

Evaluation of foliar fungicide for control of early blight of potato in Wisconsin, 2011.

Potato seed-pieces were planted 2 May at the Hancock Research Station in Hancock, WI to evaluate fungicide efficacy for control of foliar potato blights. Treatments were included for both early and late blight control, but no late blight (caused by *Phytophthora infestans*) symptoms were observed during the course of the trial. Approximately 2 oz seed-pieces were cut mechanically on 27 Apr from US#1 'Russet Burbank' tubers. Seed-pieces were allowed to heal prior to planting. No pesticides were applied to seed prior to planting. A randomized complete block design with four replications was used for the trial, and treatment plots consisted of four 24-ft-long rows spaced 36 in. apart with 15 in. spacing in the row. To minimize soil compaction and damage to plants in rows used for foliar and yield evaluations, drive rows for pesticide application equipment were placed adjacent to plots. Fungicide treatments were initiated on 6 Jul and subsequent applications were applied on a weekly basis to all four rows of each plot on the following dates: 13 Jul, 20 Jul, 27 Jul, 3 Aug, 10 Aug, 17 Aug, and 24 Aug, for a total of 8 fungicide applications. Vine kill treatments of Reglone were applied on 31 Aug and 7 Sep. Treatments were applied with 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. Plots were not inoculated with *Alternaria solani* but natural dispersal of inocula resulted in disease establishment. Early blight severity for 20 ft. of the two center rows was rated on 21 Jun, 5 Jul, and 14, 23, and 25 Aug, using the Horsfall-Barratt rating scale (0-11 rating with 0=no disease, 11=100% disease severity). Plots were harvested on 14 Sept. Precipitation in Hancock during the course of this trial was 14.58 in. Supplemental irrigation was applied 34 times during the potato production season for an additional 18.45 in.

Early blight disease pressure was moderate in this trial with disease onset occurring later in the season than average. Aerial blackleg caused by *Pectobacterium carotovorum* was noted throughout plots in this trial following an evening of high wind and hail on 18 Jul. While blackleg severity was not correlated with treatment, yields were lower than commercial average across all treatments in the trial as a result of this bacterial infection. While all treatments had significantly less early blight than the untreated control, early blight reduction was not correlated with high yields in all treatments of this trial. With respect to yield, 8 treatments performed significantly better than the untreated control and included treatments 5, 13, 14, 18, 24, 26, 28, and 31. Of these 8 treatments, 6 included a newly registered fungicide (Vertisan) or soon-to-be registered fungicide (Priaxor). All but one of the treatments included a routine alternation with a chlorothalonil-containing fungicide. Due to variability in the data as a result of blackleg few other generalizations can be made of program performance. There was no phytotoxicity observed with any of the programs in this trial.

Trt. No.	Treatment and rate/A	Application timing	RAUDPC ^z	Total cwt/A
1	Untreated control.....		0.290 g ^y	431.8 abc
2	Bravo Zn 4.17L 2.12 pt.....	1-8 ^x	0.208 bcde	451.9 abcdefg
3	Quadris 2.08SC 6 fl oz Bravo Zn 4.17L 2.12 pt.....	1,3,5 2,4,6,7,8	0.178 abcd	459.4 abcdefgh
4	Echo Zn 4.17L 2.12 pt Headline 2.09SC 10 fl oz + Echo Zn 4.17L 2.12 pt Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt Dithane 75DF 2 lb + Super Tin 80WP 2.5 fl oz.....	1-2,4 3,6 5,7 8	0.182 abcd	444.7 abcde
5	Vertisan 1.67EC 1 pt + NIS 0.25% Tanos 50WG 6 oz + Manzate 75WG 24 oz	1,3,5,7 2,4,6,8	0.190 abcd	511.5 efghi
6	Tanos 50WG 6 oz + Manzate 75WG 24 oz Vertisan 1.67EC 1 pt + NIS 0.25%.....	1,3,5,7 2,4,6,8	0.199 bcde	440.3 abcd
7	Vertisan 1.67EC 1.5 pt + NIS 0.25% Tanos 50WG 6 oz+ Manzate 75WG 24 oz	1,3,5,7 2,4,6,8	0.195 abcde	452.6 abcdefgh
8	Endura 70WDG 2.5 oz Tanos 50WG 6 oz+ Manzate 75WG 24 oz	1,3,5,7 2,4,6,8	0.248 f	451.3 abcdefg
9	Tanos 50WG 6 oz+ Manzate 75WG 24 oz Endura 70WDG 3.5 oz + Bravo Zn 4.17L 1.5 pt Manzate 75WG 24 oz+ Super Tin 80WP 2.5 fl oz	1,3 2,4 5,6,7,8	0.198 bcde	467.9 abcdefgh
10	Echo Zn 4.17L 2.12 pt Headline 2.09SC 10 fl oz + Echo Zn 4.17L 2.12 pt Endura 70WDG 3.5 oz Dithane 75DF 2 lb + Super Tin 80WP 2.5 fl oz.....	1,3,5 2,6 4 7,8	0.185 abcd	444.9 abcde
11	Echo Zn 4.17L 2.12 pt Endura 70WDG 3.5 oz	1,3,5 2,6		

