CUCUMBER (*Cucumis sativus* 'Layfatte')
Downy mildew; *Pseudoperonospora cubensis*

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Control of downy mildew of cucumbers with fungicides, 2005.

This study was conducted at a cooperator's commercial farm in St. Joseph County, MI on a sandy loam field (100 acres) that was planted to a pickling cucumber. The field was chisel plowed and cultivated before planting. Plots were established on 4-row beds that were centered every 6.5 ft and had one buffer row spaced in between each treatment bed. Rows within the beds were spaced 11 in. apart and plants had a 4 in. in-row spacing. Spray plots were 20 ft long and had a 2 ft buffer between plots in the same bed. Treatments were replicated four times in a random complete block design. Irrigation, fertilization, and insect control were applied according to standard practices by the cooperating grower. Fungicide treatments were applied with a CO_2 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 when plants had three to four true leaves and a trace of disease was already established on the lower leaves. Six applications were made on 17, 22, and 27 Aug; 1, 6, and 12 Sep following a 5-day spray schedule. Plots were visually evaluated for necrotic leaves (%) and sporulation density on the underside of infected leaves on 13 Sep. The sporulation density was rated on a 1 to 10 scale (1=no sporulation and 10 =dense sporulation). Fruits were hand-harvested from the center 10 ft of all four treatment rows and sorted according to marketable fruit or cull. Culls were the misshapen fruit (crooks and nubs) and fruit smaller than gherkin size. Both marketable and cull fruit were weighed on an electronic platform scale. Data were analyzed using Sigma Stat version 3.1 (Systat Software Inc.) and statistical differences were compared using the Fisher LSD multiple comparison test.

With disease established at the time of the initial application, a 5-day spray schedule was implemented to determine if any programs would provide acceptable control under severe disease conditions. Treatment programs that included the use of Previcur Flex 6SC and/or Tanos 50DF (Tr. 2-6, 18) provided significant reductions in both necrosis and sporulation compared to the untreated control. A significant increase in marketable yield was also evident with the Previcur Flex 6SC and Tanos 50DF programs. The programs that included Aliette 80WDG and Ranman 3.6SC (Tr. 14, 15) limited leaf necrosis and increased yield compared to the untreated control but did not reduce sporulation. All other spray programs (Tr. 7-13, 17) including strobilurin, systemic, and protectant fungicides did not control downy mildew at this site.

	Treatment and rate/A (application sequence)[z]	Necrosis (%)	Sporulation[y]	Marketable yield (lb/10 ft)	Cull (%)[x]
1	Untreated control	90.0 f[w]	8.3 d	0.1 f	98.1 e
2	Previcur Flex 6SC 1.2 pt +Bravo Weather Stik 6SC 1.5 pt (1,3,5) Tanos 50DF 0.5 lb +Manzate 75DF 3 lb (2,4,6)	32.5 a	3.8 a	9.6 a	28.4 ab
3	Previcur Flex 6SC 1.2 pt +Bravo Weather Stik 6SC 1.5 pt (1,4) Tanos 50DF 0.5 lb +Manzate 75DF 3 lb (2,5) Gavel 75DF 2 lb (3,6)	53.8 bc	4.0 ab	5.2 d	35.1 ab
4	Previcur Flex 6SC 1.2 pt +Bravo Weather Stik 6SC 1.5 pt (1,4) Tanos 50DF 0.5 lb +Manzate 75DF 3 lb (2,5) Acrobat 50WP 0.4 lb +Manzate 75DF 3 lb (3,6)	46.3 abc	4.0 ab	9.8 a	19.2 a
5	Previcur Flex 6SC 1.2 pt +Bravo Weather Stik 6SC 1.5 pt (1-6)	38.8 ab	3.3 a	8.7 ab	22.9 ab
6	Tanos 50DF 0.5 lb +Manzate 75DF 3 lb (1-6)	50.0 abc	4.5 abc	6.2 cd	28.2 ab
7	Acrobat 50WP 0.4 lb +Manzate 75DF 3 lb (1-6)	85.0 ef	7.0 cd	0.9 ef	67.0 cd
8	Gavel 75DF 2 lb (1-6)	80.0 ef	8.0 d	1.1 ef	62.1 cd
9	Ridomil Gold MZ 76WP 2.5 lb (1-6)	87.5 f	7.5 d	0.8 ef	64.1 cd
10	Manzate 75DF 3 lb (1-6)	78.8 ef	6.8 bcd	0.5 ef	77.5 d
11	Pristine 38WG 1.17 lb +Manzate 75DF 3 lb (1-6)	72.5 def	6.0 abcd	0.6 ef	76.2 d
12	Amistar 80WG 0.31 lb +Manzate 75DF 3 lb (1-6)	77.5 ef	5.8 abcd	0.8 ef	69.7 cd
13	Flint 50WG 0.25 lb +Manzate 75DF 3 lb (1-6)	82.5 ef	7.5 d	0.5 ef	75.0 d
14	Aliette 80WG 5 lb +Manzate 75DF 3 lb (1-6)	56.3 bcd	6.0 abcd	2.6 e	46.0 bc
15	Ranman 3.6SC 0.17 pt +Manzate 75DF 3 lb (1-6)	63.8 cde	6.0 abcd	2.5 e	59.1 cd
16	Omega 4FL 1.5 pt +Manzate 75DF 3 lb (1-6)	82.5 ef	4.3 ab	0.7 ef	75.7 d
17	Bravo Weather Stik 6SC 1.5 pt (1-6)	92.5 f	8.3 d	0.4 ef	67.2 cd
18	Previcur Flex 6SC 1.2 pt +Bravo Weather Stik 6SC 1.5 pt (1,2,4,5) Tanos 50DF 0.5 lb +Manzate 75DF 3 lb (3,6)	41.3 ab	3.5 a	7.6 bc	25.1 ab

[z]Application sequence: 1=17 Aug; 2=22 Aug; 3=27 Aug; 4=1 Sep; 5=6 Sep; 6=12 Sep.
[y]Sporulation index based on 1 to 10 scale; 1=no sporulation, 10=dense sporulation.
[x]Culls included misshapen fruit and those less than gherkin size.
[w]Column means with a letter in common are not significantly different (Fisher LSD; *P*=0.05).