International Journal of Food, Agriculture and Veterinary Sciences ISSN: 2277-209X (Online)
An Online International Journal Available at http://www.cibtech.org/jfav.htm
2012 Vol. 2 (3) September-December, pp. 105-107/Bavaji et al.
Research Article

IN VITRO EVALUATION OF FUNGICIDES AND PLANT EXTRACTS ON THE INCIDENCE OF LEAF BLIGHT ON SESAME CAUSED BY *ALTERNARIA ALTERNATA* (FR) KEISSLER

M. Bavaji, MD. Khamar Jahan and *M. Mahendra Nath
Department of Botany, S.V. University, Tirupati – 517502, Andhra Pradesh
**Author for Correspondence*

ABSTRACT
The effect of plant extracts and fungicides on radial growth of *Alternaria alternate,* the causal agent of leaf blight of sesame, was studied in *in vitro.* Tilt and blitox was found to be highly effective at 250µg/ml and 500µg/ml concentrations inhibiting the growth of the pathogen completely. The leaf extracts of *Boswellia ovalifoliolata* , *Euphorbia trirucalli* and *Cassia tora* are more effective to reduce the growth of *Alternaria alternata* at 500ppm concentrations than others plants.

Key Words: *Plant Extracts, Alternaria Alternata , Fungicides*

INTRODUCTION
Sesame (*Sesamum indicum* L.) is an important oil crop cultivated in several parts of India. Cultivated sesame suffers considerable yield loss every year due to pathogenic diseases (Anonymous, 1972). Sesame leaf blight disease caused by *Alternaria alternata*. Dhamu *et al*., (1981) reported that Alternaria blight reduced the yield @10.73kg/ha for every 1% increase in disease index. In view of the seriousness of the disease, this study was conducted to evaluate in vitro efficacy of different fungicides and plant extracts for control of disease.

MATERIALS AND METHODS
The efficacy of Blitox -50 , Dithane Z-78 ,Thirm , Capton , Chlorothalonil , Monoceren , Aureofungin , Tilt , Ridomil MZ , Difolatan and ethanolic extracts of *Eclipta alba , Hiptis saveolensis, Euphorbia trirucalli , Boswellia ovalifoliolata , Catharanthus roseus , Cassia tora , Almanda cathartica , Cleome viscosa* was determined by poisoned food technique (Solid media study Nene and Thapliyal , 1982) to evaluate the best fungicides and plant extracts for the control of *Alternaria alternata* associated with leaf blight of sesame. The seven days old fungal culture grown on potato dextrose agar (PDA) was used as inoculum in the form of 5 mm disc with a sterile cork borer and was transferred ascetically at the centre of the petriplates containing the PDA medium with the measured among of fungicides and plant extracts . These petriplates were incubated at 27±1˚C for six days . Each treatment of fungicides and plant extracts along with control was replicated thrice for the pathogen.
Observation on fungal colony growth diameter was recorded after 6 th day of incubation. The percentage inhibition of mycelial growth of *Alternaria alternata* was worked out by formula given by Vincent (1929) with slight modification .

RESULTS AND DISCUSSION
The data present in Table .1 revealed that all the fungicides treatments were found to be significantly over control in inhibiting the colony growth of *Alternaria alternata* . Among the all fungicides Tilt was found to be most effective and completely inhibited the growth of fungus at 250µg/ml followed by Blitox -50 which which completely inhibited the growth of the fungus at 500µg/ml , Monoceren was completely inhibited the growth of the fungus at 1000µg/ml. Ridomil MZ, Dithane Z-78, Chlorothalonil , Thiram, Defolatan , Captan , and Aureofungin inhibited growth by 71.1%, 66.6% , 63.33% , 63,3% , 61.1% , 55.5% , and 52.2% at 1000µg/ml concentration respectively. For all the fungicides at

1000µg/ml concentration were found to be more effective than 500µg/ml , 250µg/ml , 100 µg/ml, 50 µg/ml concentration respectively.

Mahajan *et al.*, (1999) have stated that captan (0.2%) and chlorothalonil (0.1%) inhibited growth 69.60 and 41.05 per cent .Pandey *et al* ., (2000) observed that copper oxychloride and thiram inhibited 100% growth of *Alternaria alternata* at 1000 ppm concentration where as captan and chlorothalonil reduced the growth by 79.76 and 46.43 percent only. Ungro and Azeredo (1984) observed that Dithane Z-78 was effective against *Alternaria alternata in vitro.*

The efficacy of eight plants extracts were tested against the growth of the fungus at three different concentrations (1000ppm, 3000ppm and 5000ppm). Results indicated that *Boswellia ovalifoliolata* showed highest growth inhibitin by 66.6% at 5000ppm concentration .*Euphorbia tirucalli* ,*Cassia tora* , *Catharanthus roseus , Eclipta alba* ,*Cleome viscose* ,*Hiptis saveolensis and Almanda cathartica* were effective and reduced the growth by 63.3% , 61.5% , 52.2% , 51.2% , 49.7% , 44.8% and 42.5% at 5000ppm concentrations. At 5000ppm concentration were found to be more effective than 3000ppm and 1000ppm concentrations respectively. Ganesan (1993) has reported that leaf extracts of *Cassia mimosoides*, *Cassia tora* and *Cassia leschenautina* inhibited the spore germination of the phytopathogenic fungi of drechslera oryzae. Extracts of *Cassia fistula* and *Cassia occidentalies* control several dermatohytic fungi (Kavitha *et al.*, 2000) ..

