POTATO (*Solanum tuberosum* 'Dark Red Norland')
Silver scurf; *Helminthosporium solani*
Black dot; *Colletotrichum coccodes*

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Evaluation of treatments for control of silver scurf and black dot of potato in Wisconsin, 2016.

Potatoes were planted on 3 May at the University of Wisconsin Hancock Agricultural Research Station in central WI to evaluate seed-, in-furrow-, and foliar-applied fungicides for the control of silver scurf and black dot of potato. Seed pieces, approximately 2 oz in size, were cut mechanically from US#1 'Dark Red Norland' tubers and allowed to heal prior to planting. A randomized complete block design with four replications was used for the trial. 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 rows used for foliar and yield evaluations, drive rows for pesticide application equipment were placed adjacent to plots. Seed treatments were applied to tubers within 24 hours of planting using a 1.06 qt Solo Hand Pump Sprayer at a rate equivalent to 3.70 qt water/ton seed. In-furrow treatments were applied over the top of seed pieces in open furrows in a 12 inch band using a plot sprayer consisting of a tractor-mounted boom, pressurized with an air compressor, using TeeJet Twin Jet Flat Spray Tip nozzles TJ-60 11003VS. In-furrow applied fungicides were applied at a rate equivalent to 9.51 qt water/1000 row feet at 30 psi. Foliar fungicide applications for silver scurf control were made in addition to the standard foliar disease program for other common potato diseases in central Wisconsin. Plots were not inoculated but relied on natural inocula for disease establishment. Fertility, insect, weed, and foliar disease management were accomplished using standard industry practices for the region. Seed emergence data were collected on 31 May from 20 linear feet of each of the center two rows of each plot (% seed emergence = number of emerged vines /maximum possible emerged vines (48)*100). Precipitation in Hancock during the potato production season was 27.62. Supplemental irrigation was applied 37 times during the potato production season for an additional 14.5 in. Vines were killed with desiccant treatments of Diquat + non-ionic surfactant applied on 15 Aug and 22 Aug. Plots were harvested and graded for size distribution on 30 Aug. At harvest, 20 tubers were randomly selected from each plot and visually evaluated for silver scurf and/or black dot incidence and severity (percentage of symptomatic tuber surface). Because the two tuber blemish diseases can be indiscernible based on visual symptoms, alone, we report our disease results collectively. All data were analyzed using ANOVA (α=0.05) and Fisher's LSD at α=0.05 (SAS Version 9.2).

Silver scurf and/or black dot incidence was high, yet severity was relatively low in this field trial; differences in blemish disease measurements were significant. Two experimental seed treatments, A22059 312.28FS 0.5 fl oz, and A9765 600FS 0.128 fl oz + A20699 117.43FS 0.31 fl oz, provided significant reduction in disease severity. Two seed treatments, Maxim MZ 4FS 0.5 lb and A22059 312.28FS 0.5 fl oz provided significant reduction of silver scurf/black dot incidence compared to the non-treated control. Double Nickel LC 1.7 fl oz (in-furrow) had a significantly higher incidence of silver scurf/black dot than the non-treated control. Emesto Silver 118FS 0.31 fl oz (seed treatment) +Nubark Mancozeb 6D 1.0 lb (seed treatment) +Serenade Soil 4.4 fl oz (in furrow) + Quadris 2.018SC 0.6 fl oz (in furrow) was the only treatment that resulted in significantly more culls than the non-treated control. Just two seed treatments had a significant reduction in weight of Size B tubers, A18232 435.7FS 0.308 fl oz and A20588 345.11FS 0.5 fl oz. Marketable Yield and Percent Emergence parameters were significantly reduced with eight of the treatments: Cruisermaxx Potato Extreme 0.31 fl oz, Maxim MZ 4FS 0.5 lb, A9765 600FS 0.128 fl oz, A22059 312.28FS 0.5 fl oz, A18232 435.7FS 0.308 fl oz, A20588 345.11FS 0.5 fl oz, A9765 600FS 0.128 fl oz + A20699 117.43FS 0.31 fl oz, and Emesto Silver 118FS 0.31 fl oz + Nubark Mancozeb 6D 1.0 lb + Reason 500SC 0.15 fl oz.

