

Evaluation of in-furrow and at-hilling applied fungicides for control of potato common scab in Hancock, Wisconsin, 2024

A trial was established on 3 May at the Hancock Agricultural Research Station in Hancock, WI. to evaluate treatments for the management of common scab. Two-ounce-sized seed pieces were mechanically cut from US#1 ‘Yukon Gold’ seed tubers and healed for 7 days prior to planting under conditions of 55°F and ample air flow to support suberization. A randomized complete block design with four replications was used and treatment plots consisted of two 20-ft-long rows spaced 36 in. apart with 12 in. spacing in the row. Common scab inoculum was introduced in this disease nursery in each of the previous production seasons by incorporating common scab-symptomatic tubers into the soil. 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. After in-furrow treatments were applied, furrows were mechanically closed using hilling disks. At-hilling applications were applied directly over freshly hilled plots on 22 May using a CO₂-pressurized backpack sprayer with a 4-nozzle spray boom with 19 in. spacing between standard flat fan spray nozzles (Tee Jet 8002VS) at a rate of 35 gal/A at 40 psi. The soil type was Plainfield Sand. Standard grower practices were used for field maintenance, fertility, insect management, and prevention of foliar early and late blight as per the production region. Crop emergence was evaluated at 40 days after planting from 20 linear feet of each of the center two rows of each plot (% seed emergence = number of emerged plants /maximum possible # of plants (40)*100). Tubers from plots were harvested, graded, and weighed on 17 Sept. Twenty tubers from each plot were chosen randomly and assessed for common scab incidence and severity measured as the percentage of tuber surface covered with common scab lesions. Natural precipitation during the trial duration was 20.21 in. Supplemental irrigation was applied 30 times for an additional 11.5 inches of water. All data were analyzed using ANOVA ($\alpha=0.05$) and Fisher’s LSD at $\alpha=0.05$ (SAS Version 9.2).

Emergence was poor as was yield across treatments. There were no significant differences across treatments for total plot yield, B size (range between 1.5 and 2.25 in diameter), C size (range less than 1.5 in. in diameter), and cull weight (data not shown). There were no significant differences in marketable yield (A size tubers, greater than 2.25 in in diameter), but data is presented. Disease pressure for this trial was uniform with nearly 100% scab incidence across treatments, but scab severity was low. All treatments significantly reduced scab severity compared to the non-treated control.

Treatment and rate ^z	Application Type ^y	Emergence (%)	Marketable Yield (cwt)	Common Scab Severity (%)
Non-treated control	NA	53.8	130.2	9.6 b
Blocker 4F 5.2 fl oz	In-furrow	46.3	92.7	4.8 a
Howler EVO 1.25 lb	In-furrow	60.6	114.3	4.9 a
Howler EVO 2.5 lb	In-furrow	55.6	122.1	4.3 a
Theia 1.5 lb	In-furrow	49.4	110.9	5.1 a
Theia 3.0 lb	In-furrow	47.5	72.1	4.8 a
Experimental #1	Hilling	50.0	96.3	5.5 a
Experimental #2	Hilling	52.5	98.1	5.3 a

^zTreatment rates applied in-furrow are given per 1,000 row ft. Seed treatments are given per ton seed. Foliar rates are per acre. ^ySeed treatments and in-furrow treatments were applied at the time of planting.