Evaluation of banded at re-hill and foliar fungicides to manage early blight and brown spot of potato in Michigan, 2024

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Experimental and commercially available fungicides were tested to determine their efficacy in managing potato early blight (*Alternaria solani*) and brown spot (*Alternaria alternata*). A field trial was established at the Montcalm Research Center in Stanton, MI. Soil type at the station is loamy sand. A randomized complete block design was used with four replicates. US#1 'Lamoka' potatoes were cut into 2-oz seed piece and left to suberize before planting. The trial was planted 28 May. Plots were two rows wide (34-in row spacing) by 18 ft long and seeded at 1.2 seed/row-ft. Banded treatments were applied at re-hilling on 2 July. A CO_2-powered backpack sprayer, equipped with TJ2504 nozzles, was used to apply fungicides at 20 gal/A. Due to the trial's proximity to commercial potato fields, a blanket application of Echo 720 was applied weekly after row-closure to the entire trial to reduce the risk of late blight developing near commercially grown potatoes. Beginning at early flower, three foliar applications (B, C, and D) were made across programs. Application dates were B=15 July, C=31 July, and D=14 Aug. The previously mentioned sprayer was used to make applications, except TJ8004XR nozzles were used. Plots were inoculated 23 July and 30 July with *A. solani* solution ($8x10^3$ conidia/mL) at a volume of 20 gal/A. Foliar disease data (combined early blight and brown spot observations) were collected regularly throughout the growing season. Plots were harvested 25 September; both rows were dug and later graded. The final disease incidence (DI) and disease severity (DS) collected 18 August, estimated yield, and estimated marketable 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).

Disease pressure was moderate, and differences were observed among the foliar DI ($P< 0.0001$) but not DS ($P>0.05$). All tested programs had significantly lower incidence (15-23.3%) than the control (DI=48.8%); severity was numerically lower in all tested programs than in the control but was not significantly lower. No significant differences were observed in yield or marketable yield.

No.	Treatment (Rate[a]) Timing[b]	Disease Incidence (%)[c]		Disease Severity (%)	Total Yield (cwt/A)	Marketable Yield (cwt/A)
1	Treated control	48.8	a	15.8	348.5	313.3
2	Luna Tranquility (11.2 fl oz) B + Luna Tranquility (11.2 fl oz) C + Scala SC (7 fl oz) D	23.0	bc	15.0	307.7	276.7
3	Endura Pro (18.5 fl oz) B + Endura Pro (18.5 fl oz) C + Scala SC (7 fl oz) D	15.0	c	15.0	319.2	284.6
4	Experimental (22.8 fl oz) B + Experimental (22.8 fl oz) C + Scala SC (7 fl oz) D	16.5	bc	13.8	331.7	300.8
5	Lucento (11 fl oz) A	18.8	bc	15.0	317.2	281.4
6	Topguard (28 fl oz) A	23.3	b	14.5	329.1	293.3
7	Topguard (28 fl oz) A + Luna Tranquility (11.2 fl oz) C	20.5	bc	15.0	306.8	274.3
8	Lucento (5.5 fl oz) B + Lucento (5.5 fl oz) C + Scala SC (7 fl oz) D	17.0	bc	13.0	335.7	297.9
	SE	2.7		0.9	14.6	15.6
	P-value	<0.0001		0.4709	0.5603	0.5586
	LSD	8.0		-	-	-

[a] All rates are listed as amount of product applied per acre.

[b] Application letters code for the following dates: A=Jul 2 (at hill), B=Jul 15 (flower), C=Jul 31 (flower + 2 weeks), D=Aug 14 (flower + 4 weeks). MasterLock 0.25% V/V was added to all treatments.

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