the leaf spot/blight disease caused by *C. traversiana* can be controlled by judicious use of these selected chemicals.

Table 1 : Efficacy of fungicides, antibiotics and sulpha drugs on radial growth of *Cercospora traversiana* of fenugreek (*Trigonella foenum graecum* Linn.)

Treatments	Percent inhibition in radial growth					ED 50 level
	50 ppm	100 ppm	250 ppm	500 ppm	1000 ppm	
Thiram	72.2	81.1	88.2	95.6	100.0	>50.00
Dithane M-45	41.5	53.8	74.4	91.0	100.0	60.24
Bavistin	90.5	100.0	100.0	100.0	100.0	>50.00
Blitox	41.3	56.5	68.2	79.8	92.4	60.52
Vitavax	78.0	96.1	100.0	100.0	100.0	>50.00
Griseofulvin	58.5	76.0	96.1	100.0	100.0	>50.00
Sulphamethoxazole	35.8	46.2	63.0	71.3	90.5	108.22
Streptomycine	24.4	31.6	52.8	74.4	82.6	158.22
	Treatment		Concentration		Treatment × Concentration	
S.Em.±	0.63		0.49		1.41	
CD at 5%	1.77		1.40		3.97	
F-value	*		*		*	

Each value in the table is the mean of three replicate.

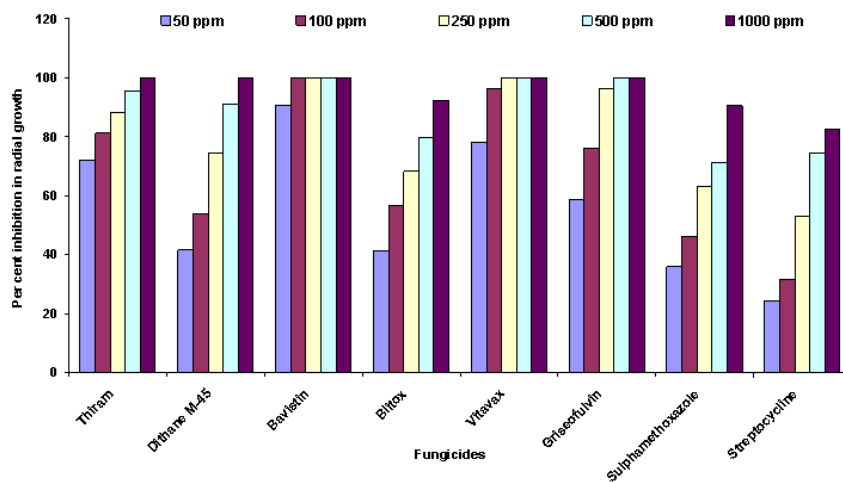


Fig. 19: Efficacy of fungicides, antibiotics and sulpha drugs on radial growth of *Cercospora traversiana* of fenugreek (*Trigonella foenum graecum* Linn.)

References

[1] Wallis, T.E., (1967). Textbook of pharmacognosy. J. & A. Churchill Ltd. 104 Gloucester Place, London.

[2] Leppik (1959). World distribution of *Cercospora traversiana* F.A.O. Pl. Prot. Bull. 8: 19-21 (Rev. of Applied Mycology 39: 484, 1960).  
 [3] Richardson, M.J. (1990). An Annotated list of seed borne diseases. 4<sup>th</sup> Ed. the Int. Seed testing Assoc. Switzerland.

- [4] Nagy, F. and Voros, J. (1972). *Cercospora traversianes* a new destructive pathogen of fenugreek in Hungary. *Acta Phytopathologia Academiae Scientiarum Hungaricae-Cisti* 7: 71-76.
- [5] Zimmer, R.C. (1984). *Cercospora* leaf spot and powdery mildew of fenugreek, a potential new crop in Canada. *Canadian Pl. Dis. Survey*. 64: 33-34.
- [6] Ryley, M.J. (1989). *Cercospora traversiana* on fenugreek (*Trigonella foenum graecum* Linn.) *Aust. Pl. Pathol.* 18: 60-63.
- [7] Bobev, S.G. Margina, A.F. and Gruytor, J. de (1999). First report of *Cercospora traversiana* on *Trigonella caerulea* in Bulgaria *Plant Dist.* 83: 783.
- [8] Nene, Y.L. (1971). Evaluation of fungicides in : Fungicides in plant disease control. *Oxford and IBH New Delhi*. Pp 280-296.
- [9] Vincent, J.M. (1947). Distorsion of fungal hyphae in the presence of certain inhibitors, *Nature*. 159: 850.
- [10] Khunti, J.P. Boraniya, M.F. and Vora, V.D. (2002). Management of powdery mildew and *Cercospora* leaf spot of mungbean by some systemic fungicide. *J. Mycol. Pl. Path.* 32(1): 103-105.
- [11] Saxena, P. and Tripathi, H.S. (2006). Fungicidal management of *Cercospora* leaf spot of Mungbean (*Vigna radiata*). *J. mycol. pl. path.* 36(2): 336-337.