

Evaluation of fungicides for suppression of root rot disease on snap bean, 2014.

The experiment was conducted at the University of Maryland's Lower Eastern Shore Research and Education Center, Salisbury. Plots were established in a field of Fort Mott "A" loamy sand soil. The experiment had four fungicide treatments with four replications laid out in a randomized complete block design. Plots consisted of two rows, 90 ft long and spaced 36 in. apart, and seeds planted 2 in. apart in the row. Plots were 6 ft wide. The field was fertilized with 15-0-15 (N-P-K) at 500 lb/A before seeding on 30 Jun. Seed was planted with a Monosem planter. Fungicides were injected with in-line orifices at 10 gpa and 23 psi, into the furrow directly behind the seed before the seed furrow was closed. *Rhizoctonia solani* was inoculated onto an autoclaved sand:cornmeal (4% cornmeal) substrate and incubated for 18 days at 25°C. The sand-cornmeal inoculum was then thoroughly mixed and manually applied in a 3-in. band over the row on 2 Jul. Stand in six 3.3-ft sections of row were evaluated and plants were counted on 9 Jul to establish the initial plant population. On 18 Jul ten plants from each row were randomly selected and gently dug and evaluated for the presence of lesions. Root lesion severity was rated on a scale where 1= no root rot, 2= 1-33% of roots with visible lesions of root rot, 3= 33-50% of the roots rotted or damaged, 4= 50-80% of the roots rotted, 5= no roots present, or more than 80% missing or pre-emergence damping-off and few if any roots. Small sections were cut from roots and hypocotyl that had discoloration or small lesions. These sections were surface sterilized and plated onto PDA to identify and confirm the presence of the pathogen. On 20 Aug plants in four 3.3-ft sections of row from each plot were harvested. Pods from all plants were removed and the pods with no discoloration and those with lesions were weighed separately.

There were no differences in initial stand counts among treatments on 9 Jul. Quadris significantly reduced the *Rhizoctonia* rating on 18 Jul compared to the non-treated control. Lesion severity was moderate in plots treated with Fontelis, where the *Rhizoctonia* rating was not significantly different from the plots treated with Quadris, but also not significantly different from the non-treated plots. Application of Double Nickel did not reduce *Rhizoctonia* rating in comparison to the non-treated plots. Isolations confirmed that all lesions were caused by *R. solani*. There were no significant differences in marketable or nonmarketable pod weight among treatments. No phytotoxicity was observed.

Treatment and rate	Stand/3.3 ft row 9 Jul	Rhizoctonia rating 18 Jul	Marketable pods/13 ft row (lb)	Unmarketable pods/13 ft row (lb)
Double Nickel 55WDG 2 qt/A	23.3 a*	2.11 a	5.08 a	0.21 a
Fontelis 1.6SC 1.6 fl oz/1000 ft row	23.5 a	1.71 ab	5.05 a	0.29 a
Quadris 2.08SC 0.6 fl oz/1000 ft row	22.7 a	1.49 b	5.36 a	0.34 a
Non-treated	23.2 a	2.06 a	4.84 a	0.34 a
<i>P</i> value**	0.7852	0.0304	0.3775	0.1954

* Means within a column followed by the same letter are not significantly different according to Fisher's protected LSD ($P=0.05$).

** P values ≤ 0.05 indicate significant differences exist among treatments.