

Short Communication

Field evaluation of different fungicides against powdery mildew of cluster bean

M D Sangani, L F Akbari, I B Kapadiya and S V Lathiya

Received: August, 2014 / Accepted: March, 2015

Cluster bean (*Cyamopsis tetragonoloba* (L.) Taub.) is an important drought resistant leguminous crop that has been grown in India since ancient times. Gujarat state occupies an area of about 1.24 lakh hectares, with an average productivity of 590 kg ha⁻¹. In Gujarat, it is mainly grown in Banaskatha, Mehesana, Ahmedabad, Panchmahal, Kachchh, Gandhinagar and Kheda districts. Powdery mildew is an important disease particularly in the Saurashtra region of Gujarat. Hence, present investigation was carried out to assess losses due to this disease and to develop feasible management option. A field trial was conducted at the Department of Plant Pathology, JAU, Junagadh to study efficacy of various fungicides for controlling powdery mildew disease of cluster bean caused by *Leveillula taurica* during *kharif* season of 2013-14 and summer season of 2014. The experiment was laid out in Randomized Block Design with three replication using variety Gum Guar, Gujarat Guar - 2. The plot size for each treatment was 3 m x 1.35 m gap with spacing of 45 x 30 cm. The treatment details are given in table 1. First spray was given on initiation of disease and remaining two sprays of fungicides were applied at 20 days interval. Control was maintained by water spraying (500 lit/ha) and without spraying of any fungicides. Observations on disease intensity were recorded from ten plants randomly selected from each treatment after seven days of last spray using 0-5 scale given by Rathore and Rathore (1995). Each plant was evaluated for its disease reaction by scoring the disease intensity on top, middle and lower leaves following a 0-5 scale, where 0=0 (Healthy leaves), 1= 1-20 %, 2=21-40 %, 3=41-60 %, 4=61-80 % and 5= 81-100 % leaf area.

Per cent disease intensity (PDI) was calculated by using the following formula:

$$\text{PDI} = \frac{\text{Sum of total rating}}{\text{Total plants observed}} \times \frac{100}{\text{Maximum disease rating}}$$

The per cent disease control and the percentage deviation in seed yield were calculated with the help of the following formula (Mathur *et al.*, 1971).

$$\text{PDC} (\%) = \frac{\text{P.D.I. in check} - \text{P.D.I. in treatment}}{\text{P.D.I. in check}} \times 100$$

Effect of different fungicides against *L. taurica* on cluster bean was tested in the field condition during two seasons in 2013-2104. Propiconazole was proved to be the most effective fungicide with 16.42 per cent mean disease intensity and 74.88 per cent disease control followed by wettable sulphur, hexaconazole and difenoconazole with per cent disease intensity of 22.42, 22.86 and 22.97 per cent and 65.69, 65.02 and 64.85 per cent disease control, respectively. In summer, lowest per cent disease intensity was found in the treatment of propiconazole (16.27 %) with 76.54 per cent disease control. These results are in agreement with Sharmila *et al.* (2004) who tested seven fungicides against powdery mildew of chilli caused by *L. taurica* and found minimum per cent disease intensity (9.03) with treatment of penconazole followed by propiconazole (Table 1).

Next effective treatment was difenoconazole with 21.91 per cent disease intensity and 68.42 per cent disease control. The highest cluster bean seed yield of 1446 kg/ha was obtained in the treatment of propiconazole followed by hexaconazole (1254 kg/ha). Yield increased in these treatments to the tune of 35.07 and 25.15 per cent.

The minimum per cent disease intensity of 16.42 per cent was recorded in the treatment of propiconazole (0.025 %) with 74.88 per cent disease control. While in

Table 1: Effect of different fungicides against powdery mildew of cluster bean

S No	Fungicides	Concentrations (%)	2013		2014	
			Per cent disease intensity*	Disease control (%)	Per cent disease intensity*	Disease control (%)
1.	Hexaconazole 5% EC	0.005	22.86 (28.57)*	65.02	22.31 (28.19)*	67.84
2.	Difenoconazole 25% EC	0.025	22.97 (28.64)	64.85	21.91 (27.91)	68.42
3.	Propiconazole 25% EC	0.025	16.42 (23.90)	74.88	16.27 (23.79)	76.54
4.	Picoxystrobin 25% EC	0.025	28.82 (32.47)	55.91	28.54 (32.29)	58.86
5.	Dinocap 48% EC	0.048	25.30 (30.20)	61.29	26.74 (31.14)	61.46
6.	Wettable Sulphur 80% WP	0.2	22.42 (28.27)	65.69	23.11 (28.73)	66.69
7.	Sulphur Dust	25 kg/ha	28.71 (32.40)	56.08	28.27 (32.12)	59.26
8.	Control (Water spray)	500 lit/ha	56.89 (48.96)	12.96	59.27 (50.34)	14.58
9.	Control		65.37 (53.95)	-	69.39 (56.41)	
	S. Em. ±		1.85		1.77	
	CD at 5%		5.55		5.32	
	CV %		9.39		8.89	

*Figures in parentheses show angular transformed values.

summer season, powdery mildew was managed satisfactorily by foliar application of propiconazole (0.025 %) with 16.27 per cent disease intensity and 76.54 and per cent disease control with maximum yield of 1446 kg/ha. The seed yield in protected plots over unprotected plots was 1378 kg/ha and loss of 28.20 per cent can be saved by protecting the crop against powdery mildew using three foliar application of propiconazole @ 0.025 at 20 days interval.

Reference

- Mathur RL, Singh G, Gupta RBL (1971) Field evaluation of fungicides for the control of powdery mildew of pea. *Indian J Mycol Pl Pathol.* 1: 95-98.
- Rathore BT, Rathore RS (1995) Studies on varietal resistance and chemical control of powdery mildew of fenugreek (*Trigonella foenum graecum*). *Indian J Mycol Pl Pathol.* 13(12): 21-23.
- Sharmila AS, Kachapur MR, Patil MS (2004) Field evaluation of fungicides against powdery mildew (*Leveillula taurica* (Lev.) of chilli (*Capsicum annuum* L.). *Indian J Mycol Pl Pathol.* 34(1): 98-99.