

Evaluation of fungicides for the control of powdery mildew disease in coriander (*Coriandrum sativum* L.)

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Abstract

Six fungicides were evaluated at Raigarh (Chhattisgarh), for the control of powdery mildew disease of coriander (*Coriandrum sativum*), caused by *Erysiphe polygoni*. All the fungicides reduced the disease severity significantly, over control, with maximum reduction in hexaconazole (0.1%) that was on par with propiconazole (0.1%) and wettable sulfur (0.3%). Yield of coriander was higher 2.54, 2.00 and 2.20 times, over control, in hexaconazole (0.1%), propiconazole (0.1%) and wettable sulfur (0.3%), respectively. Cost-benefit ratio was 1:5.3, 1:4.0 and 1:4.5 in hexaconazole (0.1%), propiconazole (0.1%) and wettable sulfur (0.3%), respectively.

Keywords: coriander, *Coriandrum sativum*, fungicides, powdery mildew, yield.

Powdery mildew, caused by *Erysiphe polygoni*, is one of the most destructive diseases of coriander (*Coriandrum sativum* L.) in India leading to production of small shrivelled seeds, thereby reducing the yield and quality. The incidence of the disease has increased in recent years due to changing production practices, especially because of the use of high yielding, late maturing varieties in new environments (Kalra *et al.* 1995). Fungicides such as Cosan, Sultaf, Karathane WD, Elosal, Thiovit or Morocide (Srivastava *et al.* 1971), Sultaf (0.25%) (Keshwal *et al.* 1979), wettable sulfur (Raju *et al.* 1982), Karathane (0.1%) (Vinayagamoorthy *et al.* 1985), carbendazim (0.05%) alone or with mancozeb (0.2%) (Adiver & Rajanna 1991), sulfur, thiophanate methyl and carbendazim (Ali *et al.* 1998) have been recommended for the

management of the disease. Most of these fungicides, except sulfur and carbendazim, are not easily available and hence a study was undertaken to control the disease with new and easily available fungicides.

The experiment was conducted at Regional Agricultural Research Station, Indira Gandhi Krishi Viswavidyalaya, Raigarh (Chhattisgarh) in *rabi* season during 2002–03 and 2003–04, in a randomized block design with six treatments namely, mancozeb (0.3%), carbendazim (0.1%), wettable sulfur (0.3%), thiophanate methyl (0.1%), hexaconazole (0.1%) and propiconazole (0.1%) with three replications in a plot size of 3 m². All the recommended agronomical practices except general fungicide sprays were adopted to raise a good crop. The first spray of the fungicides was done at the time of appearance of the first symptom

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Table 1. Efficacy of fungicides for the control of powdery mildew of coriander

Treatment	Disease severity (%)			Yield (3 m ² plot) ⁻¹ (g)			Cost:Benefit ratio
	2002-03	2003-04	Mean	2002-03	2003-04	Mean	
Mancozeb 0.3%	35.9	39.4	37.7	345.0	96.7	220.9	1 : 3.3
Carbendazim 0.1%	31.2	38.9	35.1	383.3	105.0	244.2	1 : 3.8
Wettable sulfur 0.3%	16.2	14.8	15.5	490.0	125.0	307.5	1 : 4.5
Thiophanate methyl 0.1%	35.1	34.1	34.6	358.3	113.3	235.8	1 : 3.4
Hexaconazole 0.1%	11.9	11.1	11.5	550.0	158.3	354.2	1 : 5.3
Propiconazole 0.1%	23.9	19.9	21.9	456.7	100.0	278.4	1 : 4.0
Control (Unsprayed)	67.8	60.0	64.2	230.0	48.3	139.2	1 : 2.3
CD (P=0.05)	11.5	12.9	12.2	102.2	38.7	70.5	-

of the disease in the experimental plots followed by two more sprays at fortnightly intervals. Disease scoring was done on 0-9 point scale (0=no symptoms on the plant, 1=1 to 10 small patches on leaves, 3=11 to 20 small patches on leaves, 5=more than 50% leaf area covered with patches, 7=symptoms on the leaves and stems covering more than 75% plant area and 9 = symptoms on umbel and capsules) after 10 days of the third spray. The disease severity in each replication was worked out by the formula:

Per cent Disease Index =

$$\frac{\text{Sum of all disease ratings}}{\text{Total number of ratings} \times \text{Maximum disease grade}} \times 100$$

All the fungicides tested in the experiment significantly reduced the disease severity of powdery mildew of coriander, over control. Among the fungicides, wettable sulfur (0.3%), hexaconazole (0.1%) and propiconazole (0.1%) were superior over rest of the fungicides, but statistically at par with each other. The efficacy of wettable sulfur (Srivastava *et al.* 1971; Keshwal *et al.* 1979; Ali *et al.* 1998) has already been reported against powdery mildew of coriander. The present results are also in confirmation with the above findings; but the efficacy of two other fungicides namely, hexaconazole (0.1%) and propiconazole (0.1%), against powdery mildew, which not only reduced the disease severity but also increased the yield 2.54 and 2.00 times over control is reported. Cost:benefit ratio was 1:5.3 and 1:4.0 in hexaconazole (0.1%)

and propiconazole (0.1%), respectively. These two fungicides have also been reported to control powdery mildew in chilli (Sharmila *et al.* 2004) and okra (Vijaya 2004).

References

- Adiver S S & Rajanna K M 1991 Control of powdery mildew of coriander. *Curr. Res.* 20 (4) : 59.
- Ali S A, Pathak R K & Saraf R K 1998 Fungicidal seed treatment in coriander. *Adv. Plant Sci.* 11 : 303-304.
- Kalra A, Parameshwaran T N, Ravindra N S & Dimitri B P 1995 Variable cultivar response to control of powdery mildew in coriander. *J. Essent. Oil Res.* 7 : 403-406.
- Keshwal R L, Choudhary P C & Singh K 1979 Effect of different dates of sowing and fungicidal spray on the powdery mildew of coriander. *Veg. Sci.* 6 (2) : 135-136.
- Sharmila A S, Kachpur M R & Patil M S 2004 Field evaluation of fungicides against powdery mildew of chilli (*Capsicum annum* L). *J. Mycol. Plant Pathol.* 34 : 98.
- Srivastava U S, Rai R A & Agrawal J M 1971 Powdery mildew of coriander and its control. *Indian Phytopathol.* 24 : 437-440.
- Vijaya M 2004. Chemical control of powdery mildew of okra. *J. Mycol. Plant Pathol.* 34 : 604.
- Vinayagamoorthy A, Mohideen M K, Jeyrajan R & Prakasam V 1985 Fungicidal control of powdery mildew of coriander. *South Indian Hort.* 33 : 347-348.