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Bio-efficacy of new molecules against powdery mildew disease of chilli

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ABSTACT

An experiment was conducted for two years to evaluate the bio-efficacy of a new molecule meptyldinocap 35 % EC (DE-126) along with recommended fungicides against powdery mildew *(Leveillula taurica* (Lev.) Arn.) in chilli during 2006-07 and 2007-08. The efficacy of different doses of meptyldinocap 35 % EC (DE-126) was evaluated against powdery mildew compared with other systemic and non-systemic fungicides. The results reveals that meptyldinocap 35 % EC (DE-126) @ 120 g a.i./ha was significantly superior in controlling the powdery mildew disease, in which the intensity of the diseases was also minimum i.e. 8.52% in 2006-07 and 8.87% in 2007-08, however, it was at par with meptyldinocap 35 % EC (DE-126) @ 108 g a.i./ha which recorded disease intensity of 10.37% in 2006-07 and 13.33% in 2007-08.

INTRODUCTION

Chilli (*Capsicum annum* L) is one of the most spices crops of Nimar Velly Zone of Madhya Pradesh. It is a crop of tropical and sub-tropical regions and requires a warm humid climate. Though, chilli can be grown in many varieties of soils, well drained loamy soils, rich in organic matter are best suited for the cultivation. In Madhya Pradesh occupies 47633 ha. area with the production 0.41 lakhs tones and productivity 0.86 tone/ ha (2006-07).Diseases are the main constraint for the successful cultivation of the crop. The crop suffers mainly leaf spot, leaf curl, anthracnose and powdery mildew diseases, causing economical losses. Powdery mildew disease affects the crop on fruiting stage therefore, a need of suitable and effective fungicide is important for the management of the Powdery mildew disease to get maximum yield the spray schedule needs to be worked out for this important foliar fungal disease. Powdery mildew is a major threat in the chilli production causing premature leaf fall late in the season and reducing yield Sudha and Laxman (2, 3). With these view an experiment was undertaken to evaluate the bio-efficacy of a new molecule against powdery mildew in chilli.

MATERIALS AND METHODS

The present investigation was carried out at Zonal Agriculture Research Station, RVSKVV, Khargone (M.P.) during 2006-07 and 2007-08. This station is located in the Nimar Valley zone (Agro climatic zone No 11) with the head quarter at Khargone. The station is situated at an altitude of 240 MSL, 22°N Latitude and 75°E Longitude. This tract falls under hottest belt in the country. Maximum temperature ranges from 25° C to 47° C while minimum temperature ranges from 10°C to 27°C and rarely drops below 10° C. The rains usually start in the month of June and ceases in August. It rarely continues up to mid of September. The total rainfall ranges between 700 - 900 mm. The stable rainfall period is about 3 month with 30 to 40 active rainy days. The soil is low in available nitrogen, medium in phosphorus and high in potash with pH of 8.5. The experiment was laid out in a randomized block design with three replications. The crop was raised at a spacing of 60×45 cm. (R×P) and all the recommended agronomic practices were followed to grow a successful crop. The treatments included meptyldinocap 35 % EC (DE-126) @ 90, 108, 120 g a.i./ha, triadimefon 25% WP @ 38 g a.i./ha, dinocap 48% EC 108 g a.i./ha, sulphur 80% WP 2500 g ai /ha and untreated control. Details of the treatments are given in table 1. Three sprays of each treatment were applied at 20 days interval started with the incidence of disease symptoms, using a knapsack sprayer with 600 liters spray volume/ ha. The significant variation between different treatments was judged after analysis of variance (ANOVA) and calculation of least significant difference (LSD).

RESULTS AND DISCUSSION

The efficacy of different doses of meptyldinocap 35 % EC (DE-126) was evaluated against powdery mildew during kharif 2006-07 and 2007-08. It was compared with other systemic and non-systemic fungicides. The findings (Table 2) reveals that meptyldinocap 35 % EC (DE-126) @ 120 g a.i./ha was significantly superior in controlling the powdery mildew disease, in which the intensity of the diseases was also minimum i.e. 8.52%

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in 2006-07 and 8.87% in 2007-08, however, it was at par with (DE-126) @ 108 g a.i./ha which recorded disease intensity of 10.37% in 2006-07 and 13.33% in 2007-08. The superiority of in controlling of powdery mildew in Grape is in fair accordance with Anonymous (1) who reported effectiveness of meptyldinocap 35 % EC for better control of the disease.

meptyldinocap 35 % EC (DE-126) @ 90 g a.i./ha was also effective against powdery mildew of chilli and was significantly superior to other fungicides used in the study, However, three sprays of all the fungicides were significantly better than control in minimizing powdery mildew intensity in chilli, which appeared in the third week of December in year 2006-07 and 2007-2008 in the region.

