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CHEMICALS CONTROL OF CURVULARIA LEAF SPOT OF INDIAN BEAN

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Abstract: *Curvularia leaf spot of the most important disease on Indian bean.The disease against tested nine different fungicides In–Vivo and In–Vitro. The namely fungicidesviz. Captan, Indofil M-45, Karathane, Bavistin, Bluecopper, Vitavax, Benlate, Agrimycine–100 and Chlorothalonil was tested . Show the all the fungicides controlled the disease intensity excepted the control one. Two fungicides namely Captan and Indofil M – 45were found most effective in controlling the disease. Karathaneand Bavistin which showed 12.40% and 24.26% average disease incidence. Remaining fungicides Blue copper, Vitavax, Benlate and Agrimycin-100 were showed 44.85%, 46.20% 50.00% and 56.12% average disease incidence. Chlorothalonil was least effective 60.17% fungicides.*
Keywords: *Curvularia lunata, fungicides Control.*

Introduction: Indian bean [*Dolichos lablab* (L.)Roxb] is commonly known as Field bean, Sem, Hyacinth bean, Butter bean, Kideny bean, Egyptian and Lubia bean. Which is the most ancient crop among the cultivated plants. It is primarily growth for green pods. Which are cooked as vegetables like other beans. The dry seed are also used for various vegetable preparation. Medicinal used are also recorded [1]. Sem is grown throughout the country in India. It is primarily cultivated in Karnataka, Tamilnadu, Andhra Pradesh, and Maharastra [2]. The curvularia leaf spot was found in sever from during the period between September to March. This disease affected most of the improved varieties. Curvularia leaf spot caused by *Curvularialunata* (Wakker) is one of the most important disease.

Materials and Methods

The efficacy of fungicides against the pathogen *In- Vitro* was tested by "food poison" technique as described [3] using Potato Dextrose Agar medium. Captan (0.20%), Indofil M- 45 (0.20%), Karathane (0.20%), Bavistin(0.10%), Blue copper (0.15%), Vitavax (0.20%), Benlaten (0.10%), Agrimycin-100 (0.10%) and Chlorothalonil (0.20%) were used in (Table-1). Required quantity of each fungicides was thoroughly mixed with 100 ml well sterilized Potato Dextrose Agar medium contained in 150 ml flask.

Now this medium mixed with fungicides was poured in petridishes and allow to solidify. Each treatment replicated three times. One set of control was kept in which the medium was not mixed with fungicides. Equal pieces of the fungal growth cut by the cork borer were inoculated in each petridishes at the center. These inoculated petridishes incubated at the room temperature (25–28°C) after 10 days of the incubation the fungal growth were recorded the each petridishes. The percent inhibition over control was calculated by formula [4].

$$\text{Percent inhibition over control} = \frac{C - T}{C} \times 100$$

Where,

C = Growth of fungus in control.

T = Growth of fungus in treatment.

In order to find out a suitable control of the disease, efficacy of fungicides during 2013-14 and 2014-15. For evaluation of nine fungicides used on 1month old plant were artificially inoculated by spraying mycelial and spore suspension of the pathogen and the plots were irrigated from time to time maintain the proper moisture. The first fungicidal spraying was started after appearance of the disease and repeated at an interval of 10 days with third subsequent spray. The control plots were sprayed with water only. The intensity of disease was measured by randomly selecting 100 leaves from each plot after 10 days of the least spray and the disease intensity was calculated according in the formula given below-

$$\text{Percentage Disease control} = \frac{\text{D. I. in control} \times \text{D. I. on treatment}}{\text{D. I. in control}} \times 100$$

Where:-

D = Disease I. = Intensity

The yield was estimated on the plot basis without considering the border rows in q/ha.

