

Efficacy of fungicides for managing powdery mildew in muskmelon, 2010.

A field experiment was conducted at the Long Island Horticultural Research and Extension Center on Haven loam soil. The field was plowed on 10 May and tilled on 14 Jun. Controlled release fertilizer, consisting of a blend of 300 lb/A 15-18-12 and 100 lb/A ESN, was broadcast and incorporated on 15 Jun. Black plastic mulch and drip tape were laid on 17 Jun. A waterwheel transplanter was used to open holes for planting in the mulch and to apply starter fertilizer plus insecticide on 21 Jun. The next day three seeds were placed by hand into each of the holes. After seedlings were established they were thinned to one plant per hole. Weeds were controlled between the rows of mulch by applying a tank mix of Strategy (3 pt/A) and Sandea (0.5 oz/A) on 22 Jun, which was followed by 0.4 in rain, and Select 2EC (8 oz/A) with 1% COC on 20 Jul to control weedy grasses, and by hand weeding. Select was applied when air temperature was 85 °F and resulted in damaged foliage. Cucumber beetles were managed with AdmirePro (7.5 – 10 fl oz/treated A) applied with the transplanter and Asana XL (9.6 oz/A) applied to foliage on 23 Jul. No fungicides were applied to control powdery mildew. To manage damping-off, Ridomil Gold EC (1 pt/A) was broadcast over the field and incorporated mechanically on 15 Jun. The following fungicides were applied to preventively control downy mildew (*Pseudoperonospora cubensis*) and Phytophthora blight (*Phytophthora capsici*): ProPhyt (3 qt/A) on 23 and 30 Jul; Curzate (3.2 oz/A) on 23 Jul; Ranman 400 SC (2.75 fl oz/A) on 7 Aug and 2 Sep; Forum (6 fl oz/A) on 30 Jul and 21 Aug; and Revus (8 fl oz/A) on 28 Aug and 11 Sep. Plots were three adjacent rows each with seven plants spaced 24 in. apart. Rows were spaced 68 in. apart. The plots were 18 ft apart within the row. A randomized complete block design with four replications was used. Treatment applications were made weekly using a tractor-mounted boom sprayer equipped with D5-25 hollow cone nozzles spaced 17 in. apart that delivered 53.5 gal/A at 100 psi. Severity of powdery mildew was assessed on upper and lower leaf surfaces on 3, 17 and 26 Aug; and 1 and 8 Sep. Initially 30 leaves were selected in each plot from the oldest part of the foliage based on leaf physiological appearance and position in the canopy. Beginning on 26 Aug, when symptoms had become more widespread on plants, mid-aged leaves were also assessed and the number of leaves examined was reduced to eight leaves per age group in each plot. Powdery mildew colonies were counted; severity was assessed by visual estimation of percent leaf area infected when colonies could not be counted accurately because they had coalesced and/or were too numerous. Average severity for the entire canopy was calculated from the individual leaf assessments. Area Under the Disease Progress Curve (AUDPC) was calculated by trapezoidal integration for severity from 3 Aug through 1 Sep. A square root transformation was used when needed prior to analysis to achieve homogeneity of variance. Yield was not assessed. Average monthly high and low temperatures (°F) were 81/64 in Jun, 87/70 in Jul, 83/67 in Aug, and 77/62 in Sep. Rainfall (in.) was 1.63, 3.46, 2.02, and 2.87 for these months, respectively.

Powdery mildew was first detected on 3 Aug in half of the plots. Treatment applications were started the next day. BAS 560 effectively controlled powdery mildew on both upper and lower leaf surfaces, providing 99.8% and 97.6% control, respectively, based on AUDPC values. Efficacy was similar to Procure, a registered, commercial standard fungicide for this disease applied at its highest label rate, which provided 97% control on both surfaces. Powdery mildew became severe in the non-treated plots, especially on lower leaf surfaces, illustrating the importance of mobile fungicides for managing this disease. Leaves in two of these plots had died by the last assessment date.

Treatment and rate/A ^y	Powdery mildew severity (%) ^z							
	Upper leaf surface				Lower leaf surface			
	17-Aug	26-Aug	1-Sep	AUDPC	17-Aug	26-Aug	1-Sep	AUDPC
Non-treated control	0.47	15.78 a ^x	8.06	95.42 a	0.39	35.75 a	46.03 a	271.76 a
Vivando 15.36 fl.oz	0.02	0.01 b	0.00	0.24 b	0.14	0.55 b	0.42 b	6.42 b
Procure 8 fl.oz	0.32	0.04 b	0.00	2.80 b	0.19	0.96 b	0.17 b	7.19 b
P-value (trt)	0.1843	0.0138	0.2461	0.0166	0.3384	<.0001	0.0222	0.0037

^z Exact colony counts were made when possible and severity was estimated using the conversion factor of 30 colonies/leaf = 1% severity.

^y Rate of formulated product/A. Applications were made on 4, 12, 19, and 26 Aug; 2 and 9 Sep. Pristine 38 WG at 18.5 oz/A was inadvertently applied instead of Procure on 4 Aug.

^x Numbers in each column with a letter in common are not significantly different according to Tukey's HSD ($P = 0.05$).