

Efficacy of fungicides for managing downy mildew in cucumber, 2011.

Slicing cucumber was direct seeded on 7 Jul into beds with black plastic mulch and drip irrigation in a field with Haven loam soil at the Long Island Horticultural Research and Extension Center in Riverhead. A late planting date was used to increase the likelihood of downy mildew developing during the experiment. A waterwheel transplanter was used to make planting holes in the beds and apply starter fertilizer plus insecticide on 7 Jul. During the season, water was provided as needed via drip irrigation lines. Weeds were controlled between mulched rows by applying a tank mix of Strategy (3 pt/A), Sandea (0.5 oz/A), and Scythe (1.3 fl oz/gal spray mix) on 7 Jun, applying Round-Up Weather Max (1 qt/A) on 8 Jul, and by hand weeding. Cucumber beetles were managed with Admire Pro (7.5 fl oz/A) applied with the transplanter on 7 Jul. Fungicides were applied weekly for 6 weeks beginning on 4 Aug, six days before symptoms were first observed, using a backpack CO₂-pressurized sprayer equipped with a single-nozzle boom and an 8006VS nozzle operated at 55 psi and delivering 51 gal/A. It was intended that the treatments be applied on a preventive schedule. Plots were single 27-ft rows with 18 plants at 18-in. spacing. The plots were 9-ft apart initially until plants began to vine. Vines were moved as needed to maintain plot separation. A randomized complete block design with six replications was used. Downy mildew severity was assessed on 10, 17 and 25 Aug, and 1 Sep by estimating incidence of symptomatic leaves in each plot and rating severity on nine representative affected leaves. Incidence and average severity for symptomatic leaves were used to estimate canopy severity. Fruit was removed from plants to maintain plant growth; yield was not assessed. Average monthly high and low temperatures (°F) were 87/68 in Jul and 82/66 in Aug. Rainfall (in.) was 2.35 and 10.61 for these months, respectively. There was a hurricane (28 Aug) and several atypical intensive rain events on Long Island during this experiment.

Symptoms of downy mildew were first observed on 1 Aug in cucumber in the adjacent cucurbit downy mildew sentinel plots and on 10 Aug in this experiment. Conditions were favorable for downy mildew development but not for applying fungicides. Presidio was the only treatment evaluated that provided full-season control of downy mildew. This fungicide provided 85% control based on AUDPC values.

Treatment and rate/A (application dates) ^y	Canopy severity of downy mildew (%) ^z				
	10-Aug	17-Aug	25-Aug	1-Sep	AUDPC
Nontreated control.....	0.4	6.4 a ^v	34.3 a	24.8 a	393.3 a
Forum 4.16SC 6 fl oz (1, 3, 5) alt Ranman 400SC 3 fl oz (2, 4, 6) ^x	0.3	4.5 ab	23.5 ab	18.5 ab	275.0 a
Zampro 525SC 14 fl oz (1-6) ^{x, w}	0.0	1.0 b	25.1 a	12.4 ab	239.5 a
Presidio 4SC 4 fl oz (1-6) ^x	0.0	0.1 b	4.8 b	6.3 b	58.8 b
<i>P-value</i> (treatment)	0.0453	0.0030	0.0050	0.0130	0.0004

^z Incidence of leaves with symptoms of downy mildew was estimated and severity was assessed for the affected leaves. Canopy severity was calculated by multiplying these values. Area Under Disease Progress Curve (AUDPC) was calculated from 10 Aug through 1 Sep.

^y Rate of formulated product/A. Applications dates were 1=4 Aug, 2=10 Aug, 3=17 Aug, 4=24 Aug, 5=31 Aug and 6=7 Sep.

^x All fungicides tank-mixed with Bravo Ultrex 82.5DF (1.8 lb/A) (1-6)

^w Applied with Biolink at 2 fl oz/gallon

^v Means followed by the same letter or no letter are not statistically different from each other (Tukey's HSD, *P*=0.05).