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, 2018.

Potatoes were planted on 10 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 L 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 9.5 L 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. Foliar applications were applied using a backpack CO2 sprayer with a 4 nozzle spray boom with 19 in. spacing between standard flat fan spray nozzles (Tee Jet 8002VS) at a rate of 35 gallons per acre at 40 psi. Plots were not inoculated but relied on natural inocula for disease establishment from seed potatoes and field soil. Fertility, insect, weed, and foliar disease management were accomplished using standard commercial practices for the region. Seed emergence data were collected on 7 Jun from 20 linear feet of each of the center two rows of each plot (% seed emergence = number of emerged vines /maximum possible emerged vines (40)*100). Precipitation in Hancock during the potato production season was 25.5 in. Supplemental irrigation was applied 38 times during the potato production season for an additional 16.8 in. Vines were killed with a desiccant treatment of Diquat + non-ionic surfactant applied on 7 Sep. Plots were harvested and graded for size distribution on 17 Sep. 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 ($P = 0.05$) and Fisher's LSD at $P = 0.05$ (SAS version 9.2).

Silver scurf and/or black dot incidence was high with no significant differences between treatments. Disease severity was high with most treatments controlling silver scurf/black dot equivalently to the non-treated control and just two treatments resulting in disease significantly greater than the non-treated control (Treatment 13: Amplitude 8.8 fl oz in furrow and Treatment 15: Regalia 5SC 4.4 fl oz in furrow). There was no significant treatment effect on marketable yield. Treatment 1 (Maxim MZ 7.5DP 0.5 oz seed treatment) resulted in significantly fewer culls than the non-treated control; all other treatments resulted in no differences in cull weight compared to the non-treated control. There were no phytotoxic symptoms observed with any of the fungicide programs throughout the duration of the trial.

Treatment number, treatment and rate[z]	Application type[y]	Marketable yield (cwt/A)[x]	Culls (cwt)		Silver scurf incidence (%)	Silver scurf severity (%)	
1 Maxim MZ 7.5DP 0.5 oz	Seed Trt	412.9	29.0	a[w]	100.0	34.9	a
2 Maxim MZ 7.5DP 0.5 oz	Seed Trt						
+ Phostrol 4.32F 5.0 pt	Foliar	453.3	33.2	ab	100.0	44.3	a-d
3 Cruiser Maxx Potato Extreme 0.31 fl oz	Seed Trt	478.5	33.9	ab	96.3	45.1	a-e
4 Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed Trt	484.5	34.1	ab	100.0	52.3	b-f
5 Emesto Silver 118FS 0.31 fl oz	Seed Trt	418.7	41.4	abc	100.0	42.1	a-c
6 Maxim MZ 7.5DP 0.5 lb	Seed Trt						
+ Quadris 2.018SC 0.6	In Furrow	427.8	43.2	a-d	97.5	45.8	a-e
7 Quadris 2.018SC 0.6 fl oz	In Furrow	448.3	44.2	a-d	98.8	42.1	a-c
8 Quadris 2.018SC 0.6 fl oz	In Furrow						
+ Phostrol 4.32F 5.0 pt	Foliar	433.8	48.5	a-d	100.0	38.8	ab
9 Velum Prime 0.45 fl oz	In Furrow	455.4	49.3	a-d	100.0	55.9	c-f
10 Elatus 45WG 0.34 fl oz	In Furrow	463.0	51.5	b-d	100.0	59.8	ef
11 Non-treated Control		448.5	51.5	b-d	100.0	48.3	a-e
12 Phostrol 4.32F 5.0 pt	Foliar	413.2	57.0	cd	100.0	52.7	b-f
13 Amplitude 8.8 fl oz	In Furrow	426.7	60.4	cd	100.0	63.4	f
14 Amplitude 8.8 fl oz + Regalia 5SC 4.4 fl oz	In Furrow	425.3	61.1	cd	100.0	59.1	d-f
15 Regalia 5SC 4.4 fl oz	In Furrow	424.7	62.4	d	100.0	65.6	f

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

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

[X] Marketable yield refers to the weight of Size A potato tubers of a size range ≥ 2.5 in diameter in units of cwt = 100 lb.

[W] 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.