It is also clear from the findings that at least three sprays are required for the control of powdery mildew disease in chilli. The first spray was given just after the initiation of the disease symptoms on lower leaves of chilli. The effect of this spray could be seen up to 18 to 20 days in the treated plots. The symptoms started re-appearing and the IInd spray was given in the first week of January and third spray was given in the last week of January, 2007 and 2008. These three sprays were effective in managing powdery mildew in chilli. Hence, over all three sprays of the fungicides were required to control this important disease of chilli in the prevailing climatic condition.

The maximum yield 957.6 kg/ha in 2006-07 and 1647 kg/ha in 2007-08 of dry chilli (Table 3) was obtained in meptyldinocap 35 % EC (DE-126) 120 g a.i./ha sprayed plots followed by 851.6 kg/ha and 1418 kg/ha in 2006-07 and 2007-08 respectively in meptyldinocap 35 % EC (DE-126) @108 g a.i./ha. Both the treatments were significantly superior to all other fungicides treatment. However, meptyldinocap 35% EC (DE-126) @ 108 g a.i./ha was at par with Dinocap 48% EC @ 108 g a.i./ha (807.7 kg/ha in 2006-07 and 1346 kg/ha in 2007-08). The yield of all the fungicides treated plots significantly higher over untreated control (446.1 kg/ha in 2006-07and 764 kg/ha in 2007-08) Thind and Kaur (4) observed that bayleton, karathane and sulfex improved the quility of

Table 1. Treatment Details of the different doses of meptyldinocap 35% EC (DE-126) and some recommended fungicides.

S.No.	Treatment	Dose(g a.i./ha)	Dose /ha Formulationml (or) g/ha
1.	Meptyldinocap 35%EC (DE-126)	90	257
2.	Meptyldinocap 35% EC (DE-126)	108	309
3.	Meptyldinocap 35%EC (DE-126)	120	343
4.	Triadimefon 25 % WP	38	150
5.	Dinocap 48 % EC	108	225
6.	Sulphur 80%WP	2500	3125
7.	Control		

Table 2. Bio-efficacy of different meptyldinocap 35 % EC (DE-126) treatment and some recommended fungicides on Intensity of Powdery mildew diseases of chilli.

S.No.	Treatment	Dose (g a.i./ha)	Dose/ha formulationml (or) gm/ha	Intensity of powdery mildew (%) 2006-07	Intensity of powdery mildew (%) 2007-08
1.	Meptyldinocap 35%EC **(**DE-126)	90	257	15.56(23.26)	14.44(22.24)
2.	Meptyldinocap 35% EC **(**DE-126)	108	309	10.37(18.81)	13.33(21.35)
3.	Meptyldinocap 35%EC **(**DE-126)	120	343	8.52(60.95)	8.87(17.27)
4.	Triadimefon 25 % WP	38	150	33.33(35.24)	27.07(29.34)
5.	Dinocap 48 % EC	108	225	40.74(39.58)	21.11(27.28)
6.	Sulphur 80 %WP	2500	3125	51.85(46.03)	44.07(41.56)
7.	Control			75.56(60.40)	67.04(54.92)
	CD at 5%			3.78	3.14
	CV (%)			6.2	6.21

Table 3. Bio-efficacy of different meptyldinocap 35% EC (DE-126) treatment and some recommended fungicides on yield of dry chilli.

S.No.	Treatment	Dose (g a.i./ha)	Dose/ha formulationml (or) gm/ha	Dry chilli yield (kg/ha) (%) 2006-07	Dry chilli yield (kg/ha) (%) 2007-08
1.	Meptyldinocap 35%EC (DE-126)	90	257	793.6	1132
2.	Meptyldinocap 35% EC (DE-126)	108	309	851.6	1418
3.	Meptyldinocap 35%EC (DE-126)	120	343	957.6	1647
4.	Triadimefon 25 % WP	38	150	765.2	1341
5.	Dinocap 48 % EC	108	225	807.7	1346
6.	Sulphur 80 %WP	2500	3125	642.5	973
7.	Control			446.1	764
	CD at 5 %			105.4	257
	CV (%)			7.9	12.6

Ber fruit as compared to control. The results revealed that control of powdery mildew are very important to get higher yield. The results indicated that the treatments Meptyldinocap 35 % EC (DE-126) @ 120 g a.i./ha and 108 g a.i./ha were most superior for the effective management of powdery mildew in chilli and also gave higher yield.

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