

Evaluation of fungicides for control of powdery mildew of zinnia in the greenhouse, 2018.

Zinnias were seeded in 128-cell flats on 20 Dec. The zinnia seedlings were transplanted into 4-in pots containing a soilless media (Suremix MI Grower Products, Inc., Galesburg, MI) on 19 Jan. Plants were maintained in a research greenhouse, overhead watered as needed, and fertilized three times weekly with 200 ppm Peters 20-20-20 water-soluble fertilizer (ICL Specialty Fertilizers, Dublin, OH). Greenhouse temperatures averaged 71°F during the day and 62°F at night. Six replicates per treatment were arranged in a randomized block design. The trial was inoculated by placing zinnia plants with actively sporulating powdery mildew colonies within the treatment blocks. With the exception of Proud 3, all fungicide treatments were applied to the foliage with a hand-pressurized sprayer until glistening on 31 Jan, 15 Feb, and 2 Mar. Proud 3 was applied on 31 Jan, 7, 15, and 23 Feb, and 2 and 9 Mar. The total number of powdery mildew colonies present on each plant were counted and a disease severity rating was recorded on 23 Feb and 2, 12, and 19 Mar. Data were analyzed using SAS PROC GLM and statistical differences were compared using the Fisher’s Protected Least Significant Differences test ($P=0.05$).

Disease pressure was severe in this trial with the untreated control plants averaging 168.3 powdery mildew colonies on the final rating date. With the exception of Heritage 50WG and Proud 3F, all treatments in this experiment resulted in plants that were free of powdery mildew colonies for all ratings. Although some powdery mildew colonies were observed on the Heritage 50WG treated plants, the observed colonies were small and the plants would likely still be marketable. Although a significant number of powdery mildew colonies were observed on plants treated with Proud 3, the OMRI listed product did statistically reduce the number of colonies and disease severity compared the untreated control for all rating dates. Phytotoxicity was not observed on any of the treated plants in this experiment.

Treatment and rate/100 gal	Avg. # of powdery mildew colonies per plant				Disease severity*			
	23 Feb	2 Mar	12 Mar	19 Mar	23 Feb	2 Mar	12 Mar	19 Mar
Untreated control	63.7 b**	114.7 b	135.0 c	168.3 c	4.0 b	5.2 b	5.8 c	6.3 c
Mural 45WG 7 oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Orchestra Intrinsic SC 8 fl oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Tourney 50WDG 4 oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Eagle 20EW 8 fl oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Pinpoint 4SC 15 fl oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Terraguard SC 16 fl oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Palladium 62.5WDG 6 oz	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a
Heritage 50WG 4 oz	0.0 a	0.3 a	1.7 a	4.8 a	0.0 a	0.2 a	0.3 ab	0.7 ab
Proud 3F 1 gal	15.8 a	39.5 a	35.8 b	53.2 b	0.7 a	1.0 a	1.2 b	1.3 b

*Rated on a scale of 0 to 10, where 0=no sporulation, 1=1-5%, 2=6-10%, 3=11-20%, 4=21-30%, 5= 31-40%, 6=41-50%, 7=51-60%, 8=61-80%, 9=81-99%, and 10=100% of foliage sporulating with the pathogen.

**Column means with a letter in common are not significantly different (Fisher’s LSD; $P\leq 0.05$).