Table 1: Efficacy of different fungicides in vitro against the growth of *Alternaria alternata* (Fr.) Keissler .

S.NO.	Name of the fungicide	Concentrations / Colony Diameter (mm)									
		50µg /ml	% inhibition over control	100µg / ml	% inhibition over control	250µg/ml	% inhibition over control	500 µg/ml	% inhibition over control	1000 µg /ml	% inhibition over control
1	Blitox -50	60	33	40	55.5	20	**77.7**	-	-	-	-
2	Dithane Z-78	85	5.5	68	24.4	66	26.6	40	55.5	30	66.6
3	Thiram	89	1.1	82	8.8	63	30.0	40	55.5	33	63.3
4	Captan	90	0.0	75	16.6	60	33.3	50	44.4	40	55.5
5	Chlorothalonil	45	**50.0**	78	13.3	56	37.7	44	51.1	33	63.3
6	Monoceren	90	0.0	38	57.7	20	**77.7**	15	**83.3**	-	-
7	Aureofungin	86	4.4	80	11.1	68	24.4	50	44.4	43	52.2
8	Tilt	50	44.4	25	**72.2**	-	-	-	-	-	-
9	Ridomil MZ	65	27.7	54	40.0	43	52.2	31	65.5	26	**71.1**
10	Defolatan	78	13.3	61	32.2	50	44.4	42	53.3	35	61.1
11	Control	90	-	-	-	-	-	-	-	-	-

Each value Mean of three replications

Achala sri Vastava *et al.,* (1998) have stated that *Catharanthus roseus* reduced the the spore germination and growth of *Alternaria alternata* . It may be concluded from the present study that tilt , blitox , and *Boswellia ovalifoliolata* leaf extract could be used for control of *Alternaria* leaf blight of sesame.The data on the efficacy of different fungicides and plant extracts on the mycelial growth of *Alternaria alternata* given in the Table 1 and 2.

Table 2: Efficacy of different plant extracts in vitro against the growth of *Alternaria alternata* (Fr.) Keissler.

S.NO.	Name of the plant extract	Concentrations (ppm) / Colony Diameter (mm)					
		1000 ppm	% Inhibition over control	3000 ppm	% Inhibition over control	5000 ppm	% Inhibition over control
1	*Eclipta alba*	63.2	18.9	50.0	35.8	38.0	51.2
2	*Hiptis saveolensis*	66.0	15.3	54.0	30.7	43.0	44.8
3	*Euphorbia tirucalli*	55.0	29.4	39.4	49.4	28.6	63.3
4	*Boswellia ovalifoliolata*	47.0	39.7	33.0	57.6	26.0	66.6
5	*Catharanthus roseus*	53.6	31.2	44.0	43.5	37.0	52.2
6	*Cassia tora*	48.2	38.2	37.0	52.5	30.0	61.5
7	*Almanda cathartica*	68.5	12.1	57.4	26.4	44.8	42.5
8	*Cleome viscosa*	60.0	23.0	51.8	33.5	39.2	49.7
9	Control	78.0	-	-	-	-	-

Each value- Mean of three replications

AKNOWLEDGEMENT
Authors acknowledge the Head, Department of Botany, Sri Venkateswara University for continuous support to carry out their research work.

REFERENCES

Achala Srivastava , Srivastava M and Srivastava A (1998). Fungitoxic effect of some medicinal plants (on some fruit pathogen) *Philippine Journal of Science* **127 (3)** 181 -187.
Anonymous (1972). Wealth of India - Raw materials. **Vol. X** (New Delhi, CSIR).
Dhamu KP, Phothi Raj P, Jayarajan R and Bala Kumar M (1981). Estimation of Yield loss in *Sesamum* due to disease *Madras Agricultural Journal* **68 (10)** 648 -652 .
Ganesan , T.(1993). Fungitoxic effect of wild plant leaf extracts. *Geobios*, **20** 264-266.
Kavitha S, Nirupama Devi V, Sekar R and Subbaiah GN (2001). Antifungal activity in thirteen species of *Cassia* . *Geobios* **28** 261 -262.
Mahajan PM, Sawant DM and Chaudhari CS (1999). In vitro evaluation of fungicides and chemicals against banana isolate of *Alternaria alternata* (Fr.) Keissler.*Pestology* **23** 7.
Nene YL and Thapliyal PM (1982). Fungicides in plant disease control. Second Edn , Oxford and IBH Publishing Co., New Delhi 507.
Pandey KK, Vishwakarama SN and Chanbe HS (2000). Fungicidal control of bringal leaf spot cansed by *Alternaria alternata* (Fr.) Keissler. *Pestology* **2** 42 -45.
Ungaro MGR and Azeredo JL (1984). Control of *Alternaria alternata in vitro* with Zineb ,Captan and binomial . *Fitotopatologia Brasileiro* **9** 89 -100.
Vincent JM (1929). Distribution of fungal hyphae in the presence of certain inhibitors .*Nature*, **15**9-850.