

Evaluation of fungicides for control of downy mildew of pickling cucumber, 2007.

This study was conducted at a cooperators' commercial farm in Calhoun County, MI on a sandy loam field (2 acres) that was planted to pickling cucumber. Cucumber seeds were planted every 12 in. in a single row on a raised bed covered with plastic mulch. Beds were spaced 8 ft apart on centers. Drip irrigation was used for irrigation and fertilization of the plants. The total size of the plot was 18 beds wide by 100 ft long. Spray plots consisted of a single bed 20 ft long and had a 5-ft buffer between plots within the same bed. Treatments were replicated four times in a randomized complete block design. Irrigation, fertilization, and insect control were applied according to standard practices by the cooperating grower. Fungicide treatments were applied with a CO₂ backpack boom sprayer equipped with XR8003 nozzles spaced 19 in. apart operating at a boom pressure of 50 psi and delivering 50 gal/A. The initial spray was applied on 28 Jul when plants had one true leaf and no disease symptoms were evident. Applications were made on a 7-day spray schedule on 28 Jul, 6 and 13 Aug before disease was present. After appearance of downy mildew, fungicide applications were applied every 5 days on 18, 22, and 27 Aug. Plots were visually evaluated for foliar infection and defoliation (0-100%) on 29 Aug and 5 Sep. Fruits were hand-harvested twice from the entire 20 ft of all treatment rows on 29 Aug and 5 Sep, and weighed. Data were analyzed with Sigma Stat version 3.1 (Systat Software Inc.) using the Fisher LSD multiple comparison test. Average monthly minimum and maximum air temperatures (°F) were: Jul (57.7 and 83.8); Aug (61.0 and 82.4); and Sep (52.2 and 77.3). Rainfall totals (in.) were 1.2, 6.2, and 2.3 for the same respective months.

On 29 Aug, all treatments provided control that was significantly better than the untreated control. At the first rating date several treatments (2, 6, 7, 14, 17) limited infection to <10%. One week later, plots treated with Manzate 75DF or Ridomil Gold MZ had levels of infection similar to the untreated control. At the second rating date treatments (2, 6, 17) limited infection to <20%. Defoliation progressed rapidly from 29 Aug to 5 Sep in the untreated control. Several treatments limited defoliation to ≤5% (2, 6, 8, 12, 14, 17). Total yields were not impacted by downy mildew as in previous studies. This was attributed to the relatively late appearance of the pathogen (18 Aug). With the exception of one treatment (10), all treatments yielded significantly more than the untreated control.

Treatment and rate/A, <i>applied at 5-7 day intervals, unless otherwise specified</i>	Infection (%) [*]		Defoliation (%) [*]		Total yield (lb/20 ft)
	29 Aug	5 Sep	29 Aug	5 Sep	
1 Untreated control	92.5 f ^{**}	98.8 f	52.5 c	85.0 d	55.0 c
2 Previcur Flex 6SC 1.2 pt + Bravo Weather Stik 6SC 2 pt <i>alternate</i> Tanos 50WG 8 oz + Manzate 75DF 3 lb	6.0 ab	11.3 a	0.5 a	5.0 a	90.5 ab
3 Bravo Weather Stik 6SC 3 pt.....	12.5 a-c	46.3 b-e	0.5 a	15.0 ab	96.6 ab
4 Equus 720 SST 6SC 3 pt.....	24.3 a-d	28.8 a-d	3.0 a	6.0 a	92.4 ab
5 Equus 82.5WDG 2.73 lb.....	26.3 b-d	53.8 c-e	1.0 a	17.5 a-c	108.7 a
6 Previcur Flex 6SC 1.2 pt + Bravo Weather Stik 6SC 2 pt, <i>app 1,4</i> Ranman 3.6SC 2.7 fl oz + Manzate 75DF 3 lb, <i>app 2-3,5-6</i>	4.8 ab	13.8 a	0.0 a	3.0 a	108.1 a
7 Revus 2.09SC 8 fl oz + Dithane Rainshield 4SC 4 pt + NIS 8.33EC 8 fl oz <i>alternate</i> Quadris Opti 5.5SC 3.2 pt	9.8 a-c	27.5 a-d	0.0 a	6.0 a	94.8 ab
8 Revus 2.09SC 8 fl oz + Dithane Rainshield 4SC 4 pt + NIS 8.33EC 8 fl oz <i>alternate</i> Previcur Flex 6SC 1.2 pt + Dithane Rainshield 4SC 4 pt	13.0 a-c	26.3 a-c	0.0 a	4.3 a	94.8 ab
9 Revus Opti 3.67SC 3 pt + NIS 8.33EC 8 fl oz <i>alternate</i> Previcur Flex 6SC 1.2 pt + Dithane Rainshield 4SC 4 pt	18.0 a-c	33.8 a-d	0.0 a	6.8 a	88.2 ab
10 Ridomil Gold Bravo 3.67SC 2.5 pt, <i>app 1</i> Revus 2.09SC 8 fl oz + NIS 8.33EC 8 fl oz, <i>app 2,4,6</i> Quadris Opti 5.5SC 3.2 pt, <i>app 3,5</i> ,.....	47.5 de	57.5 de	8.8 ab	27.5 bc	77.0 bc
11 Curzate 60DF 3.2 oz + Manzate 75DF 3 lb.....	12.5 a-c	31.3 a-d	0.0 a	9.3 ab	109.9 a
12 Curzate 60DF 5 oz + Manzate 75DF 3 lb	15.0 a-c	31.3 a-d	6.3 ab	4.3 a	112.7 a
13 Tanos 50DF 8 oz + Manzate 75DF 3 lb <i>alternate</i> Curzate 60DF 3.2 oz + Manzate 75DF 3 lb...	13.8 a-c	33.8 a-d	1.3 a	10.5 ab	82.3 b
14 Tanos 50DF 8 oz + Manzate 75DF 3 lb <i>alternate</i> Curzate 60DF 5 oz + Manzate 75DF 3 lb.....	5.5 ab	22.5 ab	0.0 a	3.8 a	92.0 ab
15 Manzate 75DF 3 lb	52.5 e	72.5 ef	16.8 b	36.3 c	96.6 ab
16 Ridomil Gold MZ 76WP 2.5 lb	31.8 c-e	75.0 ef	1.5 a	27.5 bc	89.6 ab
17 Presidio 4FL 2.9 fl oz + Manzate 75DF 3 lb	1.5 a	16.3 ab	0.0 a	5.0 a	88.6 ab

^{*}Based on a visual estimation of percentage of plant affected.

^{**}Column means with a letter in common are not significantly different (Fisher LSD Method; $P=0.05$).