

Evaluation of fungicides to control root rot and damping off in snap beans, Hancock, WI, 2020.

A trial to evaluate the effectiveness of fungicides to control root rot and damping off of snap bean was established on 12 Jun at the Hancock Agricultural Research Station (Hancock, WI). Two commercially available cultivars, ‘Huntington’ and ‘HyStyle’, with no fungicide seed treatment were used. Plots were 25 ft long with 4 rows spaced 19 in. apart with a seeding rate of 8 seeds per ft. The trial consisted of 4 replications, and plots were arranged in a randomized complete block design. The trial was established in a root rot nursery with a history of root rotting disease, and susceptible legumes were cropped in this field in the previous year to increase multiple genera of soilborne pathogens in the field. Naturally occurring inocula was the only source of pathogens for disease development. Fertility, insects, and weeds were managed during the growing season according to standard grower practices for the region. Seed treatments were applied at a rate of 25 ml per lb of seed and allowed to dry prior to planting. In-furrow fungicide applications for control of root rot and damping off were applied as a drench over the top of the planted row in a volume of 1 L per plot. Emergence data were recorded on 3 July by counting the number of emerged plants in the two center rows. On 24 Aug, percent canopy cover was calculated for each plot using the Foliage web application software (Andres Patrignani. (2020, April 4). andres-patrignani/foilage: Foliage (Version v1.0). Zenodo. <http://doi.org/10.5281/zenodo.3740240>). On 24 Aug, ten feet from the two center rows were hand harvested and weighed. All data were analyzed using analysis of variance (ANOVA) at $\alpha=0.05$ and Fisher’s least significant difference (LSD) at $\alpha=0.05$ (SAS Version 9.2).

The trial received 10.25 in. of irrigation (25 applications) to supplement 13.87 in. of natural precipitation. There were no significant differences between treatments for yield, emergence, or canopy cover in either variety. The plants for both varieties were stunted as a result of extreme disease pressure and yielded poorly. Observation of the root system showed uniformly rotted tap roots in all treatments, with only few healthy, shallow lateral roots allowing for plant survival.

Treatment and Rate ^z	Application Type ^y	Emergence (%)		Canopy Cover (%)		Yield (t/A)	
		Huntington	Hystyle	Huntington	Hystyle	Huntington	Hystyle
Non-treated		74.3	67.5	40.2	28.0	2.83	1.23
Ridomil Gold 0.42 fl oz	In-furrow	87.5	69.3	35.3	35.3	3.17	2.16
Ridomil Gold 0.42 fl oz	In-furrow						
Quadris 2.018 SC 0.8 fl oz	In-furrow	83.0	77.5	40.5	30.4	3.55	4.05
Quadris 2.018 SC 0.8 fl oz	In-furrow	90.0	66.5	34.2	20.8	3.33	1.36
Velum Prime 0.45 fl oz	In-furrow	91.5	54.8	36.5	29.5	3.40	1.65
Serenade 4.4 fl oz	In-furrow	94.0	51.3	30.8	25.1	2.05	2.73
Double Nickel 2.2 fl oz	In-furrow	82.3	61.3	38.0	18.6	4.08	1.30
EverGol Energy	Seed Treatment	90.3	82.0	26.9	22.6	2.60	1.68
Vitoflow 2.6 ml/Kg seed	Seed Treatment	73.3	68.0	32.0	18.6	2.23	2.11
Ridomil Gold 2.5% v/v	Seed Treatment	75.8	77.5	34.0	18.4	2.96	1.35
Velum Prime 1.5 fl oz/100 lb	Seed Treatment	81.8	64.5	37.0	26.8	4.26	1.86
Salto 4.17 FC 1.5 fl oz/100 lb	Seed Treatment	81.3	67.0	35.4	21.6	2.85	2.42

^zTreatment rates applied in-furrow are given per 1000 row ft. Seed treatments are given per seed weight or v/v in water.

^ySeed treatments and in-furrow treatments were applied at the time of planting.