POTATO (*Solanum tuberosum* 'Snowden')
White Mold; *Sclerotinia sclerotiorum*

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Evaluation of foliar fungicides for control of potato white mold in Wisconsin, 2018.

A field trial was conducted at the University of Wisconsin Agricultural Research Station in Hancock, WI to evaluate fungicide programs for control of white mold on potato. Seed pieces, approximately 2 oz in size, were cut mechanically from US#1 'Snowden' seed tubers on 24 Apr. Seed pieces were allowed to heal prior to planting on 7 May. No seed treatments were applied unless noted in the table. 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 commercial practices for the region. Fungicide treatments were initiated at row closure, 9 Jul, with 2 subsequent applications on 23 Jul and 6 Aug. 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 but relied on natural dispersal of inocula previously introduced in the field via direct dispersal of sclerotia and inoculation of previous sunflower rotational crop for disease establishment. White mold severity across 20 ft of the two center rows was rated on 1 Jul, 12 Jul, 24 Jul, 14 Aug, 24 Aug, and 30 Aug using the Horsfall-Barratt rating scale (0-11 rating with 0 = no disease, 11 = 100% disease severity). Vine kill was initiated on 4 Sep with an application of Diquat E at 1.5 pt/A followed by a second application on 10 Sep. Prior to harvest, 20 vines were collected from each plot and examined for the presence of white mold sclerotia inside of hollowed stems. Tubers from the center 2 rows of each 4-row plot were harvested and graded on 18 Sep. Total precipitation in Hancock during the potato production season was 23.5 in. Supplemental irrigation was applied 37 times during the potato production season for an additional 16.3 in. All data were analyzed using ANOVA ($P = 0.05$) and Fisher's LSD at $P = 0.05$ (SAS Version 9.2).

White mold infection was very low across the entire research field, with no visible foliar symptoms during the growing season (data not shown). There were no significant differences in yield, B size tubers (data not shown) and cull weight (data not shown). Pathogen incidence in the stem samples was low with no significant differences between treatments. There were no phytotoxic symptoms observed with any of the fungicide programs throughout the duration of the trial.

Fungicide and Rate/A	Application Timing[z]	Marketable Yield (cwt/A)[y]	White Mold Incidence (%)
Non-treated Control	-	517.7	0
Topsin-M WSB 1.0 lb	1,2	505.5	1.3
Endura 70WG 5.0 oz	1,2	504.3	3.8
Double Nickel LC 1.0 qt	1,2	493.6	1.3
Miravis Prime 3.33SC + NIS 0.25% v/v	1,2	563.0	0
Miravis Prime 3.33SC + NIS 0.25% v/v	1,2	486.6	0
Luna Tranquility 4.16SC 11.2 fl oz + NIS 0.25% v/v	1,2	490.7	1.3
Emesto Silver 118FS 0.31 fl oz/cwt	Seed Trt		
Velum Prime 0.45 fl oz/1000 ft row	In Furrow		
Luna Tranquility 4.16SC 11.2 fl oz	1,2	453.7	2.5
Asterlit 15.5 fl oz + Koverall DF75 2 lb + MSO 0.25% v/v	1-3	509.9	0
Omega 500F 8.0 fl oz	1		
Endura 70WG 5.0 oz + Koverall DF75 2 lb	2		
Asterlit 15.5 fl oz + Koverall DF75 2 lb + MSO 0.25% v/v	3	494.4	1.3
Omega 500F 8.0 fl oz	1		
Endura 70WG 5.0 oz + Koverall DF75 2 lb	2		
Luna Tranquility 4.16SC 11.2 fl oz + Koverall DF75 2 lb	3	511.9	0
Rovral 4F 32 fl oz + Koverall DF75 2 lb + MSO 0.25% v/v	1-3	484.7	1.3

[z]Fungicide applications: 1 = 9 Jul; 2 = 23 Jul; and 3 = 6 Aug.
[y]Marketable 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.

