

Evaluation of fungicides for control of pumpkin powdery mildew – Hancock, 2014.

A trial was established on 1 Jun at the Hancock Agricultural Research Station in Hancock, WI to evaluate the efficacy of fungicides for control of powdery mildew on pumpkin. ‘Sorcerer’ pumpkin was direct seeded into black plastic mulch. Each treatment plot consisted of 10 plants spaced 2 ft apart (within row) and a 5 ft spacing 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 13.5 in. of water during the growing season. Supplemental irrigation was provided with overhead irrigation totaling 15.9 in. The first fungicide application was initiated when powdery mildew was first detected in the plots on 23 Jul. Two additional applications were made at 2-week intervals on 6 and 20 Aug. Plots were treated with fungicides using a CO₂ backpack sprayer equipped with four TeeJet 8002VS nozzles spaced 19-in. apart and calibrated to deliver 35 gal/A at a boom pressure of 35 psi. Powdery mildew severity was visually assessed on 25 Jul, 5 and 18 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 handle quality (% of fruit with peduncles that could support the weight of the fruit) on 24 Sep.

While onset of powdery mildew was late in the growing season, disease pressure rapidly increased with nearly complete defoliation of the untreated control plots by the final rating date. All fungicide treatments provided significantly greater disease reduction than the non-treated control. Quintec alternated with Microthiol Disperss provided the best control of powdery mildew, the best handle rating, and was the highest yielding, numerically, among treatments. Treatments containing Bravo WeatherStik, JMS Stylet Oil, and Microthiol Disperss had significantly less disease than the non-treated control, Kocide 3000, and Rally. The poor performance of Rally was not expected. Anecdotal reporting from area growers of Rally losing efficacy to control powdery mildew indicates that there may be wide-spread resistance to Rally (myclobutanil) in Wisconsin. There were no significant differences among treatments for plot yield. No phytotoxicity was observed.

Treatment and rate/A	Application Timing ^z	Plot Yield (lb)	Handle Rating (%) ^y	RAUDPC ^x
Untreated Control	1-3	172.5	40.6ab	0.51g
JMS Stylet Oil 5.0 qt/100 gal water	1-3	151.3	42.3ab	0.36c-e
Microthiol Disperss 80DF 4.0 lb	1-3	160.4	53.8ab	0.30b
Rally 40WSP 5.0 oz	1-3	163.7	46.2ab	0.44f
Bravo WeatherStik 720SC 2.0 pt	1-3	163.4	51.1ab	0.30b
Bravo WeatherStik 720SC 2.0 pt	1,3	151.7	40.4ab	0.31bc
Bravo WeatherStik 720SC 2.0 pt Quadris 2.08SC 15.5 fl oz	1,3 2	169.7	61.0b	0.33bc
Quintec 2.08SC 6.0 fl oz Microthiol Disperss 80DF 4.0 lb	1,3 2	203.2	90.1c	0.22a
Kocide 3000 DF 0.75 lb	1-3	195.0	36.4a	0.39ef
Kocide 3000 DF 0.75 lb Microthiol Disperss 80DF 4.0 lb	1,3 2	186.3	39.5a	0.38d-f

^zFungicide application dates: 1=23 July, 2 = 6 August, 3= 20 August.

^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.