

POTATO (*Solanum tuberosum* 'Russet Burbank')
Early blight; *Alternaria solani*

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Evaluation of foliar fungicides for control of potato early blight in Wisconsin, 2025.

A field trial was conducted at the University of Wisconsin Agricultural Research Station in Hancock, WI to evaluate 24 season-long fungicide programs for control of early blight on potato. Seed pieces, approximately 2 oz in size, were mechanically cut from US#1 'Russet Burbank' seed tubers 7 days prior to planting. Seed pieces were allowed to heal prior to planting on 29 Apr by maintaining cut seed at 55°F under 98% relative humidity. A randomized complete block design with four replications was used for the trial, and treatment plots consisted of four 20-ft-long rows spaced 36 in. apart with 12 in. spacing in the row. To minimize soil compaction and damage to plants in the treatment rows, drive rows for pesticide application equipment were placed adjacent to the plots. Fertility, insect, and weed management were accomplished using standard industry practices for the region. At-hilling applications were applied directly over freshly hilled plots on 16 May using a plot sprayer consisting of a tractor-mounted boom, pressurized with an air compressor, using TeeJet Hollow Disc Cone D3-23 nozzles (16 nozzles at 8-in. spacing). Fungicides were applied at a rate equivalent to 35-gal water/A at 40 psi. Treatments 23 and 24 received a special foliar application 2 weeks prior to row closure on 25 Jun. Standard foliar fungicide treatments were initiated on 9 Jul after the P-day value (generated from a crop physiological model used for early blight prediction and fungicide initiation) reached 300. Subsequent applications were applied on a weekly basis to all four rows of each plot on the following dates: 16 Jul, 23 Jul, 30 Jul, 6 Aug, 13 Aug, 20 Aug, 27 Aug, 3 Sep, for a total of nine fungicide applications. Foliar fungicides were applied with the previously described applicator. Fungicides were applied at a rate equivalent to 35-gal water/A at 40 psi. Plots were not artificially inoculated but relied on natural inocula from soil and plant residues from the surrounding concentrated potato production region for disease establishment. Early blight severity across 20 ft of the two center rows was visually determined on 19 Jun, 26 Jun, 10 Jul, 25 Jul, 7 Aug, 14 Aug, 22 Aug, and 28 Sep using the Horsfall-Barratt rating scale (0 to 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. Vine kill was initiated 8 Sep with an application of Diquat E 1.5 pt/acre. Tubers from the center two rows of each 4-row plot were harvested and graded on 29 Sep. Total precipitation in Hancock during the potato production season was 17.39 in with supplemental irrigation applied 46 times for an additional 18.2 inches of water. All data were analyzed using ANOVA ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$ (SAS Version 9.2).

Disease onset was typical. There were no significant differences across programs for total plot yield, tuber sizing (data not shown) and cull weight (data not shown). There were no significant differences in marketable yield (A size tubers, greater than 2.25 in in diameter). There were 4 programs that had significantly lower RAUDPC than the non-treated control program (2, 3, 4, and 23). No phytotoxicity was observed with any of the fungicide programs throughout the duration of the trial.

Program number, treatment, and rate/A		Application timing ^z	Marketable yield (cwt/A) ^y	RAUDPC	
1	Untreated Control	NA	459.2	0.333	d-h ^w
2	Bravo WS 720SC 1.5 pt	1,2,4,8	459.8	0.278	ab
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 720SC 1.5 pt	3,6			
	Endura 70WG 3.5 oz + Bravo WS 720SC 1.5 pt	5,7			
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9			
3	Miravis Prime 3.33SC 11.4 fl oz	Hilling	495.9	0.270	a
	Bravo WS 720SC 1.5 pt	1,2,4,8			
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 720SC 1.5 pt	3,6			
	Endura 70WG 3.5 oz + Bravo WS 720SC 1.5 pt	5,7			
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9			
4	Miravis Prime 3.33SC 11.4 fl oz	Hilling	475.3	0.280	a-c
	Bravo WS 720SC 1.5 pt	4,8			
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 720SC 1.5 pt	3,6			
	Endura 70WG 3.5 oz + Bravo WS 720SC 1.5 pt	5,7			
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9			
5	Miravis Prime 3.33SC 11.4 fl oz	Hilling	438.4	0.308	a-g
	Bravo WS 720SC 1.5 pt	1,2,4,8			
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 720SC 1.5 pt	3,6			
	Endura 70WG 3.5 oz + Bravo WS 720SC 1.5 pt	5,7			
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9			
6	Miravis Prime 3.33SC 11.4 fl oz	Hilling	460.2	0.285	a-d
	Bravo WS 720SC 1.0 pt	1,2			
	Bravo WS 720SC 1.5 pt	3-5			
	Dithane DF75 2 lb	6-9			
7	Bravo WS 720SC 1.5 pt	1-9	448.7	0.287	a-e
8	Dithane DF75 2 lb	1-9	455.8	0.302	a-f
9	GT54478A 10 fl oz	1-9	433.2	0.328	b-h
10	GWN 9790 8.2 fl oz + GWN 12178 1 pt	1-9	383.6	0.338	e-h
11	GWN 9790 8.2 fl oz + GT41325A 5.5 fl oz	1-9	388.7	0.330	c-h
12	Zing! 4.9SC 34 fl oz	1-9	415.3	0.341	f-h
13	Badge SC 1 pt	1-9	445.1	0.354	gh
14	Badge SC 2 pt	1-9	398.6	0.373	h
15	Badge SC 1 pt + Induce 0.25 % v/v	1-9	424.6	0.339	e-h
16	Badge SC 2 pt + Induce 0.25 % v/v	1-9	425.9	0.332	d-h
17	Companion Maxx WP 1.8 oz/A	1-9	438.7	0.345	f-h
18	CR-7 15 g/A	1-9	464.0	0.349	f-h
19	CR-7 30 g/A	1-9	442.7	0.349	f-h
20	CR-7 60 g/A	1-9	446.3	0.366	h
21	CR-7 15 g/A + Companion Maxx WP 1.8 oz/A	1-9	468.5	0.340	f-h
22	Quadris 2.018 SC 6.2 fl oz + NIS 0.1% v/v	1-9	462.2	0.309	a-g

23	Romeo SRI 0.25 lb	Hilling			
	Smarrtfoil 1.5 pt + Bravo WS 720SC 1.5 pt	1			
	Bravo WS 720SC 1.5 pt	2,4,8			
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 720SC 1.5 pt	3,6			
	Endura 70WG 3.5 oz + Bravo WS 720SC 1.5 pt	5,7			
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9	464.0	0.280	a-c
24	Romeo SRI 0.25 lb	Hilling, 2 wk prior RC			
	Bravo WS 720SC 1.5 pt	1-4			
	Dithane DF75 2 lb	5-9	488.1	0.339	f-h

^zHilling applications occurred on 16 May. Foliar fungicide application dates: 2 weeks prior to row closure = 25 Jun, 1 = 9 Jul, 2 = 16 Jul, 3 = 23 Jul, 4 = 30 Jul, 5 = 6 Sep, 6 = 13 Aug, 7 = 20 Aug, 8 = 27 Aug, 9 = 3 Sep.

^yMarketable yield refers to weight of Size A potato tubers of a size range ≥ 2.5 in diameter measured in hundredweight or 100 lb per acre or cwt/A.

^xRAUDPC= Relative Area Under the Disease Progress Curve determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC).

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