	Headline 2.09SC 10 fl oz+ Echo Zn 4.17L 2.12 pt	4				
	Dithane 75 DF 2 lb+ Super Tin 80WP 2.5 fl oz....	7,8	0.210	de	471.3	abcdefgh
12	Echo Zn 4.17L 2.12 pt	1,3,5,9				
	Priaxor 4.17SC 4 fl oz + Echo Zn 4.17L 2.12 pt	2,4,6				
	Dithane 75DF 2 lb+ Super Tin 80WP 2.5 fl oz.....	7,8	0.189	abcd	440.0	abcd
13	Echo Zn 4.17L 2.12 pt	1,3,5				
	Priaxor 4.17SC 4 fl oz	2,4,6				
	Dithane 75DF 2 lb+ Super Tin 80WP 2.5 fl oz.....	7,8	0.184	abcd	518.6	ghi
14	Echo Zn 4.17L 2.12 pt	1,3,5				
	Cabrio Plus 60WG 2 lb	2,6				
	Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt	4				
	Dithane 75DF 2 lb + Super Tin 80WP 2.5 fl oz.....	7,8	0.178	abcd	518.6	ghi
15	Echo Zn 4.17L 2.12 pt	1,3,5				
	Endura 70WDG3.5 oz + Echo Zn 4.17L 2.12 pt	2,6				
	Priaxor 4.17SC 4 fl oz + Echo Zn 4.17L 2.12 pt	4				
	Dithane 75DF 2 lb + Super Tin 80WP2.5 fl oz.....	7,8	0.194	abcde	432.4	abc
16	Echo Zn 4.17L 2.12 pt	1,3,5				
	Priaxor 4.17SC 4 fl oz + Echo Zn 4.17L 2.12 pt	2,6				
	Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt	4				
	Dithane 75DF 2 lb + Super Tin 80WP 2.5 fl oz.....	7,8	0.200	bcde	459.5	abcdefgh
17	Echo Zn 4.17L 2.12 pt	1,3,5				
	Endura 70WDG 3.5 oz	2,6				
	Headline 2.09SC 10 fl oz + Echo Zn 4.17L 2.12 pt	4				
	Dithane 75DF 2 lb + Zampro 525SC 14 fl oz...	7,8	0.226	ef	473.4	abcdefghi
18	Echo Zn 4.17L 2.12 pt	1,3,5				
	Priaxor 4.17SC 4 fl oz + Echo Zn 4.17L 2.12 pt	2,6				
	Endura 70WDG 3.5 oz+ Echo Zn 4.17L 2.12 pt	4				
	Dithane 75DF 2 lb + Zampro 525SC 14 fl oz.....	7,8	0.177	abcd	516.9	fghi
19	Quadris Top 2.71SC 14 fl oz	1,2,4,5				
	Bravo Weather Stik 720SC 1.5 pt.....	3,6	0.185	abcd	481.6	abcdefghi
20	Omega 500F 7 fl oz	1,2,4,5				
	Top MP 2.08EC 6.95 fl oz	1,2,4,5				
	Bravo Weather Stik 720SC 1.5 pt.....	3,6	0.182	abcd	501.3	cdefghi
21	Quadris Top 2.71SC 14 fl oz	1,2,4,5				
	Actigard 50WG 0.33 oz	1,2,4,5				
	Bravo Weather Stik 720SC 1.5 pt.....	3,6	0.210	de	418.8	a
22	Echo Zn 4.17L 2.12 pt	1,3,5,8				
	Reason 500SC 5.5 oz	3				
	Luna Tranquility 500SC 11 fl oz.....	2,4,6,7	0.172	ab	429.9	ab
23	Echo Zn 4.17L 2.12 pt	1,3,5,8				
	Reason 500SC 5.5 oz	3				
	Luna Tranquility 500SC 8 fl oz.....	2,4,6,7	0.173	abc	494.1	bcdefghi
24	Gavel 75DF 2 lb	1,3,5,7				
	Headline 2.09SC 6 fl oz + Echo Zn 4.17L 2.12 pt	2,6				
	Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt.....	4,8	0.182	abcd	522.8	hi
25	GWN-4700 80WP 3.3 fl oz + GWN 9941 6SC 1.5 pt	1,3,5,7				
	Headline 2.09SC 6 oz + Echo Zn 4017L 2.12 pt	2,6				
	Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt...	4,8	0.212	def	471.9	abcdefgh
26	Echo Zn 4.17L 2.12 pt	1,3,5,7				
	Headline 2.09SC 6 fl oz + Echo Zn 4.17L 2.12 pt	2,6				
	Endura 70WDG 3.5 oz + Echo Zn 4.17L 2.12 pt.....	4,8	0.161	a	543.8	i
27	Echo Zn 4.17L 2.12 pt	1-2, 4				
	Headline 2.09SC 10 fl oz + Echo Zn 4.17L 2.12 pt	3, 6				
	Quash 50WDG 2.5 oz + Echo Zn 4.17L 2.12 pt	5, 7				
	Dithane 75DF 2 lb + Super Tin 80WP 2.5 fl oz.....	8	0.177	abcd	489.8	bcdefghi
28	Echo Zn 4.17L 2.12 pt	1,3,5,7				

