POTATO (*Solanum tuberosum* 'Lamoka')
Rhizoctonia canker and black scurf; *Rhizoctonia solani*

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Evaluation of seed treatments and in-furrow and banded fungicides to manage Rhizoctonia canker and black scurf of potato in Michigan, 2022.

Experimental and commercially available fungicides were tested to determine their efficacy in managing Rhizoctonia canker and black scurf. A field trial was established at the Montcalm Research Center in Stanton, MI. A randomized complete block design was used, and treatments were replicated four times. Soil type is a loamy sand. US#1 'Lamoka' potatoes were cut into 2-oz seed pieces and left to suberize. Once suberized, seed treatments were applied to tubers on 2 Jun using a cement mixer. The trial was hand planted 3 Jun, using 2 row (34-in row spacing) by 20 ft long plots seeded at 1.2 seed/row-ft. Before closing rows, *Rhizoctonia*-infested barley was placed in-furrow at 7.5 g/row-ft, and in-furrow fungicides were applied. A CO_2-powered backpack sprayer, equipped with TJ4002E nozzles, was used to apply fungicides in-furrow at 10.5 gal/A (40 psi). Banded applications were applied at hilling (14 Jul), using the previously mentioned CO_2 sprayer. Stand establishment was monitored through the growing season and stem canker disease ratings were collected mid-August. Plots were harvested 28 Sep and later graded. Final stem counts, stem canker index, black scurf incidence, and yield were compared among treatments. A generalized linear mixed model procedure was used to conduct the ANOVA and mean separations at the α=0.05 significance level (SAS version 9.4).

Significant Rhizoctonia stem canker pressure and low black scurf pressure was observed uniformly throughout the trial. Significant differences were observed stem counts ($P < 0.0001$). Significant differences were observed in the stem canker index when using a lognormal distribution of means ($P = 0.05$). Programs 7 and 12 had significantly lower stem canker index values than the inoculated control, however, no difference was observed among black scurf incidence of programs. Finally, significant differences were observed among program total yield ($P < 0.0001$) and marketable yield values ($P < 0.0001$).

No.	Treatment, Rate, and Timing[z]	Stem Count[y]	Stem Canker Index (%)	Stem Canker Index[x] (lognormal)	Black Scurf Incidence (%)	Total Yield (cwt/A)	Marketable Yield (cwt/A)
1	Non-treated, inoculated control	38.8 b	25.9	3.1 ab	0.06	169.7 b	155.4 b
16	Non-treated, non-inoculated control	64.8 a	-	-	0.05	292.0 a	262.9 a
2	Moncoat ST (0.51 fl oz/cwt) A	39.3 b	25.6	2.9 a-c	0.06	193.5 b	174.1 b
3	Proline (0.25 fl oz/cwt) A	9.5 c	22.0	2.9 a-c	0.04	82.8 c	80.1 c
4	Moncoat ST (0.51 fl oz/cwt) A; Proline (0.25 fl oz/cwt) A	5.3 c	25.1	3.0 a-c	0.00	65.4 c	63.0 c
5	Moncoat ST (0.38 fl oz/cwt) A; Proline (0.1875 fl oz/cwt) A	4.5 c	21.2	2.4 a-d	0.00	54.5 c	51.5 c
6	Vibrance Ultra Potato (0.5 fl oz/cwt) A	39.8 b	24.7	3.2 ab	0.03	174.5 b	155.9 b
7	Double Nickel LC (8 fl oz/A) B; Double Nickel LC (8 fl oz/A) C	43.8 ab	4.8	1.3 d	0.11	197.6 b	174.4 b
8	Double Nickel LC (16 fl oz/A) B; Double Nickel LC (16 fl oz/A) C	51.5 ab	19.4	2.5 a-d	0.06	215.6 ab	190.9 ab
9	Double Nickel LC (8 fl oz/A) B; Elatus (7.7 oz/A) B	33.8 b	19.1	1.9 bc	0.00	180.9 b	163.5 b
10	Elatus (7.7 oz/A) B	50.3 ab	34.6	3.5 a	0.05	208.1 b	192.3 ab
11	Velum Prime (6.5 fl oz/A) B	41.3 b	30.2	3.1 ab	0.18	210.7 ab	189.1 ab
12	Exp[w] (13 fl oz/A) B	39.0 b	7.0	1.7 cd	0.03	225.5 ab	206.5 ab
13	Elatus (6.4 oz/A) B	42.0 b	9.4	1.9 b-d	0.04	212.3 ab	191.0 ab
14	Quadris (5.3 fl oz/A) B	47.3 ab	24.1	3.2 ab	0.16	249.8 ab	228.2 ab
15	Velum Prime (6.5 fl oz/A) B; Elatus (6.5 oz/A) B	41.3 b	16.7	2.6 a-d	0.01	200.0 b	182.4 b

[z] Application letters code for the following dates: A (seed treatment)=2 Jun, B=3 Jul (in-furrow at plant), C=14 Jul (at hilling).

[y] Column values followed by the same letter were not significantly different based on Fisher's Protected LSD (α=0.05).

[x] Stem canker index analyzed using a lognormal distribution of means.

[w] Exp=Experimental compound.