

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, 2019.

Potatoes were planted on 9 May at the University of Wisconsin Hancock Agricultural Research Station in central WI to evaluate seed treatments and in-furrow 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. Plots were not inoculated but relied on natural inocula for disease establishment from seed potatoes and field residue/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 22.54 in. Supplemental irrigation was applied 38 times during the potato production season for an additional 14.95 in. Vines were killed with a desiccant treatment of Diquat + non-ionic surfactant applied on 3 Sep followed by a second application on 9 Sep. Plots were harvested and graded for size distribution on 16 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).

One treatment, Maxim 4FS seed treatment, had a significant reduction in emergence compared to all other treatments. There was no significant treatment effect on marketable yield. Quadris 2.018 SC alone, Howler, Velum Prime, and Elatus 45WG had significantly more B tubers than the non-treated control. Maxim MZ 7.5DP, Maxim MZ 7.5DP + Quadris 2.018 SC, Quadris 2.018 SC, Howler, Velum Prime, Elatus 45WG had significantly more cull weight than the non-treated control; all other treatments resulted in no differences in cull weight compared to the non-treated control. Silver scurf and/or black dot incidence and severity was high with no significant differences between treatments. There were no phytotoxic symptoms observed with any of the fungicide programs throughout the duration of the trial.

Treatment and Rate^z	Application Timing^y	Emergence (%)		Marketable Yield (cwt)^x	Bs Yield (cwt)^w		Culls Weight (cwt)		Tuber Disease Incidence (%)	Tuber Disease Severity (%)
Non-treated Control	-	81.3	bc ^v	357.5	19.9	ab	9.1	a	91.3	46.4
Maxim 4FS 0.16 fl oz	Seed Treatment	54.4	a	384.1	14.8	a	12.6	ab	83.8	28.7
Maxim MZ 7.5DP 0.5 lb	Seed Treatment	79.4	bc	355.1	21.7	a-c	24.1	c	97.5	48.4
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Quadris 2.018 SC 0.6 fl oz	In-Furrow	73.8	b	362.8	27.6	b-d	21.9	c	98.8	48.1
Quadris 2.018 SC 0.6 fl oz	In Furrow	86.9	c	384.3	30.9	d	22.5	c	100.0	61.8
Howler 5.5 oz	In-Furrow	80	bc	358.6	30.6	d	18.4	c	87.5	37.4
Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed Treatment	70.6	b	405.2	20.2	a-c	10.6	a	97.5	41.9
Emesto Silver 118FS 0.31 fl oz	Seed Treatment	90.6	cd	386.6	23.5	b-d	11.7	a	98.8	46.0
Velum Prime 0.45 fl oz	In-Furrow	98.8	d	377.1	31.4	d	18.3	bc	100.0	54.8
Elatus 45WG 0.5 oz	In-Furrow	90.6	cd	371.0	28	cd	22.9	c	96.3	51.5

^z Treatment rates applied in-furrow are given per 1000 row ft. Seed treatments are given per 100 lb seed.

^y Seed treatments and in-furrow treatments were applied at the time of planting.

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

^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.