	Headline 2.09SC 10 fl oz + Echo Zn 4.17L 2.12 pt	2,6				
	Quash 50WDG 2.5 oz + Echo Zn 4.17L 2.12 pt...	4,8	0.198	bcde	506.0	defghi
29	MasterCop 21.46SC 0.5 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.204	bcde	452.0	abcdefg
30	MasterCop 21.46SC 1.0 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.181	abcd	485.2	abcdefghi
31	MasterCop 21.46SC 1.5 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.184	abcd	507.4	defghi
32	MasterCop 21.46SC 3 pt	1,2,4				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.209	cde	446.6	abcdef
33	Equus 720SST 1 pt	1,3,5,7				
	Endura 70WDG 2.5 oz + MasterCop 21.46SC 1 pt	2,6				
	Headline 2.09SC 6 fl oz + MasterCop 21.46SC 1 pt	4				
	Dithane 75DF 2 lb + MasterCop 21.46SC 1 pt.....	7,8	0.205	bcde	474.9	abcdefghi
34	GMB 042811 1 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.197	abcde	490.4	bcdefghi
35	Champ Formula II 37.5F 0.7 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8				
	Endura 70WDG 3.5 oz.....	3	0.200	bcde	447.7	abcdef
36	Champ Formula II 37.5F 2.7 pt	1,2,3,4,6,8				
	Headline 2.09SC 10 fl oz	5,7				
	Equus 720SST 1 pt	3,6,8,				
	Endura 70WDG 3.5 oz.....	3	0.199	bcde	466.1	abcdefgh

^zRAUDPC= Relative Area Under the Disease Progress Curve,

^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.

^xFungicide applications; 1=6 Jul, 2=13 Jul, 3=20 Jul, 4=27 Jul, 5=3 Aug, 6=10 Aug, 7=17 Aug, 8=24 Aug.