Treatment Number, Treatment, and Rate/A		Application Timing[z]	Emergence (%)		Marketable Yield (cwt/A)[y]		Size Bs (cwt)[z]		RAUDPC[w]	
1	Non-treated Control	NA	100.0	g[v]	528.5	bc	32.0	a-f	0.492	l
2	Bravo WS 6SC 1.5 pt	1,2,4,8								
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 6SC 1.5 pt	3,6								
	Endura 70WG 3.5 oz + Bravo WS 6SC 1.5 pt	5,7								
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9,10	98.8	fg	566.4	b-d	28.2	a-c	0.407	jk
3	Maxim MZ 0.5D 0.5 lb/cwt	Seed Trt								
	Bravo WS 6SC 1.5 pt	1,2,4,8								
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 6SC 1.5 pt	3,6								
	Endura 70WG 3.5 oz + Bravo WS 6SC 1.5 pt	5,7								
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9,10	81.9	a	548.1	b-d	25.1	ab	0.349	g-i
4	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow	97.5	e-g	524.6	b-c	33.2	a-f	0.423	jk
5	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	2,4-10								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	1,3	96.9	d-g	569.5	b-d	38.8	a-h	0.298	a-g
6	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	4 6-10								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC	3,5	95.0	c-g	568.8	b-d	31.2	a-e	0.288	a-f
7	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	6,8-10								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	5,7	96.9	d-g	604.2	cd	30.4	a-d	0.311	b-g
8	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	6,8,10								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	7,9	95.6	c-g	576.2	b-d	33.4	a-f	0.318	c-g
9	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	8,10								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	7,9	92.5	b-g	550.4	b-d	20.6	a	0.341	f-h
10	Emesto Silver 118FS 0.31 fl oz/cwt	Seed Trt								
	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
	Bravo WS 6SC 1.5 pt	1,3,5,7,9								
	Dithane DF75 2 lb	2								
	Scala 5SC 7.0 fl oz + Dithane DF75 2 lb	4,8,10								
	Luna Tranquility 4.16SC 11.2 fl oz + Dithane DF75 2 lb	6	91.3	b-f	601.4	b-d	29.1	a-c	0.252	a

	Emesto Silver 118FS 0.31 fl oz/cwt	Seed Trt								
	Velum Prime 0.45 fl oz/1000 ft row	In-Furrow								
11	Serenade ASO 0.962 qt	1,2								
	Reason 500SC 5.5 fl oz + Movento 240SC 2.5 fl oz + MSO EC 5% v/v	3,5								
	Luna Tranquility 4.16SC 11.2 fl oz	4								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	6								
	Scala 5SC 7.0 fl oz + Bravo WS 6SC 1.5 pt	7,9								
	Bravo WS 6SC 1.5 pt	8,10	94.4	c-g	597.4	b-d	27.1	a-c	0.255	a
	Serenade ASO 0.962 qt	1								
	Serenade ASO 0.962 qt + Echo Zn 4.17SC 2 pt	2								
12	Bravo WS 6SC 1.5 pt	3,6,8								
	Luna Tranquility 4.16SC 11.2 fl oz + Bravo WS 6SC 1.5 pt	4								
	Proline 480SC 5.7 fl oz + Bravo WS 6SC 1.5 pt	5,7,9	92.5	b-g	410.6	a	18.1	a	0.292	a-f
13	Proline 480SC 5.7 fl oz	1-10	88.8	a-d	541.2	b-d	36.0	a-g	0.337	e-h
14	Dithane DF75 2 lb	1-10	88.1	a-c	530.7	bc	41.0	a-i	0.417	jk
15	Oranil 6L 1.5 pt	1-10	95.6	c-g	520.6	bc	40.3	a-i	0.426	jk
16	KFD-384-01 3.2 oz	1-10	94.4	c-g	518.7	bc	45.9	b-j	0.458	kl
17	KFD-384-01 3.2 oz + Dithane DF75 1.4 lb	1-10	90.0	b-g	559.7	b-d	53.8	d-k	0.389	h-j
18	KFD-384-01 3.2 oz + Dithane DF75 1.6 lb	1-10	88.1	a-c	522.1	bc	69.5	jk	0.408	jk
19	BAS 75003F 10.0 fl oz + Dyne-Amic 0.05% v/v	1-10	89.4	a-e	594.2	b-d	29.8	a-d	0.281	a-d
20	BAS 75003F 15.0 fl oz + Dyne-Amic 0.05% v/v	1-10	93.8	b-g	634.5	a	29.7	a-c	0.262	ab
21	Penncozeb 75WG 1.5 lb	1-10	88.1	a-c	558.2	b-d	40.5	a-i	0.383	h-j
22	Scala 5SC 7.0 fl oz + Dyne-Amic 0.05% v/v	1-10	89.4	a-e	547.8	b-d	37.5	a-h	0.416	jk
23	Quash 50WDG 4.0 oz + Dyne-Amic 0.05% v/v	1-10	90.0	a-e	581.4	b-d	50.3	c-j	0.328	d-g
24	Bravo WS 6SC 1.5 pt	1-10	87.5	a-c	519.4	bc	63.1	i-k	0.411	jk
	Penncozeb 75WG 1.5 lb	1								
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 6SC 1.0 pt	2								
25	BAS 75003F 10.0 fl oz + Dyne-Amic 0.05% v/v	3,5,7								
	Endura 70WG 3.5 oz + Bravo WS 6SC 1.5 pt	4								
	Tanos 50WDG 6.0 fl oz + Bravo WS 6SC 1.5 pt	6,8								
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9,10	88.8	a-d	590.1	b-d	54.9	e-k	0.284	a-e

