

Evaluation of fungicides for control of powdery mildew on squash, 2019.

This study was conducted at the Michigan State University Plant Pathology Research Farm located in Lansing, MI, in a field of Capac loam soil previously planted to pumpkins. The field was prepared by plowing, discing, and applying pre-plant fertilizer (urea 46-0-0 100 lb/A) on 3 Jun. Raised beds, 2.5-ft wide and 110-ft long, were formed and covered with black plastic on 4 Jun. Beds were spaced 12 ft. apart from bed center to adjacent bed center. Treatments were arranged in a randomized complete block design with four replicate plots per treatment. Squash ‘Buckskin’ plants, 4-weeks old, were transplanted 18 in. apart on 12 ft centers on 27 Jun. Thirteen plants were planted per 20-ft plot with a 5-ft buffer between replicates within a row. Weekly applications of 20-20-20 5 lb/A were applied through the drip irrigation. Fungicide treatments were applied on 5, 14, 22 Aug and 5 Sep using a CO₂ backpack sprayer and a broadcast boom equipped with four XR8003 flat-fan nozzles spaced 18 in. apart and calibrated at 50 psi to deliver 50 gal/A. Plants were evaluated for disease severity (percentage of the plot with foliar necrosis) on 26 Aug, and 11 and 19 Sep. Fruit were harvested from the full length of plots (20 ft of row) and weighed on 9 Oct. Statistical analysis was conducted with SAS software (v9.3). Data were analyzed using an analysis of variance (ANOVA), with means separation performed using Fisher’s protected least significant differences (LSD).

On the first rating date of 26 Aug, powdery mildew colonies were present in the untreated control plots, but no foliar necrosis was observed in the trial. From 11 to 19 Sep, disease pressure was moderate to high with disease severity reaching 82.5% in the untreated control plots on the last rating date. Disease severity on 19 Sep was lower for all of the fungicide programs compared to the untreated control. There were no differences in disease severity among the alternating fungicide programs; disease severity for all programs was ≥45% for the final assessment. There were no differences in yield among the untreated control and the alternating fungicide programs.

Treatment and rate/A, (application date ^z)	Disease severity (%) ^y			Yield (lb/plot)
	26 Aug	11 Sep	19 Sep	
Untreated control	0.0 a ^x	48.8 b	82.5 b	163.4 a
Bravo WS SC 2 pt + Tebuzol 3.6F 6 fl oz, (A,C) <i>alt.</i> Rally WP 5 oz + Bravo WeatherStik SC 2 pt, (B,D)	0.0 a	21.3 a	57.5 a	156.9 a
Torino SC 3.4 fl oz + Bravo WeatherStik SC 2 pt, (A,D) <i>alt.</i> Quintec SC 6 fl oz + Bravo WeatherStik SC 2 pt, (B) <i>alt.</i> Aprovia Top SL 13.5 fl oz + Bravo WS SC 2 pt, (C)	0.0 a	22.5 ab	58.8 a	155.8 a
Aprovia Top SL 13.5 fl oz + Bravo WeatherStik SC 2 pt, (A,C) <i>alt.</i> Quintec SC 6 fl oz + Bravo WeatherStik SC 2pt, (B) <i>alt.</i> Torino SC 3.4 fl oz + Bravo WeatherStik SC 2 pt, (D)	0.0 a	15.0 a	45.0 a	133.1 a

^z A = 5 Aug, B = 14 Aug, C = 22 Aug, and D = 5 Sep; *alt.* = alternate.

^yBased on a visual estimation of the percentage of necrotic foliage.

^xColumn means with a letter in common are not significantly different (LSD t Test; *P*=0.05).