

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, 2017.

Potatoes were planted on 2 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 qt 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 fungicides were applied at a rate equivalent to 9.51 qt 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. Plots were not inoculated but relied on historically recognized, ample natural inocula 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 30 May 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 20.6 in. Supplemental irrigation was applied 36 times during the potato production season for an additional 12.7 in. Vines were killed with desiccant treatments of Diquat + non-ionic surfactant applied on 8 Aug and 31 Aug. Plots were harvested and graded for size distribution on 19 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 ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$ (SAS Version 9.2).

Silver scurf and/or black dot incidence and severity were high in this trial. There were with no significant differences in blemish disease incidence or severity across all of the treatments. Ten of the 24 treatments had significantly reduced emergence compared to the non-treated control. All of these were seed-applied treatments. In-furrow applications and one seed treatment (A9765 + A20699) did not significantly reduce emergence. Nine treatments, all of which were seed treatments, had a significantly reduced marketable yield compared to the non-treated control. Size Bs and culls were generally lower for the seed-treatment treatments than the in-furrow treatments.

Treatment and Rate ^z	Application Type ^y	Emergence (%)	Marketable Yield (cwt/A) ^w	Size Bs (cwt) ^v	Culls (cwt)	Silver Scurf Incidence (%)	Silver Scurf Severity (%)
Non-treated Control	-	84.6 f-h	441.6 h-j	17.4 h-j	24.6 a-e	98.8	45.4
A9765 0.128 fl oz	Seed Treatment	56.3 bc ^x	351.9 de	9.4 a-d	19.7 ab	100.0	38.0
A14382 0.23 fl oz	Seed Treatment	57.9 c	372.9 d-f	10.4 b-e	25.8 a-f	100.0	35.3
A18232 0.308 fl oz	Seed Treatment	72.5 de	386.2 e-g	11.9 c-f	25.5 a-f	100.0	43.3
A20588 0.5 fl oz	Seed Treatment	66.7 cd	406.7 f-h	12.1 c-f	24.1 a-d	100.0	36.6
A9765 0.128 fl oz	Seed Treatment						
+ A20699 0.31 fl oz	Seed Treatment	82.9 e-g	427.9 hi	14.0 e-i	16.7 a	100.0	40.6
Maxim MZ 7.5DP 0.5 oz	Seed Treatment	33.8 a	245.7 a	6.5 ab	31.5 c-h	100.0	28.3
Maxim MZ 7.5DP 0.5 oz	Seed Treatment						
+ Phostrol 4.32F 5.0 pt	2X Foliar	35.0 a	299.9 bc	5.3 a	21.6 a-c	97.5	36.0
Cruiser Maxx Potato Extreme 0.31 fl oz	Seed Treatment	42.5 a	340.0 cd	7.9 a-c	20.9 a-c	100.0	30.6
Cruiser Maxx Vibrance Potato 0.5 fl oz	Seed Treatment	57.5 bc	366.9 d-f	12.4 c-g	30.0 b-h	100.0	36.1
Maxim MZ 7.5DP 0.5 lb	Seed Treatment						
+ Quadris 2.018SC 0.6	In Furrow	44.4 ab	272.6 ab	8.7 a-c	47.0 i	100.0	34.9
Emesto Silver 118FS 0.31 fl oz	Seed Treatment	58.3 bc	339.9 c-e	9.0 a-d	25.8 a-g	100.0	33.4
Phostrol 4.32F 5.0 pt	2X Foliar	77.5 d-f	403.7 f-h	13.5 d-h	21.2 a-c	100.0	48.6
Quadris 2.018SC 0.6 fl oz	In Furrow	89.4 f-h	480.3 j	18.2 i-k	35.4 e-i	100.0	46.4
Quadris 2.018SC 0.6 fl oz	In Furrow						
+ Phostrol 4.32F 5.0 pt	2X Foliar	90.0 f-h	441.0 h-j	18.6 j-l	37.2 g-i	100.0	45.0
Quadris 2.018SC 0.8 fl oz	In Furrow	89.4 f-h	470.8 ij	19.5 j-l	35.0 d-i	100.0	45.4
Vertisan EC1.67 0.7 fl oz	In Furrow	88.1 f-h	444.4 h-j	22.9 lm	31.5 c-h	98.8	43.6
Elatus 45WG 0.34 fl oz	In Furrow	91.3 gh	435.8 h-j	22.1 k-m	36.4 f-i	98.8	40.6
Bio-Tam 2.0 3.0 oz	In Furrow	96.3 h	424.1 g-i	26.6 m	34.5 d-h	98.8	38.4
Velum Prime 6.5 fl oz	In Furrow	87.5 f-h	438.7 h-j	24.4 m	37.3 g-i	100.0	30.3
Vertisan EC1.67 1.1 fl oz	In Furrow	83.1 e-h	456.9 ij	18.3 j-l	40.2 hi	100.0	40.5
Priaxor 4.17SC 0.48 fl oz	In Furrow	78.8 e-g	430.4 hi	16.1 f-j	27.2 a-g	98.8	35.2
Azteroid 1.65SC 0.75 fl oz	In Furrow	88.8 f-h	457.7 ij	16.5 g-j	35.6 e-i	98.8	39.4
MycoApply EndoMaxx 0.41 g	In Furrow	85.6 f-h	438.6 h-j	17.6 h-k	30.6 b-h	100.0	39.9

^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 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.

^w 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.

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