

Evaluation of foliar fungicides to manage white mold of potato in Michigan, 2019.

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A foliar fungicide efficacy trial was established at the Montcalm Research Center in Lakeview, MI. The trial objective was to determine the efficacy of commercially available fungicides for managing white mold. A randomized complete block design, with four replicates, was used. Potato seed were cut from US#1 'Lamoka' tubers and treated with Cruiser Maxx Potato Extreme (0.31 fl oz/100 lb seed), then allowed to suberize before planting. The trial was hand-planted 14 May. Plots were four rows wide (34-in. row spacing) by 20 ft long and a 10-in seed spacing was used. Standard grower practices were followed to manage non-target pests. The first fungicide applications were made 26 Jun, with a 7-d spray interval until 13 Aug. A CO₂ powered backpack sprayer, equipped with two TJ 8004XR flat fan nozzles and operating at a boom pressure of 38 psi, was used to apply fungicides at 20 gal/A. A standard fungicide program was also applied to control plots to prevent creating an entry point for late blight in a major potato producing region of MI. While in flower, plots were inoculated with *S. sclerotiorum*-infested millet at a rate of 0.0125 lb/rw-ft on 12 Jul and 25 Jul. Disease data were collected regularly until a chemical vine kill 30 Aug. Twenty stems were arbitrarily rated from the center two rows of plots and assigned a disease severity (0-3). The severity ratings were: 0 = no disease, 1 = infection on secondary stem or petiole, 2 = infection on main stem but not girdling, 3 = infection girdling mainstem, resulting in wilting and/or death. The ratings were used to calculate a disease index and mean severity, which were then used to calculate a plot disease index. The center two rows of plots were harvested 27 Sep, potatoes were washed, and the marketable yield (cwt/A) determined. A generalized linear mixed model procedure was used to conduct the ANOVA and mean separations at $\alpha=0.05$.

Mean disease index (DX) values ranged between 19 and 24%, but were not significantly different among treatments ($P>0.05$). Estimated marketable yields (range: 114-166 cwt/A) were not different among tested fungicide programs ($P>0.05$). Numerically, program 1 (treated control) had the highest DX and lowest marketable yield, with values of 24.2% and 114.8 cwt/A, while program 4 had the lowest DX and highest marketable yield of 19.0% and 166.0 cwt/A, respectively. The lack of differences among treatments is believed to be caused by a large infestation of potato leafhoppers (*Empoasca fabae*), which resulted in an early vine kill. In the first week of Aug, leafhoppers infested the research field and surrounding grower fields. Insecticide applications were made, but hopper pressure remained high as insects migrated in from external fields. If insect pests had not caused vines to prematurely senesce, disease may have continued to develop enough for differences to be observed.

Other pathology trials for potatoes in Michigan, 2019.

A second trial was conducted at the Montcalm Research Center to investigate the management of potato early die using different russet varieties with and without a fall fumigation program. Methods were similar to those previously described here. These experiments are still in early stages, but results are available upon request.

Table 1.

No.	Treatment, Rate ^z , and Timing ^y	Disease Index (%) ^{x, w}	Marketable Yield (cwt/A)
1 ^v	Bravo Weather Stik (1.5 pt) ACEG + Manzate Max (1.6 qt) BDF	24.2	114.8
2	Bravo Weather Stik (1.5 pt) ABCDEFG + Luna Tranquility (11.2 fl oz) DF	20.0	159.5
3	Bravo Weather Stik (1.5 pt) ACDFG + Previcur Flex (19.2 fl oz) BE + Serenade ASO (32 fl oz) BE + Luna Tranquility (11.2 fl oz) DF	21.2	142.3
4	Bravo Weather Stik (1.5 pt) ACEG + LifeGard WG (4.5 oz/100gal) ACEG + Manzate Max (1.6 qt) BDF	19.0	166.0

^z All rates, unless otherwise specified, are listed as a measure of product per acre.

^y Fungicide applications were initiated at row touch. Application letters code for the following dates: A = 26 Jun, B = 9 Jul, C = 15 Jul, D = 23 Jul, E = 30 Jul, F = 8 Aug, G = 13 Aug.

^x Disease index was calculated by multiplying the disease incidence (0-100%) by the mean severity (0-3), then dividing by 3.

^w Column values followed by the same letter were not significantly different based on Fisher's Protected LSD ($\alpha=0.05$); if no letter, then the effect was not significant.

^v Treated control.