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, 2020.

Potatoes were planted on 5 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 under conditions of 55°F and 98% relative humidity. 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 after cutting 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-in. 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/1,000 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 9 Jun from 20 linear feet of each of the center 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 17.51 in. Supplemental irrigation was applied 41 times during the potato production season for an additional 15.3 in. Vines were killed with a desiccant treatment of Diquat + non-ionic surfactant applied on 3 Sep followed by a second application on 8 Sep. Plots were harvested and graded for size distribution on 15 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).

There were no significant differences in vine emergence across treatments. Treatments of Mancozeb Nubark, Maxim MZ + Quadris, Quadris, Cruiser Maxx Vibrance Potato, Regalia, and Double Nickel had significantly greater total plot yield than the non-treated control. Treatments of Maxim MZ + Quadris, Quadris, Cruiser Maxx Vibrance Potato, Regalia, and Double Nickel had significantly greater marketable yield compared to the control. Treatments of Howler and Cruiser Maxx Vibrance Potato has significantly more C size tubers compared to the non-treated control. Howler was the only treatment that had significantly more culls than the non-treated control and the other treatments. There were no significant differences in B size tubers across treatments. Disease pressure for the trial was good, with high disease incidence of silver scurf on the tubers, but relatively low disease severity compared to previous years. A seed treatment of Maxim MZ alone was the only treatment that significantly reduced both tuber disease incidence and severity when compared to the non-treated control. There was no phytotoxicity for any of the treatments.

Treatment and rate[z]	Application timing[y]	Total Plot Yield (cwt/A)		Marketable yield (cwt)[x]		Cs yield (cwt)[w]		Culls weight (cwt)		Tuber disease incidence (%)		Tuber disease severity (%)	
Non-treated Control	-	367.6	a[v]	342.8	ab	4.2	a	0.70	a	50.0	b-d	6.5	b-d
Maxim 4FS 0.08 fl oz	Seed treatment	363.4	a	336.5	a	5.7	a-c	1.22	a	50.0	b-d	7.3	cd
Maxim 4FS 0.08 fl oz + Nubark 0.5 lb	Seed treatment	383.6	ab	359.2	a-d	5.0	a	1.23	a	60.0	d	9.1	de
Nubark Mancozeb 1.0 lb	Seed treatment	399.9	b-d	371.6	b-e	5.1	ab	0.86	a	42.5	bc	4.3	ab
Maxim MZ 7.5DP 0.5 lb	Seed treatment	377.1	ab	350.6	a-c	4.8	a	0.77	a	25.0	a	1.7	a
Maxim MZ 7.5DP 0.5 lb	Seed treatment												
Quadris 2.018 SC 0.6 fl oz	In-furrow	421.4	cd	393.2	e	5.8	a-c	0.87	a	57.5	cd	7.4	cd
Quadris 2.018 SC 0.6 fl oz	In-furrow	406.3	b-d	379.6	c-e	6.0	a-c	1.39	a	65.0	d	9.1	de
Howler 5.5 oz	In-furrow	385.5	ab	354.6	a-c	6.9	bc	2.52	b	62.5	d	6.7	b-d
Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed treatment	422.5	d	389.9	de	7.6	c	1.49	a	50.0	b-d	6.3	bc
Regalia 2.2 fl oz	In-furrow	418.9	cd	395.1	e	5.1	ab	0.70	a	62.5	d	11.5	e
Double Nickel LC 2.2	In-furrow	399.0	b-d	377.6	c-e	4.7	a	1.19	a	43.8	bc	4.9	bc
Maxim MZ 7.5DP 0.5 lb	Seed treatment												
Minuet 24 fl oz	In-furrow	390.2	a-c	364.3	a-e	6.0	a-c	1.08	a	35.0	ab	4.8	bc

[z] Treatment rates applied in-furrow are given per 1,000 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 C potato tubers are of a size range less than 1.5 in. 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.