

Evaluation of at-plant treatments for control of Rhizoctonia diseases of potato in Wisconsin, 2015.

Potatoes were planted on 4 May at the University of Wisconsin Hancock Agricultural Research Station in central WI to evaluate seed- and in-furrow- applied fungicides for the control of Rhizoctonia diseases of potato, including seedling damping-off and tuber black scurf. Fertility, insect, and weed management was accomplished using standard commercial practices for the region. In preparation for planting, US#1 seed tubers were cut into approximately 2 oz pieces on 21 Apr. Seed pieces were allowed to heal for 14 days at 13°C with 95% relative humidity and good airflow for suberization. A randomized complete block design with four replications was used for the trial and treatment plots consisted of four, 24-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. In-furrow treatments were applied using a CO₂ backpack sprayer equipped with a single TeeJet 8002VS flat fan nozzle calibrated to deliver 12 gal/A at a boom pressure of 40 psi. Seed treatments were applied to cut seed prior to planting using the same sprayer equipment as previously described. Plots relied upon natural inocula for disease establishment. Seed emergence data were collected on 1 Jun from 24 linear feet of each of the center 2 rows of each plot (% seed emergence = number of emerged vines /maximum possible emerged vines (48)*100). Precipitation in Hancock during the potato production season was 18.5 in. Supplemental irrigation was applied 39 times during the potato production season for an additional 16.2 in. Vines were killed with 2 desiccant treatments of Diquat+non-ionic surfactant applied on 27 Aug and 2 Sep. Plots were harvested and graded on 16 Sep. At harvest, 20 tubers were randomly selected from each plot after washing and visually evaluated for symptoms of black scurf (% incidence= number of symptomatic tubers/20*100).

Rhizoctonia and black scurf pressure was low in the 2015 production season in Hancock, Wisconsin. There were no significant differences in seed emergence and black scurf incidence in tubers among treatments. Percent emergence ranged from 71.9-92.2% with our untreated control treatment emerging at 83.9%. Black scurf incidence ranged from 0-10% with our untreated control treatment resulting in a disease incidence of 2.5%. Marketable yields were significantly different based on treatments with 7 programs resulting in significantly higher yields than the untreated control. Among the 7 programs, 3 were applied in-furrow (Priaxor 500SC 0.48fl oz, A19649 200SC 0.71 and 0.94 fl oz rates), and 4 were applied as seed treatments (Cruiser Maxx Potato 0.31 fl oz, Cruiser Maxx Potato Extreme 0.31 fl oz, Maxim MZ 7.5DP 0.5 lb, Nubark Mancozeb 6D 1.0 lb).

Treatment and rate ^z	Application Type ^y	Emergence (%)	Marketable Yield (cwt)	Black Scurf Incidence (%)
Untreated Control	-	83.9	426.6 a-d	2.5
Double Nickel LC 1.7 fl oz	In Furrow	78.2	430.3 a-e	2.5
Priaxor 500SC 0.48 fl oz	In Furrow	78.2	495.6 e-i	0.0
Quadris 2.018SC 0.6 fl oz	In Furrow	71.9	463.0 c-h	7.5
Serenade Soil 4.4 fl oz	In Furrow	72.9	429.0 a-d	0.0
Moncut 70DF 0.83 oz	In Furrow	80.3	456.6 b-g	2.5
Vertisan 200EC 1.1 fl oz	In Furrow	80.7	479.7 d-i	2.5
A19649 200SC 0.47 fl oz	In Furrow	87.5	460.4 b-g	7.5
A19649 200SC 0.71 fl oz	In Furrow	79.7	502.8 f-i	0.0
A19649 200SC 0.94 fl oz	In Furrow	92.2	516.6 g-i	0.0
Elatus 45WG 0.34 fl oz	In Furrow	78.7	461.9 b-g	2.5
Elatus 45WG 0.5 fl oz	In Furrow	84.4	490.3 d-i	0.0
Cruiser Maxx Potato 0.31 fl oz	Seed Treat	79.2	514.0 g-i	0.0
Cruiser Maxx Potato Extreme 0.31 fl oz	Seed Treat	78.7	521.8 g-i	0.0
Maxim MZ 7.5DP 0.5 lb	Seed Treat	91.7	533.8 I	0.0
Nubark Mancozeb 6D 1.0 lb	Seed Treat	81.8	524.7 Hi	0.0
Emesto Silver 118 FS 0.31 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	72.4	395.4 Ab	0.0
Emesto Silver 118 FS 0.31 fl oz	Seed Treat			
Reason 500SC 0.15 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	81.8	399.8 a-c	0.0
Emesto Silver 118 FS 0.31 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat			
Serenade Soil 4.4 fl oz	In Furrow	87.0	443.9 b-f	0.0
Emesto Silver 118 FS 0.31 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat			
Quadris 2.018SC 0.6 fl oz	In Furrow	82.3	424.5 a-d	0.0
Moncoat MZ 7.5DP 0.75 lb	Seed Treat	85.9	375.9 A	0.0
Convoy 40SC 0.38 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	85.4	440.5 a-f	0.0
Emesto Silver 118FS 0.5 lb	Seed Treat			
Firbark 0.5 lb	Seed Treat	81.8	426.8 a-d	0.0
Convoy 40SC 0.38 fl oz	Seed Treat			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	78.7	396.7 a-c	2.5
Moncut 70DF 1.07 fl oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	86.5	395.6 Ab	0.0
Quadris 2.018SC 0.6 fl oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	77.6	399.4 a-c	2.5
Vertisan 200EC 1.1 fl oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	91.7	424.2 a-d	2.5
Priaxor 4.17SC 0.6 fl oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	79.2	425.4 a-d	0.0
Moncut 70DF 1.6 oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	88.1	396.1 Ab	2.5
Moncut 70DF 1.07 oz	In Furrow			
Serenade Soil 4.4 fl oaz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	78.7	396.6 a-c	0.0
ProStar 70WG 1.07 fl oz	In Furrow			
Nubark Mancozeb 6D 1.0 lb	Seed Treat	78.2	403.4 a-c	10.0

^zTreatment rates applied in-furrow are given per 1000 row ft. Seed treatment rates are given per 100 lb seed.

^ySeed treatment and in-furrow were applied at the time of planting.

^xColumn numbers followed by the same letter are not significantly different at P=0.05 as determined by Fisher's Least Significant Difference (LSD) test.