

Evaluation of fungicides for control of late blight in potato tubers in storage, 2011-2012.

A trial was established on 15 Dec 2011 at the Hancock Agricultural Research Station-Storage Research Facility in Hancock, WI to evaluate post-harvest fungicide treatments for the control of potato tuber late blight in storage. Forty five tubers placed in individual plastic containers with independent air flow systems were used for each of 4 replicates. Replications were completely randomized within the storage research area and maintained at 55±2°F and relative humidity of 97%. Tubers were harvested from a late blight-free field and subjected to 3 min of wounding in a modified cement mixer to simulate rough harvest conditions which promote disease. Inoculation immediately followed simulated wounding by submerging tubers into a sporangia suspension for 2 minutes. The suspension was prepared by inoculating detached leaves of a late blight susceptible tomato cultivar with an axenic isolate of *P. infestans* clonal lineage US-23 collected from a Wisconsin production field in 2010. At 12 days post inoculation, sporangia were washed from the leaves and the concentration was adjusted to 5,000 sporangia/ml. After inoculation, tubers were allowed to dry for 2 hrs prior to fungicide treatment. A total mix volume of 70 mL was used for fungicide treatments applied using a 1 gal handheld pump sprayer. Ten tubers were randomly selected and evaluated for the incidence and severity of late blight from each replicate of each treatment at 60 days post-inoculation (DPI). Tubers were sliced in half and the presence of symptomatic tissue, or incidence, was assessed. The symptomatic external surface area, and the symptomatic surface area of the cut surface (inner surface) were recorded (disease severity).

All of the treatments provided significant control of late blight incidence, with the exceptions of Phostrol (12.8 fl oz) + Mertect (0.42 fl oz) and Mertect (0.42 fl oz) alone. While ozone was not the most effective treatment for controlling late blight, it did significantly reduce the amount of surface mycelium and secondary infection on infected tubers (data not shown). All treatments significantly limited disease severity of infected tubers as quantified on outer and inner tuber surfaces.

Treatment and rate/ton	Incidence (%)	Disease Severity of infected Tubers (%)	
		Outer Surface	Inner Surface
Untreated, non-inoculated control.....	0.0 a*	-	-
Untreated, inoculated control.....	80.0 d	74.1 e	51.7 d
Scholar 1.92SC 0.6 fl oz + ICI5504 250SC 0.6 fl oz + CGA169374 360FS 0.15 fl.....	5.0 a	2.5 abc	3.0 ab
A18780 440SC 1.0 fl oz.....	0.0 a	-	-
A18780 B 440SC 1.0 fl oz.....	5.0 a	26.5 abcd	9.0 abc
Phostrol 6.27F 12.8 fl oz + Mertect 340F 0.42 fl oz.....	80.0 d	25.4 bc	15.8 ab
Mertect 340F 0.42 fl oz.....	70.0 d	51.1 cd	37.0 c
Presidio 4SC 4 fl oz.....	0.0 a	-	-
V-10208 3.2FS 10 fl oz.....	5.0 a	3.0 abc	3.0 ab
V-10208 3.2FS 10 fl oz + Presidio 4SC 4 fl oz.....	2.5 a	5.0 abc	3.0 abc
Phostrol 6.27F 12.8 fl oz.....	32.5 bc	15.8 ab	9.6 ab
Phostrol 6.27F 6.4 fl oz.....	22.5 b	7.3 a	6.1 a
Oxidate 27SC 1.25 fl oz.....	25.0 b	34.9 c	25.5 bc
Oxidate 27SC 6.25 fl oz.....	30.0 b	10.9 a	8.3 a
Ozone 10 ppm.....	47.5 c	58.4 d	32.5 c

* Numbers followed by the same letter within a column are not significantly different at P=0.05 as determined by Fisher's Least Significant Difference test.