Field evaluation of fungicides for management of Sclerotinia on dry edible (pinto) beans

Carrington, ND (2008)

15- and 30-inch row spacing

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KEY FINDINGS:

- Under high Sclerotinia disease pressure, pinto bean yields were optimized in narrow (15-inch) row spacing relative to wide (30-inch) row spacing. Sclerotinia severity was lower in the wide (30-inch) row spacing relative to the narrow (15-inch) row spacing, but the lower disease levels were not enough to overcome the yield penalty associated with planting pinto beans to wide rows.
- Applied as a single application at early bloom. ProPulse (10.3 fl oz/ac) and Topsin (35 fl oz/ac) were more effective against Sclerotinia than Proline (5 or 5.7 fl oz/ac). ProPulse = prothioconazole (200 g ai/L) + fluopyram (200 g ai/L); Proline = prothioconazole (480 g ai/L); Topsin = thiophanate-methyl (540 g ai/L).
- In this trial, applications made at 2 to 3 open blossoms per plant were slightly more effective than applications made at 8 days earlier at 75% bloom, but optimal fungicide application for Sclerotinia control differs relative to canopy closure at bloom and soil moisture levels in the 2 to 3 weeks prior to bloom.

METHODS and RESULTS:

Fungicide application timing:

- A July 22 (approx. 75% of plants with an open blossom)
- B Aug. 30 (2 to 3 open blossoms on most plants)

Fungicide application details:

- Proline and ProPulse were applied with a non-ionic surfactant (0.25% v/v)
- Fungicides were applied in 18.5 gallons of water/ac at 35 psi using 8002 twin-jet nozzles.

Agronomics: 'Lariat' pinto beans were seeded May 19 and harvested October 2. Previous crop was canola. Conventional tillage was utilized.

Disease establishment: This trial was conducted on a site with a history of Sclerotinia disease epidemics. To facilitate disease development, supplemental overhead irrigation was applied during bloom and pod-fill.

Within-column means followed by different letters are significantly different.

Combined analysis

(P < 0.05; Fisher's protected least significant difference).

15- and 30-inch row spacing Sclerotinia Yield

percent. Sept. 11

severity

pounds / acre

	percent, coper ri		1		
Non-treated control	69	d	1564	с	
Proline 5.0 fl oz/ac (A)	60	cd	1671	bc	
Proline 5.7 fl oz/ac (A)	58	cd	1727	bc	
Proline 5.0 fl oz/ac (B)	60	cd	1836	bc	
Proline 5.7 fl oz/ac (B)	55	bc	1931	b	
Proline 5.0 fl oz/ac (A,B)		b	2033	b	
Topsin 35 fl oz/ac (B)	33	а	2466	а	

Narrow rows

Disease assessments: Sclerotinia severity was assessed shortly before maturity on September 11 as the percent	Narrow rows 15-inch row spacing			Wide rows 30-inch row spacing				
of the canopy expressing Sclerotinia disease symptoms.	Sclerotinia severity		Yield		Sclerotinia severity		Yield	
	percent, Se	ot. 11	pounds / acre		percent, Sept. 11		pounds / acre	
Non-treated control	73	d	1686	с	65	b	1443	b
Proline 5.0 fl oz/ac (A)	70	d	1736	с	50	ab	1605	ab
Proline 5.7 fl oz/ac (A)	78	d	1947	bc	43	а	1724	ab
Proline 5.0 fl oz/ac (B)	68	d	1787	bc	48	ab	1668	ab
Proline 5.7 fl oz/ac (B)	60	cd	2185	b	50	ab	1676	ab
Proline 5.0 fl oz/ac (A,B)	48	bc	2106	bc	43	а	1960	а
Topsin 35 fl oz/ac (B)	25	а	3007	а	40	а	1926	а
ProPulse 10.3 fl oz/ac (B)	35	ab	2781	а	NO DATA		NO DATA	

IMPORTANT NOTICE:

- Fungicide performance can differ in response to which diseases are present, levels of disease when products are applied, environmental conditions, plant architecture and the susceptibility to disease of the variety planted, crop growth stage at the time of fungicide application, and other factors.
- This report summarizes fungicide performance as tested at the NDSU Carrington Research Extension Center under the conditions partially summarized above.
- Fungicide efficacy may differ under other conditions; when choosing fungicides, always evaluate results from multiple trials.
- This report is shared for educational purposes and is not an endorsement of any specific products.