

Evaluation of fungicides for control of pumpkin powdery mildew – Hancock, Wisconsin, 2015.

A trial was established on 25 May at the University of Wisconsin Hancock Agricultural Research Station in Hancock, WI to evaluate the efficacy of fungicides for control of powdery mildew on pumpkin. Pumpkin ‘Sorcerer’ was direct seeded into black plastic mulch. Each treatment plot consisted of 10 plants spaced 2 ft apart within rows and 5 ft spacings between rows. Treatments were replicated four times and arranged in a randomized complete block design. Insecticide, herbicide, and fertility applications were made according to standard production practices for the region. Natural precipitation provided 18.6 in. of water during the growing season. Supplemental irrigation was provided with overhead irrigation totaling 14.8 in. The first fungicide application was initiated when powdery mildew was first detected in the plots on 30 Jul. Three additional applications were made at 2-week intervals on 13 Aug, 27 Aug, and 10 Sep. Plots were treated with fungicides using a CO₂ backpack sprayer equipped with four TeeJet 8002VS nozzles spaced 19in. apart and calibrated to deliver 35 gal/A at a boom pressure of 35 psi. Powdery mildew severity was visually assessed on 6 Aug, 19 Aug, and 2 Sep using the Horsfall-Barratt rating scale (0-11 rating with 0 = no disease, 11 = 100% disease severity). The Area Under the Disease Progress Curve (AUDPC) was determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC), i.e. percentage of the maximum possible AUDPC for the whole period of the experiment. Plots were harvested for yield and graded for stem/handle quality (% of fruit with peduncles that could support the weight of the fruit) on 26 Sep.

While onset of powdery mildew was relatively late in the growing season, disease pressure rapidly increased with nearly complete defoliation of the non-treated control plots by the final rating date. All fungicide treatments provided significantly greater disease reduction than the non-treated control with the exception of the JMS Stylet Oil and Kocide only treatments. Quintec alternated with Microthiol Disperss provided the best control of powdery mildew among treatments. The Quintec alternated with Microthiol Disperss and Bravo Weather Stik (4 applications) treatments had significantly better handle ratings than the non-treated control. Rally performed poorly in the trial, indicating that there may be fungicide resistance to Rally (myclobutanil) in populations of *Podosphaera xanthii* in Wisconsin. There were no significant differences among treatments for plot yield. No phytotoxicity was observed.

Fungicide (rate/acre)	Application Timing ^z	Plot Yield (lb)	Handle Rating (%) ^y	RAUDPC ^x
Untreated Control		97.8	19.5% a	0.591 f
JMS Stylet Oil 5.0 qt/100 gal water	1-4	102.2	21.7% ab	0.536 ef
Microthiol Disperss 80WP 4.0 lb	1-4	106.3	27.2% ab	0.500 de
Rally 40WSP 5.0 oz	1-4	114.5	25.8% ab	0.489 de
Bravo Weather Stik 720SC 2.0 pt	1-4	115.2	40.7% bc	0.384 bc
Bravo Weather Stik 720SC 2.0 pt	1,3	102.7	29.9% ab	0.457 cd
Bravo Weather Stik 720SC 2.0 pt	1,3			
Quadris 2.08SC 15.5 fl oz	2,4	114.8	25.3% ab	0.396 bc
Quintec 2.08SC 6.0 fl oz	1,3			
Microthiol Disperss 80WP 4.0 lb	2,4	99.7	57.0% c	0.291 a
Kocide 3000DF 0.75 lb	1-4	96.4	25.1% ab	0.546 ef
Kocide 3000DF 0.75 lb	1,3			
Microthiol Disperss 80WP 4.0 lb	2,4	94.2	18.3% a	0.523 de

^zFungicide application dates: 1=30 July, 2 = 13 August, 3= 27 August, 4=2 September.

^yColumn numbers followed by the same letter are not significantly different at P=0.05 as determined by Fisher’s Least Significant Difference (LSD) test.

^xRAUDPC= Relative Area Under the Disease Progress Curve.