

Evaluation of single product treatments for control of downy mildew on pickling cucumbers, 2019.

This trial was established at the Michigan State University Plant Pathology Farm in Lansing, MI, in a field of Capac loam soil previously planted to cucumber. Urea preplant fertilizer (100 lb/A) was applied on 7 Jul. The field was prepared by plowing and disking on 21 Jun and disking on 7 Jul. Raised beds were formed, plastic was laid, and drip tape was established for irrigation on 8 Jul. Weeds were controlled with an application of Curbit EC (3 qt/A), Command 360 ME (1.2 qt/A), and Dual II Magnum (0.8 qt/A) on 17 Jul prior to planting. Cucumber 'Bowie' seeds were sown on 29 Jul and spaced 12 in. apart in rows that were spaced on 5.5-ft centers. Treatments were arranged in a completely randomized block design with four replicates. Each treatment replicate consisted of a single 20-ft row plot with a 3-ft buffer between treatments within the row. The trial was fertilized throughout the growing season with weekly applications of 20-20-20 via drip tape at 5 lb/A. Four weekly spray treatments were applied on 22 and 29 Aug; 5 and 12 Sep using a CO₂ backpack sprayer and a broadcast boom equipped with three XR8003 flat-fan nozzles spaced 18 in. apart, calibrated at 50 psi and delivering 50 gal/A. Foliage was evaluated for infection on 6, 12, 19, and 27 Sep.

Over the course of the study, foliar disease progressed from 5.5% to 85.0% for the untreated control plants. Orondis Opti SC was among the most effective treatments with 1% foliar infection on the last rating date (17 Sep), and with the lowest numerical value of all treatments. (NOTE: Further evaluations may have allowed for significant differences between the most effective treatments) Other effective fungicides providing a level control on 27 Sep that was similar to Orondis Opti SC and included Omega SC, Previcur Flex SL, Ranman SC, and Zing! SC. Cabrio EG and Forum SC were the least effective fungicides and nearly always resulted in foliar infection percentages similar to the untreated control across the assessment periods. While Presidio SC was better than the untreated control, it was less effective than most of the other fungicides included in this study. The AUDPC data indicated the most effective fungicides in limiting downy mildew foliar disease in this trial included Orondis Opti SC, Omega SC, Previcur Flex SL, Zampro SC, Zing! SC, Elumin SC and Ranman SC. Treatments that were similar to the untreated control, according to the AUDPC data, included Koverall DG, Forum SC, and Cabrio DG.

Treatment and rate/A, applied at 7-day intervals	Ratings of Foliar Disease (%) ^z				
	6 Sep	12 Sep	19 Sep	27 Sep	AUDPC
Untreated control	5.5 e ^y	35.0 c	43.8 g	85.0 e	898.4 h
Bravo WeatherStik SC 2 pt	1.3 ab	6.3 a	15.0 e	26.3 c	245.4 f
Elumin SC 8 fl oz	0.8 ab	0.8 a	8.0 b-e	22.5 c	154.8 c-f
Forum SC 6 fl oz	3.5 cd	33.8 c	45.0 g	83.8 e	898.8 h
Gavel DF 2 lb	1.8 a-c	7.0 a	13.0 de	22.5 c	220.8 ef
Koverall DG 3 lb	1.0 ab	4.5 a	11.3 c-e	23.8 c	191.1 d-f
Omega SC 1 pt	0.5 a	1.0 a	4.8 a-c	6.5 ab	59.6 a-c
Orondis Opti SC 40 fl oz	0.0 a	0.0 a	0.0 a	1.0 a	4.0 a
Presidio SC 0.25 pt	2.5 bc	18.8 b	27.5 f	66.3 d	576.1 g
Previcur Flex SL 1.2 pt	0.3 a	0.0 a	0.0 a	9.0 ab	36.5 ab
Ranman SC 2.75 fl oz	0.3 a	2.0 a	3.5 a-c	8.8 ab	69.3 a-c
Zampro SC 14 fl oz	1.0 ab	3.0 a	7.5 b-d	11.3 b	116.8 b-e
Zing! SC 36 fl oz	1.0 ab	3.0 a	8.0 b-e	9.3 ab	112.4 b-d
Cabrio EG 12 oz	4.5 de	36.3 c	48.8 g	83.8 e	913.1 h

^zBased on a visual estimation of the foliage diseased (%).

^yColumn means with a letter in common are not significantly different according to Fisher's Least Significant Difference (LSD Test; $P=0.05$) using ANOVA, SAS