

Evaluation of fungicides for powdery mildew in tomato, 2011.

The experiment was conducted at the Long Island Horticultural Research and Extension Center in Riverhead, NY, in a field with Haven loam soil. The rye cover crop was chopped and baled. Ground was tilled several times on 6-7 May and ProGro 5-3-4 organic fertilizer was applied at 2000 lb/A. Seeds were sown on 25 May in the greenhouse. Black plastic mulch and drip tape were laid on 16 Jun. Seedlings were transplanted on 7 Jul using a waterwheel transplanter that put Organic Gem liquid fertilizer at 2 fl oz/gal in each hole before the seedling was placed by hand in the hole. Plots consisted of 10 plants in a single row with 24-in plant spacing and 68-in row spacing. There was 8-ft spacing between plots in a row. Plots for each of the four replications were in four adjacent rows with a driveway separating replication 1 and 2 from 3 and 4. A spreader row was planted between replication 1 and 2 and between replication 3 and 4. Plants were staked and trellised following standard procedure for fresh-market tomato production. Weeds were managed by manually removing along the edge of mulch and in plant holes and by mowing between rows. There was an early outbreak of late blight in the region, which affected this experiment starting in early Jul. Fungicides were selected with targeted activity for the late blight fungus (*Phytophthora infestans*) to minimize impact on powdery mildew. A mefenoxam-sensitive strain (US-23) was present. Fungicides applied were Ridomil Gold (0.25 pt/A) on 6 Jul and 2 Sep; Previcur Flex (1.5 pt/A) on 6 Jul, 27 Jul, and 4 Aug; Revus (8 fl oz/A) on 6 Jul, 15 Jul, and 20 Aug; Presidio (4 fl oz/A) on 25 Aug; and Ranman (2.75 fl oz/A) on 20 Aug. Fruit were removed from the plants to maintain foliar growth; yield was not assessed. Foliar treatment applications were made using a CO₂-pressurized backpack sprayer with a boom that has a single 8006VS nozzle delivering 51 gal/A at 55 psi. Each side of the planted row was treated with the boom held sideways to obtain thorough coverage of foliage mimicking a drop nozzle on a tractor sprayer. A preventive 7-day application schedule was used. Applications were made on 22 Aug, 29 Aug, and 15 Sep. Applications could not be made during the week of 5 Sep due to rain falling everyday resulting from a tropical storm (Lee). Leaves were examined routinely for disease symptoms. Disease severity was assessed by estimating the percentage of leaves in each plot with symptoms (incidence) and the severity of symptoms on these affected leaves. Canopy severity was calculated with these values. Yield was not assessed. Average monthly high and low temperatures (°F) were 79/61 in Jun, 87/68 in Jul, 82/66 in Aug, and 76/63 in Sep. Rainfall (inches) was 6.1, 2.35, 10.61, and 6.88 for these months, respectively. There was a hurricane (28 Aug) and several atypical intensive rain events during the 2011 growing season on Long Island.

Few symptoms of powdery mildew were observed. This may have been at least partly due to frequent rainfall creating unfavorable conditions for powdery mildew. Fewest symptoms were seen in plants receiving the middle and highest rates of Mettle; however, there were no significant differences among treatments. All treatments controlled Septoria leaf spot. Based on severity on 21 Sep, Mettle provided 91-95% control while Rally provided 85% control. Leaves were damaged during Hurricane Irene and tropical storm Lee the following week, which resulted in a lot of defoliation in late Sep, and additionally late blight re-emerged; consequently canopy severity of Septoria leaf spot and powdery mildew declined.

Treatment (rate/A) ^y	Septoria leaf spot severity (%) ^z			Powdery mildew severity (%) ^z		
	21 Sep ^x	27 Sep	AUDPC	21 Sep	27 Sep	AUDPC
Untreated control.....	36.8 a	6.8	130.9 a	0.3	0.03	0.8
Mettle 125 ME (4 oz).....	2.8 b	3.9	20.1 b	0.0	0.12	0.5
Mettle 125 ME (6 oz).....	3.3 b	0.8	12.1 b	0.0	0.00	0.0
Mettle 125 ME (8 oz).....	1.8 b	0.7	7.5 b	0.0	0.00	0.1
Rally 40W (4 oz).....	5.5 b	2.6	24.3 b	0.0	0.12	0.5
<i>P-value (treatment)</i>	<.0001	0.2777	<.0001	0.0852	0.4449	0.3096

^z Canopy severity was calculated from assessments of the percentage of leaves in each plot with symptoms (incidence) and the severity of symptoms on these affected leaves. Area under disease progress curve (AUDPC) was calculated from the two disease severity ratings.

^y Rate of formulated product/A.

^x Numbers in each column followed by the same letter or no letter are not significantly different from each other according to Tukey's HSD (*P*=0.05).