26	Penncozeb 75WG 1.5 lb	1								
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 6SC 1.0 pt	2								
	BAS 75003F 15.0 fl oz + Dyne-Amic 0.05% v/v	3,5,7								
	Endura 70WG 3.5 oz + Bravo WS 6SC 1.5 pt	4								
	Tanos 50WDG 6.0 fl oz + Bravo WS 6SC 1.5 pt	6,8								
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz	9,10	91.9	b-g	577.5	b-d	60.3	h-k	0.309	b-g
27	Echo 720 1.5 pt + WE1603-1 0.25% v/v	1								
	Luna Tranquility 4.16SC 11.2 fl oz + Echo 720 1.5 pt + WE1603-1 0.25% v/v	2,3								
	Revus Top 48.3SC 5.5 fl oz + Echo 720 1.5 pt + WE1603-1 0.25% v/v	4,6,8,10								
	Tanos 50WDG 6.0 fl oz + Echo 720 1.5 pt + WE1603-1 0.25% v/v	5,7,9	85.6	ab	514.7	bc	53.8	d-k	0.299	a-g
28	Ariston + Sonata + WE1603-1 0.25% v/v	1								
	Luna Tranquility 4.16SC 11.2 fl oz + Ariston 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	2,3								
	Revus Top 48.3SC 5.5 fl oz + Ariston 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	4,6,8,10								
	Tanos 50WDG 6.0 fl oz + Ariston 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	5,7,9	90.6	b-f	635.0	d	47.5	b-j	0.304	a-g
29	Echo 720 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	1								
	Luna Tranquility 4.16SC 11.2 fl oz + Echo 720 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	2,3								
	Revus Top 48.3SC 5.5 fl oz + Echo 720 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	4,6,8,10								
	Tanos 50WDG 6.0 fl oz + Echo 720 1.5 pt + Sonata 1.0 pt + WE1603-1 0.25% v/v	5,7,9	87.5	a-c	541.7	bcd	57.9	g-k	0.267	a-c
30	Ariston + Sonata 1.5 pt + WE1603-1 0.25% v/v	1								
	Luna Tranquility 4.16SC 11.2 fl oz + Ariston 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	2,3								
	Revus Top 48.3SC 5.5 fl ozp + Ariston 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	4,6,8,10								
	Tanos 50WDG 6.0 fl oz + Ariston 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	5,7,9	91.3	b-f	531.6	bc	55.6	f-k	0.284	a-e
31	Echo 720 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	1								
	Luna Tranquility 4.16SC 11.2 fl oz + Echo 720 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	2,3								
	Revus Top 48.3SC 5.5 fl oz + Echo 720 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	4,6,8,10								
	Tanos 50WDG 6.0 fl oz + Echo 720 1.5 pt + Sonata 1.5 pt + WE1603-1 0.25% v/v	5,7,9	91.9	b-g	509.2	b	74.8	k	0.286	a-e

32	Bravo WS 6SC 1.5 pt + Nano-Pro 4.0 fl oz	1,2,4,8									
	Priaxor 4.17SC 4.5 fl oz + Bravo WS 6SC 1.5 pt + Nano-Pro 4.0 fl oz	3,6									
	Endura 70WG 3.5 oz + Bravo WS 6SC 1.5 pt + Nano-Pro 4.0 fl oz	5,7									
	Dithane DF75 2 lb + Super Tin 80WP 2.5 oz + Nano-Pro 4.0 fl oz	9,10	93.8	b-g	510.7	bc	63.7	i-k	0.397	ij

[z] Fungicide application dates: 1=11 Jul, 2 = 18 Jul, 3= 25 Jul, 4 = 1 Aug, 5 = 8 Aug, 6 = 15 Aug, 7 = 22 Aug, 8 = 29 Aug, 9 = 5 Sep, 10 = 12 Sep.
[y] Marketable 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.
[x] Size B potato tubers are of a size range between 1.5 and 2.25 inch in diameter
[w] RAUDPC= Relative Area Under the Disease Progress Curve determined by trapezoidal integration and then converted into Relative AUDPC (RAUDPC).
[v] Column numbers followed by the same letter are not significantly different at P=0.05 as determined by Fisher's Least Significant Difference (LSD) test.