

Evaluation of foliar fungicides to manage late blight of potato in Michigan, 2021.

Commercially available fungicides were tested to determine their efficacy in managing potato late blight. A field trial was established at the Michigan State University Plant Pathology Farm in East Lansing, MI. A randomized complete block design was used, and treatments were replicated four times in loam soil. US#1 ‘Lamoka’ potatoes were cut into 2-oz seed pieces and left to suberize for 10 days before being treated with Emesto Silver (0.31 fl oz/100 lb seed). The trial was hand planted 23 Jul. Plots were four rows wide (34-in row spacing) by 20 ft long, and seeded at 1.2 seed/row-ft. All insect, week, fertility, and irrigation management was consistent with standard approaches for the commercial growers in the region. Foliar fungicide programs were initiated on 2 Sep with follow-up applications made weekly until 18 Oct. A CO₂ powered backpack sprayer, equipped with two TJ 8004XR nozzle, was used to apply fungicides at 20 gal/A (38 PSI). The trial was inoculated 27 Sep after sunset. *P. infestans* inoculum (3 x 10⁵ sporangia/mL) was applied over plots at 20 gal/A using the previously mentioned equipment. After inoculating the trial, a misting system was used to maintain leaf wetness and facilitate disease development. Stand counts were collected at emergence. Foliar disease incidence (DI) and disease severity (DS) ratings (0-100%) were collected for each plot from 24 Sep to 18 Oct. The center two rows of plots were harvested on 10 Nov and graded 11 Nov. The final DI, DS, and estimated marketable yield (cwt/A) were compared among treatments. A generalized linear mixed model procedure was used to conduct the ANOVA and mean separations ($\alpha=0.05$).

Differences were observed among the DI ($P < 0.0001$) and DS ($P < 0.0001$) values of programs. All treated programs had significantly lower DI and DS values than the non-treated control but did not differ from each other. No significant differences in marketable yield were observed in this trial, and yield was well below Michigan averages. This was likely caused by several flooding events that caused stand thinning and a loss of one quarter of the trial; however, at least three replicates of each treatment were included in final analyses.

No.	Product, Rate ^z , Timing ^y	Late Blight Incidence (%)		Late Blight Severity (%)		Marketable Yield (CWT/A)
		Oct 18 ^x		Oct 18		
1	Non-treated Control	100.0	a	86.8	a	50.0
2	Emesto Silver (0.31 fl oz/cwt) A + Minuet (12 fl oz) BCDE + Velum Prime (6.5 fl oz) B + Flint Extra (3 fl oz) CE + Echo 720 (1.5 pt) FH + Echo 720 (2 pt) IJ + Luna Tranquility (10.95 fl oz) G + Dithane F-45 (1.6 qt) G + Scala (7 fl oz) I	5.0	b	8.0	b	78.4
3	Emesto Silver (0.31 fl oz/cwt) A + Echo 720 (1.5 pt) CDEFGH + Echo 720 (2 pt) IJ	4.5	b	7.8	b	75.2
4	Emesto Silver (0.31 fl oz/cwt) A + Growthful Pre (2 gal) B + Growthful Post (12.8 fl oz) CDEFGHIJ + Echo 720 (1.5 pt) CDEFGH + Echo 720 (2 pt) IJ	3.0	b	8.4	b	64.2

^z All rates are listed as a measure of product per acre, and all foliar applications contained MasterLock at a rate of 0.25 % v/v.

^y Application timings: A = seed treatment Jul 9, B = in-furrow Jul 22, C = Sep 2, D = Sep 9, E = Sep 16, F = Sep 24, G = Oct 1, H = Oct 6, I = Oct 12, J = Oct 18.

^x Column values followed by the same letter are not significantly different based on Fisher’s Protected LSD ($\alpha=0.05$).