Treatment and Rate[z]	Application Type[y]	Emergence (%)		Marketable Yield[w] (cwt)		Size B[v] (cwt)		Culls (cwt)		Silver Scurf/Black Dot Incidence (%)		Silver Scurf/Black Dot Severity (%)	
Non-treated Control	-	92.3	fg	475.5	e-g[x]	20.3	cd	13.3	a-e	67.5	b-e	11.0	b-f
Phostrol 4.32F 5.0 pt	Foliar	87.0	d-g	467.5	e-g	19.8	cd	15.4	b-f	61.3	a-e	9.3	a-e
Quadris 2.08SC 0.6 fl oz	In Furrow												
Phostrol 4.32F 5.0 pt	Foliar	94.0	g	501.9	g	22.9	d	10.0	a-c	60.0	a-d	9.0	a-e
Quadris 2.08 SC 0.6 fl oz	In Furrow	84.5	c-f	515.4	g	21.6	d	16.5	c-f	66.3	a-e	11.8	c-f
Double Nickel LC 1.7 fl oz	In Furrow	93.5	fg	477.7	e-g	22.5	d	17.3	d-f	85.0	f	15.5	ef
Maxim MZ 4FS 0.5 lb	Seed Treat												
Phostrol 4.32F 5.0 pt	Foliar	87.8	d-g	433.7	d-f	21.7	d	9.5	ab	57.5	a-c	9.8	a-e
Elatus 45WG 0.5 fl oz	In Furrow	91.5	fg	466.3	e-g	18.9	b-d	13.3	a-e	72.5	c-f	17.3	f
Cruisermaxx Potato Extreme 0.31 fl oz	Seed Treat	65.3	a	399.0	a-d	19.6	cd	15.4	b-f	66.3	a-e	6.5	a-d
Maxim MZ 4FS 0.5 lb	Seed Treat	79.0	b-d	375.4	ab	17.7	a-d	10.8	a-d	51.3	a	5.5	a-d
Regalia 5SC 4.0 fl oz	In-Furrow	86.5	d-g	438.1	d-f	20.0	cd	10.6	a-d	71.3	b-f	11.5	c-f
Elatus 45WG 0.34 fl oz	In Furrow	90.8	fg	481.9	fg	17.1	a-d	12.2	a-d	75.0	d-f	12.5	d-f
A9765 600FS 0.128 fl oz	Seed Treat	74.0	ab	352.1	a	19.4	b-d	16.5	c-f	76.3	ef	9.0	a-e
A22059 312.28FS 0.5 fl oz	Seed Treat	81.0	b-e	359.7	a	15.6	a-c	9.6	ab	51.3	a	3.0	a
A18232 435.7FS 0.308 fl oz	Seed Treat	77.0	bc	362.2	a	12.6	a	10.5	a-d	56.3	ab	4.3	ab
A20588 345.11FS 0.5 fl oz	Seed Treat	72.8	ab	361.0	a	13.5	ab	12.7	a-e	58.8	a-c	5.0	a-c
A9765 600FS 0.128 fl oz	Seed Treat												
+ A20699 117.43FS 0.31 fl oz	Seed Treat	81.5	b-e	395.5	a-d	15.3	a-c	7.8	a	63.8	a-e	3.8	a
Emesto Silver 118 FS 0.31 fl oz	Seed Treat												
+ Nubark Mancozeb 6D 1.0 lb	Seed Treat												
+ Serenade ASO 2.2 fl oz	In Furrow	84.5	c-f	428.5	c-f	19.8	cd	19.4	ef	67.5	b-e	9.8	a-e
Emesto Silver 118 FS 0.31 fl oz	Seed Treat												
+ Nubark Mancozeb 6D 1.0 lb	Seed Treat												
Serenade ASO 2.2 fl oz	In Furrow												
+ Velum Prime 0.45 fl oz	In Furrow	89.5	e-g	425.2	b-e	17.2	a-d	9.8	a-c	63.8	a-e	6.8	a-d
Emesto Silver 118 FS 0.31 fl oz	Seed Treat												
+ Nubark Mancozeb 6D 1.0 lb	Seed Treat												
Serenade Soil 4.4 fl oz	In Furrow												
+ Quadris 2.018 SC 0.6 fl oz	In Furrow	91.5	fg	443.5	d-f	21.0	cd	21.8	f	67.5	b-e	6.5	a-d
Emesto Silver 118 FS 0.31 fl oz	Seed Treat												
+ Nubark Mancozeb 6D 1.0 lb	Seed Treat												
+ Reason 500SC 0.15 fl oz	Seed Treat	81.0	b-e	378.3	a-c	18.2	a-d	12.9	a-e	56.3	ab	5.3	a-c

[z]Treatment rates applied in-furrow are given per 1000 row ft. Seed treatment rates are given per 100 lb seed. Foliar treatments are given in pint per acre.

[y]Seed treatment and in-furrow were applied at the time of planting. Foliar treatments were applied twice, on 26 Jun and 17 Jul.

[x]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.

[w]Marketable yield refers to Size A potato tubers of a size range ≥2.5 in diameter.

[v]Size B potato tubers are of a size range between 1.5 and 2.25 in diameter.