

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, 2023.

Potatoes were planted on 3 May at the University of Wisconsin Hancock Agricultural Research Station in central WI to evaluate seed-applied 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 artificially inoculated; they relied on natural inocula from seed, soil, and plant residue for disease establishment. 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 rows of each plot (% seed emergence = (number of emerged vines / maximum possible emerged vines) * 100). Precipitation in Hancock during the potato production season was 7.75 in. Supplemental irrigation was applied 50 times during the potato production season for an additional 21.4 in. Vines were killed with a desiccant treatment of Diquat applied on 28 Aug with a second application on 5 Sept. Plots were harvested and graded for size distribution on 11 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 emergence and marketable yield, B size yield (data not shown), C size yield (data not shown) and cull weight (data not shown) between treatments. Nine treatments significantly reduced both the incidence and severity of silver scurf on the tubers (2, 3, 7, 8, 11, 13, 14, 17 and 19). No phytotoxicity was observed with any of the fungicide programs throughout the duration of the trial.

Treatment number, Treatment, and rate ^z		Application Timing ^y	Emergence (%)	Marketable Yield (cwt) ^x	Disease Incidence (%)	Disease Severity (%)
1	Untreated Control	Seed Trt	97.5	544.1	67.5 cd	6.73 de
2	Maxim MZ 0.5 lb	Seed Trt	91.9	483.2	40.0 ab	2.63 a
3	Maxim 4FS 0.08 fl oz	Seed Trt	83.1	516.2	42.9 ab	3.79 a-c
4	Maxim 4FS 0.08 fl oz + Nubark 0.5 lb	Seed Trt	88.1	492.8	52.5 a-d	4.50 a-d
5	Nubark 0.5 lb	Seed Trt	94.4	532.4	45.0 ab	5.18 a-e
6	Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed Trt	93.8	523.6	50.0 a-d	3.16 a
7	NAI-9071 1.0 fl oz	Seed Trt	91.9	543.3	35.0 a	2.85 a
8	Convoy 0.51 fl oz + Proline 0.012 fl oz	Seed Trt	91.9	518.7	35.0 a	2.48 a
9	Convoy 0.51 fl oz+ Hydrovent 0.1% v/v	Seed Trt	94.4	548.6	52.5 a-d	6.15 b-e
10	Convoy 0.51 fl oz	Seed Trt	90.0	499.2	42.5 ab	4.15 a-d
11	Emesto Silver 0.31 fl oz	Seed Trt	92.5	563.0	40.0 ab	3.00 a
12	Elatus 45WG 0.64 oz	In Furrow	91.3	545.6	67.5 cd	6.13 b-e
13	Maxim MZ 0.5 lb	Seed Trt				
	Quadris 2.018 SC 0.6 fl oz	In Furrow	93.1	508.8	32.5 a	2.90 a
14	Quadris 2.018 SC 0.6 fl oz	In Furrow	93.1	539.5	42.5 ab	3.90 a-c
15	Companion Maxx WP 0.55 oz	In Furrow	94.4	545.8	47.5 a-c	4.18 a-d
16	Experimental 1 0.55 oz	In Furrow	86.9	534.1	70.0 d	6.50 c-e
17	SP-1 Biofert 0.26 L + Companion Maxx 0.55 oz	In Furrow	96.9	523.1	32.5 a	3.65 ab
18	SP-1 Biofert 0.26 L + Experimental 1 0.55 oz	In Furrow	90.6	517.3	60.0 b-d	7.55 e
19	Companion Maxx WP 0.55 oz + Quadris 2.018 SC 0.6 fl oz	In Furrow	94.4	530.6	35.0 a	3.90 a-c
20	SP-1 Biofert 0.26 L + Companion Maxx WP 0.55 oz + Quadris 2.018 SC 0.6 fl oz	In Furrow	92.5	487.5	52.5 a-d	4.20 a-d

^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.

^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.