SNAP BEAN (*Phaseolus vulgaris* 'Hystyle')
Fusarium crown and root rot; *Fusarium solani* f.sp. *pisi*

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Evaluation of fungicides to control Fusarium crown and root rot in snap beans, Hancock, WI, 2022.

A trial to evaluate the effectiveness of fungicides to control Fusarium crown and root rot in snap bean was established on 9 Jun at the University of Wisconsin Hancock Agricultural Research Station located in central Wisconsin. The commercially available cultivar, 'Hystyle' was used. Plots were 20 ft long with four rows spaced 30 in. apart with a seeding rate of 8 seeds per ft. The trial consisted of four replications, and plots were arranged in a randomized complete block design. 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. A regionally sourced isolate of *Fusarium solani* f.sp. *pisi* was used to inoculate the trial. Cultures of the pathogen were grown on Clarified V8 agar for 1 week before inoculating sterile containers with 2 lbs of autoclaved rye berries per container. Rye berries were incubated on the benchtop for 21 days prior to field inoculation. At the time of planting, 100 grams of inoculated rye was placed in-furrow over the seed in the 2 center rows of each plot prior to covering the furrows. In-furrow fungicide applications were applied as a drench over the top of the planted row in a volume of 1 L per plot. Emergence data was recorded on 30 Jun by counting the number of emerged plants in the two center rows. On 17 Aug, ten feet from the two center rows were machine harvested and weighed. Ten roots samples were collected prior to harvest and evaluate for root rot using the following scale: 1 = 1-20% discoloration with individual lesions, 2 = 21-40% discoloration with coalesced lesions but tissues are firm with some reduction in root mass, 3 = 41-60% discoloration and root tissue lesions combined with considerable softening, 4 = 61-80% discoloration and internal pith tissues of roots affected, 5 = 81-100% discoloration, root softening and rotting along with heavy reduction in root mass. All data were analyzed using analysis of variance (ANOVA) at α=0.05 and Fisher's least significant difference (LSD) at α=0.05 (SAS Version 9.2). The trial received 9.7 in. of irrigation (24 applications) to supplement 11.01 in. of natural precipitation.

Weather conditions during this trial were typica for the region. There were no significant differences between treatments for emergence, and yield. All seed treatments and in-furrow treatments significantly reduced root rot disease when compared to the non-inoculated, non-treated control.

Treatment and rate[z]	Application Timing[y]	Emergence (%)	Root Rot Disease Rating (0-5)		Yield (ton/A)
Non-treated Control	NA	80.6	0.33	a	16.2
Inoculated Control	NA	71.9	0.95	c	13.4
Ridomil Gold 0.42 fl oz	IFAP	76.3	0.40	ab	12.7
Ridomil Gold 0.42 fl oz + Quadris 2.018 SC 0.8 fl oz	IFAP	78.2	0.55	ab	13.5
Quadris 2.018 SC 0.8 fl oz	IFAP	73.5	0.48	ab	14.4
Velum Prime 0.45 fl oz	IFAP	79.1	0.40	ab	15.4
Serenade ASO 4.4 fl oz	IFAP	77.7	0.50	ab	12.1
Double Nickel 2.2 fl oz	IFAP	71.5	0.40	ab	12.2
Propulse .36 fl oz	IFAP	77.2	0.50	ab	12.7
Proline 0.192 fl oz	IFAP	74.9	0.43	ab	10.6
Regalia 4.4 fl oz	IFAP	69.4	0.48	ab	12.8
Howler 5.5 oz	IFAP	72.4	0.40	ab	10.5
Zironar	IFAP	72.7	0.48	ab	13.2
XSK03	IFAP	74.4	0.48	ab	15.3
Ethos XB	IFAP	67.2	0.43	ab	14.9
Vibrance 4.3 SC 0.16 fl oz/ 100 lb seed	Seed Treatment				
Ridomil Gold 0.42 fl oz	IFAP	82.9	0.30	a	12.8
Vibrance 4.3 SC 0.16 fl oz/ 100 lb seed	Seed Treatment	71.9	0.35	a	12.8
EverGol Energy 1 fl oz/100 lb seed	Seed Treatment	76.1	0.65	b	12.5
Vitoflow 2.6 ml/kg seed	Seed Treatment	77.4	0.48	ab	12.8
Ridomil Gold 2.5% v/v	Seed Treatment	83.8	0.40	ab	13.0
Velum Prime 1.5 fl oz/100 lb seed	Seed Treatment	76.5	0.43	ab	12.9
Saltro 4.17 FC 1.5 fl oz/100 lb seed	Seed Treatment	80.2	0.48	ab	12.4

[Z]Treatment rates applied in-furrow are given per 1,000 row ft. Seed treatments are given per seed weight or v/v in water.
[Y]Seed treatments and in-furrow treatments were applied at the time of planting.