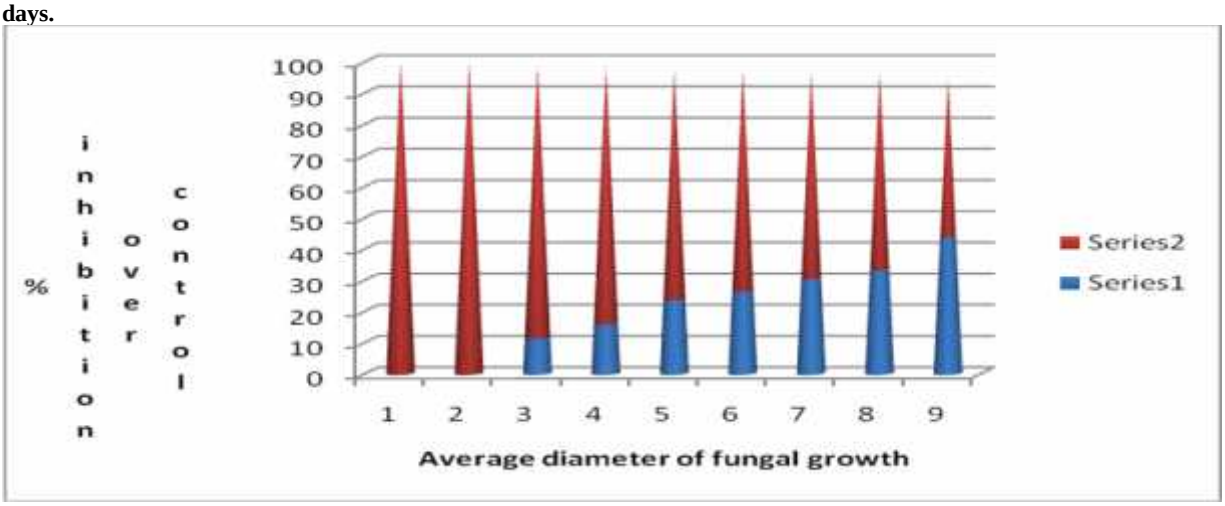
Results and Discussion

The result presented in (Table-1 & Figure-1) indicate that all the fungicides were significantly superior over control in inhibiting the growth of the pathogen *In-Vitro* Captan (0.20%) and Indofil M-45(0.20%) was most effective fungicides, which show the hundred percent of inhibition over control. These were also statistically at par with each others. Next best fungicides Karathane and Bavistin was average effective, which showed the 11.51 mm and 16.07 mm. fungal growth and shows 87.21% and 82.14% inhibition over control. Next superiority of fungicides were Blue copper, Vitavax, Benlate and Agrimycin-100,which showed the 73.55%, 70.54%, 66.07% and 62.97% inhibition over control. Chlorothalonil was least effective tested fungicides which show the 43.85mm and 51.27%of inhibition over control the fungicides are also reported [5-6].

Table No. 1: Inhibitory effect of different fungicides on the growth of *Curvularialunata In–Vitro* at 28± 1°C after 10 days.

S.N.	Fungicides	Doses	Average diameter of fungal growth(mm)	Percentage inhibition over control
1	Captan	0.20	00.00	100.00
2	Indofilm - 45	0.20	00.00	100.00
3	Karathane	0.20	11.51	87.21
4	Bavistin	0.10	16.07	82.14
5	Blue copper	0.15	23.80	73.55
6	Vitavax	0.20	26.51	70.54
7	Benlate	0.10	30.53	66.07
8	Agrimycin-100	0.10	33.32	62.97
9	Chlorothalonil	0.20	43.85	51.27
10	Control		90.00	
C.D. at 5% level			**2.88**	

Figure 1: Inhibitory effect of different fungicides on the growth of Curvularialunata *In–Vitro* at 28± 1oC after 10 days.



The result was field tested indicated in Table–2 show that all the fungicides controlled the disease intensity except the control one. Two fungicides namely Captan and Indofil M- 45 were found most effective in controlling the disease intensity as compared to other fungicides. They were statistically par to each other.

Table– 2: Effect of spray fungicides on disease intensity and yield by *Curvularialunata* under field condition.

S. N	Fungicides	Dose%	Disease incidence		Mean	Yield		Mean
			2013-14	2014-15		2013-14	2014-15	
1.	Captan	0.20	9.43 (17.87)*	9.98 (18.36)*	9.70	77.00 (61.34)*	76.50 (61.00)*	76.75
2.	Indofil M-45	0.20	9.91 (18.38)*	10.45 (18.86)*	10.18	75.00 (60.00)*	74.33 (59.56)*	74.66
3.	Karathane	0.20	12.40 (20.62)*	13.85 (21.85)*	13.13	73.60 (59.08)*	72.33 (58.26)*	72.96
4.	Bavistin	0.10	24.06 (29.36)*	25.35 (30.23)*	24.7	65.00 (53.73)*	64.60 (53.49)*	64.80
5.	Blue Copper	0.15	44.85 (42.05)*	45.98 (42.67)*	45.42	62.60 (52.30)*	62.80 (52.42)*	62.7
6.	Vitavax	0.20	46.20 (42.80)*	47.20 (43.39)*	46.7	60.30 (50.94)*	59.00 (50.18)*	59.65
7.	Benlate	0.10	50.08 (45.03)*	50.89 (45.49)*	50.53	58.60 (49.95)*	56.03 (48.62)*	57.45
8.	Agrimycin100	0.10	56.12 (48.52)*	57.27 (49.16)*	56.69	54.00 (47.29)*	55.30 (48.04)*	54.65
9.	Chlorothalonil	0.20	60.17 (50.85)*	61.23 (51.25)*	60.7	57.60 (45.92)*	53.30 (49.89)*	52.45
	Control	-	65.00 (53.73)*	66.00 (54.33)*	65.5	40.60 (39.85)*	39.30 (83.82)*	39.95
	CD @ 5%		**1.95**	**2.05**		**2.15**	**2.62**	

**Transferred values indicated in parenthesis.*

Highest yield of 76.75 q/ha was obtained with Captan followed by Indofil M- 45(74.67) q/ha. The next effective fungicide was Karathan (0.20) and Bavistin (0.10) which showed 13.43 and 24.70 average disease incidence and yield 72.69q/ha and 64.8 q/ha significantly different from each other remaining fungicides Blue copper, Vitavax ,Benlate, and Agrimycine -100 were showed 45.42, 46.7, 50.55 and 56.69 average disease incidence and yield 62.7q/ha, 59.69 q/ha,57.45q/ha and 54.65q/ha respectively Chlorothalonil least effective fungicides which show the 60.7% average disease incidence and show mean yield52.45 q/ha against *Curvularia lunata* observation [7].

Hence it is concluded that curvularia leaf spot of Indian bean can be successfully controlled by there spraying of Captan (0.20%) and Indofil M - 45(0.20%).

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