

POTATO (*Solanum tuberosum* 'Yukon Gold') S. Jordan¹, S. Zimmerman², A.J. Gevens¹
Common scab; *Streptomyces scabies* 1Dept. of Plant Pathology, Univ. of Wisconsin, Madison, WI 53706
2Univ. of Wisconsin Extension, Langlade County, Antigo, WI 54409

Evaluation of at-plant treatments for control of potato common scab in Wisconsin, 2016.

A trial was established on 24 May at the University of Wisconsin Extension Langlade County Research Area, Antigo to evaluate fungicides for common scab control. Two-ounce-sized seed pieces were mechanically cut from US#1 'Yukon Gold' tubers and healed for 10 days prior to planting. A randomized complete block design with four replications was used and treatment plots consisted of four, 20-ft-long rows spaced 36 in. apart with 12 in. spacing in the row. Common scab inoculum was introduced in this research field plot in each of the previous potato rotations by incorporating common-scab symptomatic tubers into the soil and applying manure to exacerbate the disease. In-furrow treatments were applied to seed and soil in an open furrow on the day of planting using a CO₂ backpack sprayer equipped with a single TeeJet 8002VS flat fan nozzle calibrated to deliver 12 gal/A at a boom pressure of 40 psi. Seed treatments were applied to seed tubers prior to planting using the same sprayer equipment as previously described. Treated seed pieces were allowed to dry before planting. After in-furrow treatments were applied, furrows were mechanically closed using hilling disks. The soil type was Antigo silt loam. Standard grower practices were used for field maintenance, fertility, insect management, and prevention of early and late blight as per the production region. The total natural precipitation during the production season was 17.9 in. No supplemental irrigation was applied during the growing season. During the production season, additional common scab-targeted fungicide applications were made for two of the treatments with the initial application at emergence (21 Jun) with the second application following 2 weeks later (5 Jul). Foliar applications were made using a CO₂ backpack sprayer equipped with a boom equipped with 4 TeeJet 8002VS flat fan nozzles spaced 19 in apart, calibrated to deliver 30 gal/A at a boom pressure of 35 psi. Seed emergence data were collected 21 Jun from 20 linear feet of each of the center 2 rows of each plot. Vines were chemically killed with Verdure-X 1.5 pt/A + non-ionic surfactant on 24 and 31 Aug. The center two rows of each plot were harvested, and tubers were graded into marketable (US#1), undersize, and cull categories on 12 Sep. After undersize tubers were graded out and tubers washed, but before scabbed tubers are removed, 20 tubers from each plot were chosen randomly and assessed for scab incidence and severity (% of tuber surface covered on an individual tuber). All data were analyzed using ANOVA ($\alpha=0.05$) and Fisher's LSD at $\alpha=0.05$ (SAS Version 9.2).

Despite very high disease incidence ratings, disease severity was very low in this trial and non-significant % severity results are not shown. The non-treated control resulted in 72.5% common scab incidence, with all treatments resulting in numerically lower incidence. Five treatments resulted in seed emergence that was significantly less than that of the non-treated control: Amyprotec 42 0.35 fl oz (seed treatment) + Amyprotec 42 0.32 fl oz (in-furrow), EF-400 0.35 fl oz + BacStop 0.25 fl oz (seed treatment), EF-400 0.35 fl oz + BacStop 0.25 fl oz (seed treatment) + EF-400 0.73 fl oz + BacSTop 0.55 fl oz (in-furrow), EF-400 0.35 fl oz + BacStop 0.25 fl oz (seed treatment) + EF-400 0.73 fl oz + BacSTop 0.55 fl oz (in-furrow) + EF-400 8.0 fl oz + BacStop 6.0 fl oz (emergence), and Amyprotec 42 20.0 ml (seed treatment). Treatments that significantly reduced seed emergence included: Amyprotec 42 0.35 fl oz (seed treatment) + Amyprotec 42 0.32 fl oz (in-furrow) and the Amyprotec seed treatment alone, and all of the EF-400 0.35 fl oz + BacStop 0.25 fl oz combination treatments with the exception of the combination include a foliar application. Marketable yields were not significantly greater than the non-treated control (358 cwt/acre) for any of the treatments, but four treatments resulting in yields significantly less than the non-treated control including: Amyprotec 42 0.35 fl oz (seed treatment) + Amyprotec 42 0.32 fl oz (in-furrow), EF-400 0.35 fl oz + BacStop 0.25 fl oz (seed treatment and the seed treatment, emergence, and in-furrow treatment), and Double Nickel LC 20.0 ml (seed treatment).

Treatment and rate ^z	Application Type	Seed Emergence (%)		Marketable Yield (cwt/acre)		Common Scab Incidence (%)
Non-treated Control	NA	73.1	de ^y	358.0	de	72.5
Blocker 4F 10.4 fl oz	in-furrow	63.1	bcd	335.5	cde	57.5
Blocker 4F 5.2 fl oz	in-furrow	71.9	cde	361.1	e	32.5
Blocker 4F 5.2 fl oz + Serenade Soil 4.4 fl oz	in-furrow	69.4	b-e	340.1	cde	40.0
Amyprotec 42 0.35 fl oz	seed treatment					
Amyprotec 42 0.32 fl oz	in-furrow	61.3	b	246.7	ab	47.5
Amyprotec 42 0.35 fl oz	seed treatment					
Blocker 4F 5.2 fl oz + Amyprotec 42 0.32 fl oz		66.3	b-e	302.5	b-e	57.5
Serenade Soil 4.4 fl oz	in-furrow	68.8	b-e	322.5	cde	47.5
EF-400 0.35 fl oz + BacStop 0.25 fl oz	seed treatment	61.9	bc	274.7	abc	55.0
EF-400 0.35 fl oz + BacStop 0.25 fl oz	seed treatment					
EF-400 0.73 fl oz + BacStop 0.55 fl oz	in-furrow	60.6	b	308.0	b-e	42.5
EF-400 0.35 fl oz + BacStop 0.25 fl oz	seed treatment					
EF-400 0.73 fl oz + BacStop 0.55 fl oz	in-furrow					
EF-400 8.0 fl oz + BacStop 6.0 fl oz	emergence	48.1	a	209.2	a	42.5
EF-400 0.35 fl oz + BacStop 0.25 fl oz	seed treatment					
EF-400 0.73 fl oz + BacStop 0.55 fl oz	in-furrow					
EF-400 8.0 fl oz + BacStop 6.0 fl oz	emergence					
EF-400 8.0 fl oz + BacStop 6.0 fl oz	foliar	65.0	bcd	295.5	b-e	52.5
Amyprotec 42 20.0 ml	seed treatment	59.4	b	290.7	bcd	42.5
Double Nickel LC 20.0 ml	seed treatment	65.0	bcd	277.4	bc	65.0
Regalia 5SC 4.0 fl oz	in-furrow	76.3	e	308.4	b-e	60.0

^zTreatment rates applied in-furrow are given per 1000 row ft. Seed treatment rates are given per 100 lb seed. Foliar treatments are given in fl oz per acre.

^yColumn numbers followed by the same letter are not significantly different at $P=0.05$ as determined by Fisher's Least Significant Difference (LSD) test.