

Evaluation of fungicides to control white mold in dark red kidney bean, Hancock, WI, 2023.

A trial to evaluate the effectiveness of fungicides to control white mold in dark red kidney bean was established on 6 Jun at the University of Wisconsin Hancock Agricultural Research Station in central Wisconsin. The commercial cultivar Montcalm was selected for the trial. Plots were seeded at approximately 4.5 seeds per ft. Plots were 25 ft long with 4 rows spaced 30 in. apart. There were four replications per treatment, and plots were arranged in a randomized complete block design. Snap beans and sunflowers had been planted in this field in previous years with historically high levels of disease. Naturally-occurring inocula were the only source for disease development. Fertility, insects, and weeds were managed during the growing season according to standard grower practices for the region. Twelve fungicide programs were evaluated. Fungicide applications for control of white mold were applied twice: once at 10% bloom (20 Jul) and 14 days after 10% bloom (3 Aug). Fungicides were applied 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. On the day of harvest, 15 Aug, the two center rows of each plot were evaluated for white mold with the total number of symptomatic plants (or “strikes”) for each plot recorded. Bean pods from the two, center rows of each plot were machine-harvested and weighed. All data were analyzed using analysis of variance (ANOVA) ($\alpha=0.05$) and Fisher’s least significant difference (LSD) test at $\alpha=0.05$ (SAS Version 9.2). Total precipitation in Hancock during the production season was 5.26 in. Supplemental irrigation was applied 28 times during the production season for an additional 12.6 in.

Weather conditions during bloom were only moderately conducive to infection of flowers and subsequent disease spread, but most infections did occur through flowers and not via the ground. All but one program (Howler EVO 2X) significantly reduced white mold strikes compared to the non-treated control. There were no significant differences between programs for yield. No phytotoxicity was observed with any of the fungicide programs throughout the duration of the trial.

Treatment and Rate/A	Application Timing ^z	White Mold Strikes	Yield (ton/A)
Non-treated Control	NA	22.0 e ^y	21.8
Topsin-M WSB 2.0 lb	AB	7.8 a	23.8
Endura 70WG 11.0 oz	AB	9.8 ab	23.7
Propulse 1.67 SC 8.0 fl oz + NIS 0.12% v/v	AB	10.0 ab	23.0
Propulse 1.67 SC 10.3 fl oz + NIS 0.12% v/v	AB	11.8 a-c	24.6
Delaro 325 SC 12.0 fl oz + NIS 0.12% v/v	A		
Propulse 1.67 SC 8.0 fl oz + NIS 0.12% v/v	B	8.0 a	20.5
Delaro 325 SC 12.0 fl oz + Luna Privilege 4.16 SC 6.84 fl oz + NIS 0.12% v/v	A		
Propulse 1.67 SC 8.0 fl oz + NIS 0.12% v/v	B	9.8 ab	23.2
Luna Flex 3.13 SC	AB	10.5 ab	23.3
Luna Flex 3.13 SC	AB	12.0 a-c	25.1
Luna Flex 3.13 SC	A		
Propulse 1.67 SC 8.0 fl oz + NIS 0.12% v/v	B	14.3 b-d	27.0
Howler 5.0 lb + Dyne-Amic 0.375 % v/v	AB	18.3 de	23.6
Theia 3.0 lb + Dyne-Amic 0.375 % v/v	AB	16.3 cd	24.5

^zFoliar applications were applied at either the 10% bloom stage on 20 Jul (A) and 14 days later on 3 Aug (B).

^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.