

Evaluation of fungicides for control of downy mildew on hand-harvested pickling cucumbers, 2007

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The experiment was conducted on a Pepperbox loamy-sand soil at the Carvel Research and Education Center near Georgetown, DE. The experiment was arranged as a randomized complete block design with four replications. Cucumbers were direct seeded in rows spaced 5 ft apart and 20 ft long with 3 in. between plants within the row on 5 Aug. Fungicide applications were initiated on 14 Aug (first true leaf expanded) before any symptoms were seen on the plants, but present in an adjacent field. Downy mildew was observed at low incidence on 23 Aug. Subsequent applications were made on 23, 30 Aug and 6, 11, 17 Sep using a backpack CO₂ pressurized sprayer that delivered 30 gal/A at 52 psi. Applications were made with a broadcast boom equipped with 4 hollow cone nozzles (D4 disks, no. 45 cores) spaced 18 in. apart. Each plot was bordered by an untreated row. Disease severity was measured on 11 Sep and at the last harvest on 26 Sep by estimating the percent of infected leaf area per plot. A 15 ft-long section of the plot was hand harvested on 17 and 26 Sep. Cucumbers were graded according to size and quality. The weight of crooks and nubs (small and misshapen fruit) was subtracted from the total yield weight to obtain marketable yield. The average minimum and maximum temperatures during the trial were 64°F and 85°F respectively. The plot received a total 3.8 inches of rainfall, and supplemental overhead irrigation was provided as necessary.

Despite periods of hot, dry weather during the trial, downy mildew severity was very high by harvest time and the yields of the untreated control plots reflected that. One of the goals of the test was to verify that the new strains of downy mildew that are present in DE are resistant to mefenoxam (Ridomil Gold) and pyraclostrobin (Cabrio). This test was conducted in conjunction with other cooperating states in the US to ascertain the distribution of these fungicide resistant strains of *P. cubensis*. There was no control provided by either of these two fungicides. The other two fungicide alternations tested were very effective in protecting plants and producing good yields and are industry standards where these resistant strains are present. There were no symptoms of phytotoxicity for any treatment.

Treatment and rate/A	Marketable Yield (bu/A)	Total Yield (bu/A)	% Crooks & nubs *	% Infected foliage	
				11 Sep	26 Sep
Previcur Flex 6F 1.2 pts + Bravo Weather Stik 6SC 2.0 pts alt. w/ Ranman 3.33 SC 2.75 fl oz + Bravo Weather Stik 6 SC 2.0 pt .	203.8 a **	281.9 a	40.0 b	16.2 a	23.7 a
Tanos 50 DF 8 oz + Manzate Prostick 75 DG 3.0 lbs alt. w/ Previcur Flex 6F 1.2 pts + Manzate Prostick 75 DG 3.0 lbs .	225.0 a	306.5 a	40.0 b	12.5 a	25.0 a
Ridomil Gold 4EC 4.0 fl oz	0.5 b	43.2 b	99.5 a	43.7 c	82.5 b
Cabrio 20 EG 14.0 oz	2.3 b	49.7 b	96.2 a	32.5 b	83.7 bc
Control	0.2 b	31.3 b	99.2 a	43.7 c	88.7 c
LSD (<i>P</i> =.05)	31.5	41.2	4.8	5.8	5.0

* Data were transformed from percentages by arcsin√, analysis of variance was performed and means were converted back to the percentages which are represented in the table.

**Mean values within a column followed by the same letter are not significantly different according to Fisher's protected least significant difference (LSD) test.