

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, 2021.

Potatoes were planted on 5 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 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 21.46 in. Supplemental irrigation was applied 36 times during the potato production season for an additional 14.5 in. Vines were killed with a desiccant treatment of Diquat + non-ionic surfactant applied on 31 Aug. Plots were harvested and graded for size distribution on 14 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).

Treatments, consisting of Nubark Mancozeb, Maxim MZ plus Quadris in-furrow and Howler, had significantly reduced emergence compared to the non-treated control. The treatment of Maxim MZ plus Quadris, which had the lowest emergence, also had significantly less total plot yield and marketable yield compared to the non-treated control. There was no visible phytotoxicity associated with any of the treatments. However, reduced emergence was likely due to a negative effect from the in-furrow or seed treatments as there were no significant differences in disease incidence and severity among treatments.

Treatment and rate ^z	Application Timing ^y	Emergence (%)		Total Plot Yield (cwt)		Marketable Yield (cwt) ^x		Disease Incidence (%)	Disease Severity (%)
Non-treated Control		92.5	c-e ^v	471.3	b-d	437.7	bc	75.0	13.0
Nubark Mancozeb 1.0 lb	Seed Treatment	83.8	ab	438.7	a-c	404.9	ab	80.0	15.9
Maxim MZ 0.5 lb	Seed Treatment	85.6	a-c	464.7	b-d	429.3	bc	85.0	17.3
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Quadris 2.018 SC 0.6	In Furrow	81.9	ab	407.4	a	374.1	a	80.0	10.6
Quadris 2.018 SC 0.7	In Furrow	85.0	a-c	425.3	ab	396.2	ab	75.0	10.4
Howler 5.5 oz	In Furrow	79.4	a	434.9	a-c	403.3	ab	87.5	13.8
Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed Treatment	95.6	de	472.4	b-d	434.0	bc	82.5	13.4
Regalia 2.2 fl oz	In Furrow	96.9	de	468.9	b-d	439.0	bc	82.5	14.8
Double Nickel LC 2.2 fl oz	In Furrow	89.4	b-d	494.2	d	461.7	c	77.5	13.0
Velum Prime 0.45 fl oz + Minuet 0.83 fl oz	In Furrow	93.8	de	484.0	cd	447.3	bc	82.5	14.6
Velum Prime 0.45 fl oz	In Furrow	98.1	e	492.5	d	459.0	c	87.5	15.5
Minuet 0.83 fl oz	In Furrow	95.0	de	451.4	a-d	417.4	a-c	75.0	12.6

^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.